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Introducing an Integrative Approach for Studying Foreign Languages in Higher Education: The Case of Belgrade Faculty of Philology¹

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Abstract

After the Republic of Serbia officially adopted the principles of the Bologna Declaration in 2003, the international development of the Serbian higher education had to follow the guidelines common for all European Union countries. Abiding by the new Higher Education Law of 2005, the Faculty of Philology of the Belgrade University first started introducing gradual changes and then implemented the reformed curriculum for language learning as of the 2006/2007 academic year. The new programme of academic study includes three main domains for each of the many departments of the Faculty of Philology: Language, Literature, and Culture, but these comprise different courses, some of which are mandatory, while others are elective. For instance, in the English Department, besides the mandatory classes in Contemporary English Language, students also attend several courses in English Linguistics, Anglophone Literatures, EFL Methodology, and Cultural Studies. This paper will illustrate the introduced changes and discuss the benefits of the new, integrative approach to foreign language studies, both for students and their professors.

Keywords: Belgrade Faculty of Philology, higher education, English Department, foreign languages, Bologna Declaration, languaculture

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Introduction

Situated in the Balkans, more precisely at the crossroads of Southeast and Central Europe, the Republic of Serbia is one of the legal and recognised successor states to the former Yugoslavia (whose full name was: the Socialist Federal Republic of Yugoslavia - SFRY). Before becoming part of Yugoslavia, Serbs had several sovereign states, from as early as the Middle Ages, while the Serbian Kingdom proper was established and recognised in 1217 by both Constantinople and Rome – as two major centres of power at that time.

One of the oldest universities in the Balkans, and the oldest one in Serbia, is situated in its capital Belgrade. The University of Belgrade (in Serbian: *Univerzitet u Beogradu*, and in the Cyrillic alphabet: *Универзитет у Београду*) is also the largest Serbian higher education institution. The Republic of Serbia currently has 17 universities including 136 faculties. There are 8 public universities consisting of 85 faculties and 9 private ones consisting of 51 faculties, with the total of about 2,500 professors teaching over 200,000 students. Out of this number, about 90,000 are students at the University of Belgrade, which covers four domains (natural sciences and mathematics; medical sciences; technological sciences; and social sciences and humanities), with its 31 faculties and 11 research institutes. Currently being one of the top 400 universities in the world (according to the *Shanghai List*), the University of Belgrade is more than two centuries old, since it was founded in 1808, when its name was the Belgrade Higher School.

Under its umbrella, the first school in which *education* was taught in Serbian – the Lyceum of the Principality of Serbia, was founded in 1838. Besides several courses in the Serbian language (grammar, syntax, and stylistics), students could also opt for learning German or French, so it can be said that this was the seed from which the Faculty of Philology (*Filološki fakultet*, in Serbian, and in Cyrillic: *Филолошки факултет*) at the University of Belgrade would bloom later on. It is the oldest faculty of philology in Serbia, since it was founded in 1908, and also the largest one, with about 350 teachers and associates, plus a hundred administrative staff members. All in all, there are 31 departments, with some 8,500 students, including the Department for Librarian and Information Studies, several majors in Serbian Language and/or Literature, as well as numerous Foreign Language Departments. These are the very focus of our paper, since its aim is to analyse the introduction of an integrative approach for studying foreign languages at the Belgrade Faculty of Philology in the twenty-first century.

Implementing Reformed Curricula at the Belgrade Faculty of Philology

In Serbia, the domain of higher education is regulated by the Ministry of Education, Science and Technological Development. Serbia is a state on its way towards the full membership in the European Union (EU), as a candidate country since 2012. Like all the other EU candidates, Serbia also had to harmonise its national laws, regulations, and standards with those of the EU, which is the accession requirement for any country before it becomes a member state. Among other documents, Serbia had to accept officially the Bologna Declaration and thus become a member of the Bologna Process, which happened in 2003. In line with the principles of this important document, Serbia adopted the new Law on Higher Education in 2005, which was the final sign that it had entered “the mainstream of change” and “of coordinated reforms” (*The Bologna Declaration*, p. 3). The entire University of Belgrade, which means the Faculty of Philology as well, started implementing the reforms in conformity with the new law, as of the following academic year – 2006/2007. The main changes introduced at the Faculty of Philology were that students had many more elective courses than before, and that besides language and literature they could study culture, too.

Namely, ever since the establishment of the Belgrade Faculty of Philology, each of its departments had been devoted to teaching the respective language, and in most cases the literature/s written in that language. For instance, until the introduction of the reformed programme, the students at the English Department had the following obligatory courses (each lasting two terms, that is, a whole year): Contemporary English Language I - IV, English Language I - IV (Phonetics, Morphology, Syntax, History of the English Language), English Literature I - IV, American Literature; and elective courses in Linguistics (Semantics or Contrastive Analysis), Literature (Shakespeare or another offered course), Methodology of Teaching, Educational Psychology, and Second Foreign Language (see more in: Rasulic and Trbojevic, 2004, pp. 208-231). In their analysis of the revised programme of academic studies at the Department of English language and literature at the Faculty of Philology in Belgrade, Trbojevic, Rasulic, and Jovanovic present the background which led to introducing the changes, and point to the fact that the reform was prompted by what they name ‘top-down’ and ‘bottom-up’ developments (Trbojevic, Rasulic, and Jovanovic, 2011, p.19).

The first kind of changes were those made by the Serbian state and academic institutions, which “provided a legal and institutional frame for the reform that has long since been felt necessary” (Trbojevic, Rasulic, and Jovanovic, 2011, p. 20). They included, but were not reduced to, the enactment of the 2005 Law on Higher Education, because the role of the newly-formed National Councils for Education and Higher Education was also of great significance. The previous acceptance of the Bologna Declaration principles had an enormous impact as well, since prior to that the lack of supportive standards and reference frames had been a stumbling block for even launching the reform. That frame was rightly found in the Council of Europe’s documents: *Common European Framework of Reference for Languages* (CEFR) and *European Language Portfolio* (ELP), as part of the European Higher Education Area (EHEA), which represented a huge help in harmonising our education standards with those valid in other European countries.

Another key event which greatly enhanced the reform at the Faculty of Philology in Belgrade was the granting of funds by the European Commission for our Tempus IV project (for the period 2010–2013) entitled *Reforming Foreign Language Studies in Serbia* (REFLESS). The very goal of this project was implementation of EU language education policies in Serbia, as well as harmonisation of language education standards in our country with those prescribed in the CEFR and the ELP, in order to integrate Serbia into the EHEA and boost the country's further development in this domain. Among the most significant results achieved by our joint efforts within the framework of the REFLESS Tempus IV project were two publications: *Reforming Foreign Language Studies in Serbia: Towards Serbian Language Education Policy*, and *Evropski jezički portfolio za filološke studije na fakultetima u Srbiji* (the Serbian version of the ELP for foreign language students). These studies particularly helped implementing the reform not only at the Faculty of Philology in Belgrade, but also at all the remaining state Philology Departments – that is, those of four other universities in Serbia (Novi Sad, Nis, Kragujevac, and Novi Pazar).

The second kind of factors that prompted our reform, which Trbojevic, Rasulic, and Jovanovic named 'bottom-up' developments (Trbojevic, Rasulic, and Jovanovic, 2011, p. 19), were the problems that mostly concerned students, on the one hand, and professors, on the other. The greatest obstacle to both successful students' accomplishment and high-quality performance of their teachers was the one already discussed above: outdated – or, as Trbojevic, Rasulic, and Jovanovic call them, 'petrified' – curricula, while most of the remaining hindrances stemmed from that core, such as: "non-selective accumulation of content material aggravating students' workload [...], formation of large groups of students 'stuck' in some courses [...], poor quality output [...], market reality and students' needs" (Trbojevic, Rasulic, and Jovanovic, 2011, p. 20-22), etc. Especially the last two factors mentioned here – 'market reality and students' needs' – were both at odds with the actual knowledge and skills they used to obtain until graduation. In the new programme, introduced in the fall of 2006, which "is not a close and fixed set of courses, but a dynamic system of mandatory and elective courses" (Trbojevic, Rasulic, and Jovanovic, 2011, p. 22), six major fields of study were defined: "The Contemporary English Language, English Linguistics, EFL Methodology and Applied English Linguistics, Translation, Anglophone Literatures and Cultural Studies" (Trbojevic, Rasulic, and Jovanovic, 2011, p. 22). Within such a flexible framework, coupled with continual evaluation, not only can students be involved more actively, but the level of their responsibility and awareness is also increased.

One of the major changes introduced during the reform at the Faculty of Philology in Belgrade in the twenty-first century was the creation of courses in Cultural Studies, which had previously existed only sporadically, and not in all Departments. For instance, in the English Department already in the 1980s students had to pass the Introductory Course to English Studies (cf. Trbojevic, Rasulic, and Jovanovic, 2011, p. 25), while they also learnt about the cultural history of Great Britain and the United States within the framework of respective courses in English Literature and American Literature. Nevertheless, after the curricula were reformed, the new integrative approach made available the space for fresh, so much and so long needed independent courses in the domain of Cultural Studies: *British Studies – Introductory Course*, which is mandatory for the first-year students, *American Studies – Introductory Course*, mandatory for the second-year students, *British Cultural Studies* and

American Cultural Studies as elective courses at the fourth year of studies, and *Cultural Diversity in Modern Britain* at the MA level. The aim of these courses is to bring

the social, political and cultural history of Britain and the US closer to the students, hoping to raise awareness and appreciation of cultural features and differences which would aid our students in understanding and internalizing both the English language and Anglophone literatures (Trbojevic, Rasulic, and Jovanovic, 2011, p. 25).

Conclusion

The necessity of introducing the domain of Cultural Studies in foreign language teaching was recognised in the twenty-first century not only in Serbia, but in many other countries, as well. In their comprehensive analysis of a similar problem regarding foreign learners of the Japanese language, Xiao Yan Li and Katsuhiro Umemoto point out that “in the Japanese language education curriculum, Japanese civilization is merely an adjunct and its position is too weak” (Li and Umemoto, 2010, p. 291). Discussing numerous similarities, but also differences between studying a foreign language and learning about the cultural context in which it is spoken, they assert that

In foreign language education, the rules of grammar and vocabulary constitute explicit knowledge, which is transferred from teachers to students in a classroom. However, language cannot be used only in such an explicit context. Implicit knowledge, such as the way language is used, or its implied meaning according to time, place, and situation is also required (Li and Umemoto, 2010, p. 294).

Having ascertained that learning a foreign language *per se*, without relevant courses in Cultural Studies, is not enough for attaining the level of proficiency, they conclude the following: “In order to improve the acquisition of communication skills, we must integrate the study of both Japanese culture and language in the practice of Japanese language education” (Li and Umemoto, 2010, p. 285). Their decision, as well as the change we implemented within the framework of reforming curricula at the Faculty of Philology in Belgrade by introducing courses in Cultural Studies, was based on previous research by numerous significant theoreticians worldwide.

Although before the last decade of the twentieth century foreign language departments, those at the University of Belgrade and those in numerous other countries alike, did not envisage studying cultures in their syllabi,² “the notion that language and culture are inseparable” (Li and Umemoto, 2010, p. 288) was already recognised and highlighted. The proof of this was the emergence of a specific term – *linguaculture* (or *linguaculture*) as early as in 1994, when Michael Agar, an American anthropologist, pointed to the importance of culture in learning a foreign language, in his essay *Language Shock: Understanding the Culture of Conversation*: “You can master grammar and the dictionary, but *without* culture you won't

² See more about that problem in, for instance: Robinson, 1981; Byram, 1994; Byrnes, 2002; Paige et al., 2003; Koda, 2005; Kramsch, 2011.

communicate.” (Agar, 1994, p. 29, emphasis in the original). This cultural dimension of language has further been analysed by many researchers, among them most prominently by Karen Risager, who has written extensively about the significant implications of culture and languaculture in foreign language education, which has also been the topic of this paper. Asserting “that language teaching and learning should focus on the appropriate use of the target language, oral and written, according to situational and wider social contexts” (Risager, 2005, p. 186), she draws attention to the link that should preferably exist between the study of language and cultural studies, because the one “between the study of language and the study of literature is not a natural one, it is a historical construction that was once important in the nation-building processes” (Risager, 2005, p. 194).

Regarding the future of Cultural Studies in teaching foreign languages, Li and Umemoto “predict that the integrated study of language and culture will surely become a major issue in the practice of Japanese language education” (Li and Umemoto, 2010, p. 285). In a similar way, by implementing its reformed curricula of integrated language & literature & culture studies, the Faculty of Philology at the University of Belgrade has once again proven that, although it is one of the oldest institutions of higher education in the Balkans, it is still up-to-date and on a par with the most sophisticated philological departments in the world.

The logo for the International Association for Foreign Language Research (iafor) is centered on the page. It consists of the lowercase letters 'iafor' in a light blue, sans-serif font. The text is enclosed within a circular graphic composed of several overlapping, semi-transparent arcs in shades of blue and red, creating a sense of motion or a globe.

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Thai Student Teachers' Beliefs about Science Teaching and Learning

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Abstract

Teacher's beliefs have played an important factor which influence how science teachers teach. This study intended to explore the student teachers' beliefs on science teaching and learning in a teacher preparation institution in Southern Thailand. The study was conducted during their field experience in the second semester of, academic year 2014. Common aspects of teaching and learning, teacher roles, and teaching strategies were taken into account to reveal teachers' beliefs. Semi-structured interviews were used to explore the beliefs about science teaching and learning by using Teacher Belief Interview (TBI) (translated version). The respondents of the study were 18 Thai student teachers that were selected by using purposive sampling technique. Categories present within each question were identified. Categories that emerged from the transcription of the interviews resulted from the constant comparative method. Teacher-centered responses were identified as "traditional" or "instructive" beliefs. "Responsive" and "reform-based" answers were identified as student-centered beliefs. The findings indicated that their beliefs about teaching and learning distributed evenly between teacher-centered and student-centered responses.

Keywords: Thai student teacher, beliefs, science teaching, learning

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Introduction

Teaching and learning management of teachers is the key to improving the quality of students. Effective and successful teaching, teachers must have the necessary knowledge and can put the knowledge to use appropriate teaching in the classroom. In addition, the teacher used teaching process based on the concept that they held. These are causing the teacher expresses the teaching behavior and determine the direction instruction of teachers.

Teachers' beliefs represent individual teacher's ideas about what they think is true and reflect their own prior experiences with science. Undeniably, teachers' beliefs about teaching and learning play an important role in affecting the nature of teachers' intentions in the classroom and in influencing their professional work, like lesson planning, assessment, and evaluation. These beliefs have an impact on teachers' decision making during classroom interaction with students (Nespor, 1987; Pajares, 1992)

Over the years, researchers have paid more attention to the area of teacher practices, attitudes, and knowledge. The concern about how little we know about how teacher beliefs about science teaching and learning, and how they relate to teacher practices have been recently elevated in learning about the development of science teachers. A recommendation for future research includes the area of science teacher preparation programs with a focus on their beliefs related to their teaching and practices (Fullan, 2001).

The ultimate goal is to improve the quality of teacher preparation programs by better understanding the role the beliefs of teachers and their crucial components in the pre-service development of science teachers. Therefore, the focus of the research is to examine Thai Student Teachers' beliefs about science teaching and learning.

Literature review

Beliefs have been receiving a great deal of attention from educational researchers and widely discussed in the literature. Bandura (1986) stated that beliefs are considered to be the best indicators of why a person behaves, handles information, and makes decisions in a certain way. In educational research, beliefs about teaching and learning are categorized into two dimensions-Traditional and Modern. These two belief dimensions are variously termed as direct vs. indirect; conventional vs. contemporary; teacher-centered vs. student-centered approach of teaching-learning process. (OECD, 2009; Wolley *et al.*, 2004).

Objective

This research intended to explore the student teachers' beliefs on science teaching and learning in a teacher preparation institution in Southern Thailand.

Methodology

Research design

An interpretative research was chosen. Researcher collected and interpreted qualitative data about student teachers' beliefs on science teaching and learning. It focused on the in-depth meanings that participants ascribed to the emphasized on nature of teaching and learning aspects.

Participants

There were 18 student teachers who participated in the research during their field experience in the second semester of, academic year 2014 were selected by using purposive sampling technique. They were student in a teacher preparation institution in Southern Thailand. All of them was female. They had previous training experiences that they had enrolled in professional subjects with specification in Science (Biology, Chemistry, Physics, Geology, and etc.)

Method/Research instrument

In this research, the instrument was a translated version (in Thai) of Teacher Belief Interview (TBI), originally designed by Luft and Roehrig (2007). It was used to explore the beliefs about science teaching and learning. The TBI utilizes semi-structured interview questions to elicit the beliefs of each participant, allowing the interviewer to probe the thoughts of the teacher in order to understand his/her beliefs. Teacher Belief Interview (TBI) comprises of the following questionnaire items (see table 1).

Table 1. Questions used for teacher beliefs interview (TBI)

Teachers' beliefs about teaching and learning
1. How do you maximize student learning in your classroom?
2. How do you describe your role as a teacher?
3. How do you know when your students understand a concept?
4. How will you decide what to teach or what not to teach?
5. How will you decide when to move on to a new topic in your class?
6. How do you think students learn best?
7. How will you know when learning is occurring in your classroom?

Source: Luft and Roehrig (2007)

Data collection

Researcher used Teacher Belief Interview (TBI) (translated version) to interview student teachers' beliefs on science teaching and learning. The data was collected during their field experience in the second semester of, academic year 2014. Each interview followed the semi structured interview protocol which was open ended in nature. Each interview was audio taped using a digital voice recorder. Field notes were also compiled during the interview.

Data analysis

The researchers analyzed data by from the transcription of voice recorder interviews of each student teacher. In data analysis, the researcher used data classification; it is called micro typological analysis which analysis phrases or sentences then grouped of words or coding keywords that were shown in teachers' beliefs about teaching and learning. After that, the summaries were searched for pattern and/or categories. The emergent categories used for the questions were Traditional, Instructive, Transitional, Responsive, and Reform-based. The researcher checked the consistency by data triangulation, then interpretation and conclusion by analytic induction.

Results and discussion

This part describes how the beliefs about teaching and learning. Table 2 shows the results of the survey of student teachers' beliefs on science teaching and learning.

Table 2 The frequency of Thai Student Teachers ' beliefs about science teaching and learning.

(N=18)

Teachers' beliefs about teaching and learning	Teacher-centered beliefs		Transitional	Student-centered beliefs	
	Traditional	Instructive		Responsive	Reform-based
Beliefs about Teaching					
How do you maximize student learning in your classroom?	2	3	6	7	
How do you describe your role as a teacher?	2	6	7	3	
How will you decide what to teach or what not to teach?	1	7	7	2	1

Table 2 (Continued)

(N=18)

Teachers' beliefs about teaching and learning	Teacher-centered beliefs		Transitional	Student-centered beliefs	
	Traditional	Instructional		Responsive	Reform-based
How will you decide when to move on to a new topic in your class?	2	7	5	3	1
Total	7	23	25	15	2
Beliefs about Learning					
How do you know when your students understand a concept?	1	2	11	3	1
How do you think students learn best?		4	9	4	1
How will you know when learning is occurring in your classroom?		1	10	6	1
Total	1	7	30	13	3

The eighteen participants for this study were selected. In Table 2 the Teacher Belief Interview (TBI) seven central questions are displayed based on whether they held beliefs about teaching or beliefs about learning. The individual questions were coded along the Teacher-centered to Student-centered continuum which includes the categories of: Traditional, Instructional, Transitional, Responsive and Reform-based. This study identified several frames of reference to conceptualize the complex interplay between beliefs on science teaching and learning.

Beliefs about teaching

Total of the study indicated that their *beliefs about teaching* were between teacher-centered and student-centered beliefs. The transitional category was the most frequently scored category. For example, when the interviewer asked, how do you describe your role as teacher? They responded,

"I am responsible for guiding students in their development of understanding and process skills."

Transitional category belief about teaching reflected that the main focus was on the teacher's relationship with students. A Transitional teacher organized the classroom around students' needs by providing students science activities. In the transitional classroom, teacher involved with designing activities that builds a positive supportive environment.

Beliefs about learning

Participant *beliefs about teaching and learning* are summarized (Table 2). Their *beliefs about learning* are more transitional to responsive than his *beliefs about teaching*. For example, how do you know when your students understand a concept? They responded,

“Students can apply what they've learned.”

This was an example of a reform-based response because the application of concepts to new situations to demonstrate scientific understandings.

There might be a few explications why the beliefs about learning are a little more student-centered than their own beliefs about teaching. This might present that the *beliefs about teaching* are more grounded to their own prior experiences, while the *beliefs about learning* are more grounded in the coursework of a teacher preparation institution.

Conclusion and Recommendations

The present study indicated that their *beliefs about teaching* were between the categories teacher-centered beliefs and student-centered beliefs. Their *beliefs about learning* were more transitional to responsive than his *beliefs about teaching*.

A teacher preparation institution and university science teacher education should dedicate continuous efforts to change student teachers' beliefs about teaching and learning by mostly model constructivist teaching approaches.

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***Multiple Reading Program:
An Assessment on Reading Comprehension Ability of Thai University Students***

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Abstract

In order to develop English reading comprehension abilities, we have to understand how our students learn, pre-assessment and ongoing assessments are essential. This provides feedback for both the teachers and the students for students learning improvement. The implementation of a student-centered teaching and learning should also be established. This means building a good rapport between the student and the teacher. Regardless of Individual differences, learners are expected to understand the same concepts, principles and skills. To cope up with the different students learning style, our methods should vary as to meet their needs. By changing and fitting the techniques of instruction to suit students' level, teachers are able to adjust the lesson content. The Multiple Reading Program (MRP) includes students learning styles, emotional intelligence and personality assessment integrated with reading skills. The research findings provide practical information about developing English reading comprehension abilities using MRP. This study compared the English reading comprehension ability of Thai university students before and after using MRP.

Keywords: multiple reading, learning styles, individual differences

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Introduction

In the classroom, we meet students with different needs, experiences, abilities, language proficiency, background knowledge, readiness to learn and learning styles. Thus, not all students learn in the same way. Some are dependent, others are independent. Regardless of Individual differences, learners are expected to understand the same concepts, principles and skills. To cope up with the different students learning style, teachers must have various teaching strategies and methods. One strategy to enhance learners reading, writing, listening and speaking comprehension is Multiple Reading Program (MRP). The program includes students learning styles, emotional intelligence and personality assessment integrated with reading skills. This study aims to compare the English reading comprehension ability of Thai university students before and after using MRP.

Reading is the basic foundation on which academic skills of an individual are built, and that has been verified by various studies time and again. Reading as defined by Wikipedia is a complex cognitive process of decoding symbols in order to construct or derive meaning (reading comprehension). It is a means of language acquisition, of communication, and of sharing information and ideas. Most of the subjects we are taught in school are based on a simple concept - Read, Synthesize, Analyze and Process information. While there is no doubt about the fact that reading is a priceless activity, it has been observed that its importance has been deteriorating rapidly. One of the most prominent causes for this is the technology boom, owing to which we end up spending most of our time in front of the television or computer screen (Naik, 2012).

English teachers teach reading comprehension in schools by asking questions following reading or just by assigning skill sheets as practice like looking for the main idea, sequencing, following directions, noting details, and cause and effect relationships. Unfortunately, most teachers failed to differentiate teaching and testing reading comprehension. Durkin (1978) as mentioned by Cooter and Reutzel (2005) suggested that effective comprehension instruction includes helping, assisting, defining, demonstrating, modeling, describing, explaining, providing feedback, thinking aloud, and guiding students through learning activities which is often not found during the teaching sessions. Research has shown that reading comprehension improves when teachers provide explicit comprehension strategy instruction.

Reading fluency involves the ability to read text smoothly and at a reasonable rate. When fluent readers read aloud, they do so effortlessly with speed, accuracy, and proper expression as though they are speaking. Fluent readers are able to focus their attention on the ideas in the text and comprehend the author's message. On the other hand, less fluent readers struggle along through text in a very labored, word-by-word way. They must focus most of their attention on decoding the words, so comprehension suffers. Comprehension can be virtually ignored when readers must devote most of their mental energies on decoding. Thus, fluency is important because it provides a kind of bridge between word recognition and reading comprehension (National Reading Panel, 2000; Rasinski, 1985; Reutzel & Hollingsworth, 1993).

Methodology

The study was conducted at Rajamangala University of Technology Lanna (RMUTL), Phitsanulok Campus, from November to December 2014. The participants were Thai students under the Faculty of Business Administration and Liberal Arts (BALA), RMUTL, Phitsanulok, Campus. At the time of study, 40 (volunteer) students enlisted to participate in the study. There were 4 males and 26 females, from ages 20 to 21. This study aims to compare the English reading comprehension abilities of Thai English learners before and after using Multiple Reading Program.

The respondents underwent six (6) face-to-face sessions. Other activities were done online (facebook). An English reading comprehension test was administered before and after the course. A quasi-experimental pre-test and post-test control group design was used in this study. According to Moore (2008), a quasi-experimental study is a type of evaluation which aims to determine whether a program or intervention has the intended effect on a study's participant. The reading comprehension questions were gathered from free TOEIC® Practice Tests. The Learning Styles adopted from brainbox was also used as bases in teaching the lessons. The pre-test and post-test were collected, tabulated and recorded to analyze the data.

Research Findings and Discussion

The research revealed that the learners' pretest and posttest scores on English reading comprehension ability were 45.56% and 65.31% respectively. The learners' English reading comprehension ability after learning with Multiple Reading Program was significantly higher at .05 level.

The result of the study from the Multiple Reading Program showed that students' mean scores increased. This resulted from the differentiated instruction in teaching reading comprehension. Willoughby (2005) stated that no two students enter classroom with identical abilities, experiences and needs, learning style, language proficiency, background knowledge, readiness to learn, and other factors can vary widely within a single class group. Regardless of their individual differences, however, students are expected to master the same concepts, principles and skills to help all students succeed in their learning is an enormous challenge that requires innovative thinking.

The participants' learning styles showed that 90% are visual, 6% are kinesthetic and 3% are auditory learners. Visual learners are those who learn best through seeing things. Kinesthetic learners are those who learn best through experiencing or doing things and auditory learners are those that learn best through hearing things.

Hannum (2005), discussed five different theories with regards to individual differences among students and the role these differences play in learning: 1) Ausubel believes that individual learning is based upon what the individual already knows; the key individual difference variable is one's cognitive structure or a mental map of existing knowledge. 2) To Bandura, instruction must be based on modeling, self-regulation, and self-efficacy. He believed that instruction should be altered to account for individual differences. Instructors should develop environments that create and encourage self-efficacy within individual learners, which is most effectively done by direct encouragement of students and providing opportunities for students to

experience mastery or success in particular learning tasks. 3) According to Gagne, the level of pre-requisite skills acquired by students may differ by student; therefore, instruction must meet the needs of the individual learner. 4) Skinner would propose that individual differences among students come from the fact that each student comes from different environments in which their learning behavior has been shaped and reinforced in various ways. Therefore, what may be considered a positive reinforcer for one student (or group of students) may not promote positive learning behavior for others. 5) Vygotsky believes that the Zone of Proximal Development (ZPD) is the prime determinant of individual differences and development among students. He defines the Zone of Proximal Development as the discrepancy between the child's capacity to solve problems independently and the child's ability to solve problems with assistance.

According to Cook (2012) we need to figure out how each student best learns and adapt our instruction. Many traditional educators may find it difficult to change their teaching styles, but it is essential so that all learners receive the same opportunity to learn.

Delivery of instruction in the past often followed a "one size fits all" approach. In contrast, differentiation is individually student centered, with a focus on utilizing appropriate instructional and assessment tools that are fair, flexible, challenging, and engage students in the curriculum in meaningful ways. Teaching ESL to university students is no different than teaching the elementary and high school students. For this, not all students learn in the same way. This is why teachers must differentiate their teachings. The Multiple Reading Program is set to use students learning styles, promote differentiated instruction and help develop students to improve their comprehension skills. As educators we have to find out what are the needs of our students. If, we do not understand how our students learn, then we have no acceptable ways of figuring out how to teach them.

Conclusion

In order to develop English reading comprehension abilities, we have to understand how our students learn, pre-assessment and ongoing assessments are essential. This provides feedback for both the teachers and the students for students learning improvement. The implementation of a student-centered teaching and learning should also be established. This means building a good rapport between the student and the teacher. As students understand things differently, our methods should vary as to meet their needs. As the Multiple Reading Program is an eclectic approach, it focuses on the reading skills acquisition based on the learning abilities of every individual student. By changing and fitting the techniques of instruction to suit students' level, teachers are able to adjust the lesson content. This encourages critical thinking in students, and gives them a chance to come forward and demonstrate what they have learned. It also creates a sense of equality among students. MRP provides ample opportunity for students to aim and attain academic success with ease. The research findings provide practical information about developing English reading comprehension abilities using Multiple Reading Program. The limitation of this study is its small sample size and the course time given. It should be compared with other reading strategies to provide effective methods in teaching reading.

The logo for the International Association for Educational Research (IAFOR) is centered on the page. It consists of the lowercase letters "iafor" in a light blue, sans-serif font. The text is surrounded by several overlapping, semi-transparent circular arcs in shades of blue and red, creating a dynamic, circular graphic effect.

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***The Level of Math Anxiety among the Students Who Consistently Perform Poorly
in Mathematics at Secondary Level Education in Bangladesh***

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Abstract

This paper reports on a research that investigated Math Anxiety among students who are getting poor marks consistently in last three exams. A school from Dhaka, National Bangla High School, was selected purposively for this research. The participants were 122 students, both girls (n=75) and boys (n=47), from grade IX and X with poor results in Mathematics. The research applied two data collection tools including Math Anxiety Questionnaire (MAQ) and Self Rating Scale. The research revealed that students participated in this study has different level of Math Anxiety. A good number of students are suffering from high Math Anxiety. There is no significant difference between the level of Math Anxiety among boys and girls. This research also identifies several reasons behind the Math Anxiety among the participants of this study which includes: students do not understand Mathematical problems in the school, they do not understand what their teachers do in Math class, they feel bored in Math classes, they have low self-confidence in solving Math problems and they do not get adequate supports from their family. The findings of this study can be a lead of a large scale study on impact of Math anxiety in Math achievement and career progressions.

Keywords: Math Anxiety, Level of Math Anxiety, Cause of Math Anxiety, Secondary Education, Bangladesh.

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Introduction

Math Anxiety becomes one of the significant concerns for educators around the world. For example, only seven percent American people have positive experiences about Mathematics and it indicates that majority of Americans have negative experiences with Mathematics (Furner & Duffy, 2002). Defining Math Anxiety as an emotional state that makes people panic towards Mathematics, Maloney & Beilock explain few characteristics of Math Anxiety which included:

- Math Anxiety can happen in the time of solving Mathematical problems or even reading a cash register receipt;
- People with Math Anxiety do poor performance when numerical information is related with the work;
- Math anxious people try to avoid Mathematical task as they have less confidence about Mathematics; and
- Less practice makes Math anxious individuals weak and later Mathematics becomes a great burden to them.

Math Anxiety and Causes

Studies indicated that the cause behind Math Anxiety is multi-faceted and causes of Math Anxiety in female students can be divided into four categories including parental influences, school influences, internal influences and societal influences (Clark, 2012). Behavior of an instructor can be the cause of Math Anxiety like being hostile, gender-bias attitude, uncaring attitude, anger, unrealistic expectation and embarrassing students in front of peer. There might be some other reasons like communication problem, instructional problem, improper evaluation methods and ineffective teaching materials. Sometimes common teaching techniques can be an instructional problem. Beside instructional problem, past experience also can be an immense cause of Math Anxiety, for examples, lack of success with Math, inadequate number of Math course and misinformation about Math. Sometimes parents pass their anxiety to their children as well as teachers (Furner & Duffy, 2002).

Students and teachers both face problem with Math Anxiety. Unwillingness to do a Mathematical problem is one of the symptoms of Math Anxiety. It can happen at different age for different reasons. The main cause of Math Anxiety is teacher or instructor (Smith, 2004). Emotion and intellect towards Mathematics may act as a cause of Math Anxiety like teachers' behaviors towards Mathematics, though it can not be conclusively said that a teacher who has Math Anxiety or disliking about Math has also disliking about teaching Mathematics (Widmer & Chavez, 2001). Students' attitude towards Mathematics depends on the teacher's attitude with Mathematics (Malinsky, Ross, Pannells, & Mcjunkin, 2006). It also can not be ignored that Math Anxiety may come from bad class room experiences, parental influence and poor Math performance of past (Scarpello, 2007).

Effect of Math Anxiety in Career

Math Anxiety affects students' achievement as well as future career (Malinsky, Ross, Pannells, & Mcjunkin, 2006). Students having Math Anxiety try to avoid the subjects

those are related to Mathematics. Sometime students try to avoid some career like accounting, business, medicine, psychology, programming because they need to handle some Mathematical problems with these occupations (Widmer & Chavez, 2001). Not only career choice, but also daily and professional life both might get affected by the Anxiety (Smith, 2004). More than seventy percent Americans stop studying Mathematics before they complete their education. Math Anxiety is now a big concern for the students of high school and technical education because when a student suffers from Math Anxiety, they try to avoid Mathematics and have little confidence in their ability to solve Mathematical problems. Student starts taking minimum number of Math courses which limits their career choice. Students having high level of Math Anxiety achieve less in Math compared to the students having less Math Anxiety. It indicates that Math Anxiety has a correlation with the Math achievement of students (Scarpello, 2007). With high Math Anxiety, students become less motivated to do Math hence their achieved scores in Mathematics decrease. There is a significant relationship with the Math Anxiety and the motivation to do Mathematics (Lee, 2009). If students are not motivated to do Math, their achievement cannot be satisfactory. Without reducing Math Anxiety, it is difficult to motivate students to do better in Mathematics and to improve their Math achievement (Zakaria & Nordin, 2008).

Math Anxiety and Gender

There is no relation between Math Anxiety and gender difference (Ruben, 1998). But cultural experience and expectation have impact on it. There is a popular myth saying "Mathematics is for boys". Therefore, some preconceptions are there in mind of both teachers and students that girls face problems with Mathematics and girls have to struggle harder with Mathematics than boys do although this is also true that several teachers also feel girls can do better in all subjects including Mathematics (Widmer & Chavez, 2001). Society often portrays an impression that women are of poor memories compared to men (Furner & Duffy, 2002). Though there is no significant relationship between gender and Math Anxiety in early grades, female suffer more with Math Anxiety in secondary and tertiary education. The interesting matter is that non-traditional aged group also suffers more than traditional aged group with Math Anxiety and there is a correlation between age and Math Anxiety (Malinsky, Ross, Pannells, & Mcjunkin, 2006)

Reduce Math Anxiety

Better understanding of Mathematical problems can reduce the Anxiety (Henderson, 2000) and for that reason, different teaching methods like using games and one to one help can be useful against Math Anxiety (Widmer & Chavez, 2001). Students facing Math Anxiety can be benefitted from proper ideas and information about Mathematics as

importance of Mathematics may play significant role in students' future success (Smith, 2004). Anthropologist and psychologist have a belief that causes and cures of mental illness like anxiety may vary from culture to culture. There is a great contribution of ethnicity and gender to the belief about any anxiety. Financial status and stress have significant role on it (Atkinson, Abreu, Bush, & Brewer, 1998).

Math Achievements among Bangladeshi students

In 2007, learning achievement of the students of grade X ($n = 3,014$) was assessed by Campaign for Popular Education (CAMPE), Bangladesh, with an instrument based on learning objectives set by National Curriculum Coordination Committee (NCCC). Bangla, English, Mathematics and Everyday Science were covered in the test. Each subject contained 20 items, which made the whole test comprises of 80 items. Students showed the worst performance in Mathematics followed by English, Bangla and Everyday science (Table-1.1). For instance, 16.4% of the students in Mathematics, 26.8% in English, 30.0% in Bangla and 42.8% in Everyday science satisfied the criteria of 50% correct items. 35.5% students fall below the cut-off mark of pass grade in Bangla, while the percentage is 40.1% in English, 53.1% in Mathematics and 22.8% in Everyday Science. Fail rate of girls was higher than boys (Nath, et al., 2007). It indicates a possibility of having a common cause behind the worst performance in Mathematics.

Table 1.1-Percentage of students satisfying minimum criteria for achieving skills in various Subjects under test ($n = 3,014$) (Education Watch report 2007)

Criteria	Subjects				
	Bangla	English	Mathematics	Everyday Science	All
50% correct items	30.0	26.8	16.4	42.8	7.5
40% correct items	53.8	46.8	33.3	66.6	17.9
33% correct items	64.4	59.9	46.9	77.1	27.1

Methodology

The research was designed following mixed method approach included more than one technique to collect and analyze data.

Sampling Techniques and Sample Size

A purposive sampling technique was used for a total of 122 respondents. Students' past academic results was collected with the consent of Headmaster of National Bangla High School, Dhaka. Respondents who had poor achievement in Mathematics for a long time became the participants of this study. Poor achievers of grade IX and X were the participants for this research including 75 girls and 47 boys. A total of 59 students were from grade IX and 63 from grade X. All the selected students ($n=122$) participated in Math Anxiety Questionnaire survey and among them 28 students (17 girls and 11 boys) participated in Self Rating Scale which was intensive and semi structured questionnaire.

Development of Research Tools

This research applied two data collection tools including Math Anxiety Questionnaire (MAQ) and Self Rating Scale. MAQ was adapted from Allan Wigfield (1988) (Wigfield & Meece, 1988). The permission of using MAQ was given by the author through e-mail. This MAQ was used on “Math Anxiety in Elementary and Secondary School Students”. It was in English and later has been translated and adapted in Bangla Language by the researcher and checked by a panel of experts including Math educators and faculty members of Educational Psychology and Guidance and necessary adjustment was done. A priory judgmental technique and field testing was conducted to finalize the translation.

Self-rating Scale was prepared with the help of experts in educational psychology field. Firstly, a number of ideas were generated based on aims of the research. Secondly, a semi-structured questionnaire was developed based on the ideas generated earlier. Thirdly, the semi-structured questionnaire was sent to three education psychology researchers and required alteration was done following their suggestions. Fourthly, after preparing the draft self-rating scale, it was applied involving a pilot group and being finalized on the basis of feedback generated from the field.

Data Collection Procedure

MAQs were distributed by the help of the class teachers to the selected students and collected by the class captains. After distributing the MAQs, oral instruction was provided to all the students. There were six sections in each shift. Students took 45 minutes on average to complete the MAQ.

From the whole sample (n=122) only 28 students gave their consent to take part in the Self Rating Scale. Similarly, to complete the scale, each student required 45 minutes on average.

Data Processing and Analysis

The data collected by MAQ was analyzed by following quantitative data analysis and the Self Rating Scale was analyzed by following descriptive analysis technique.

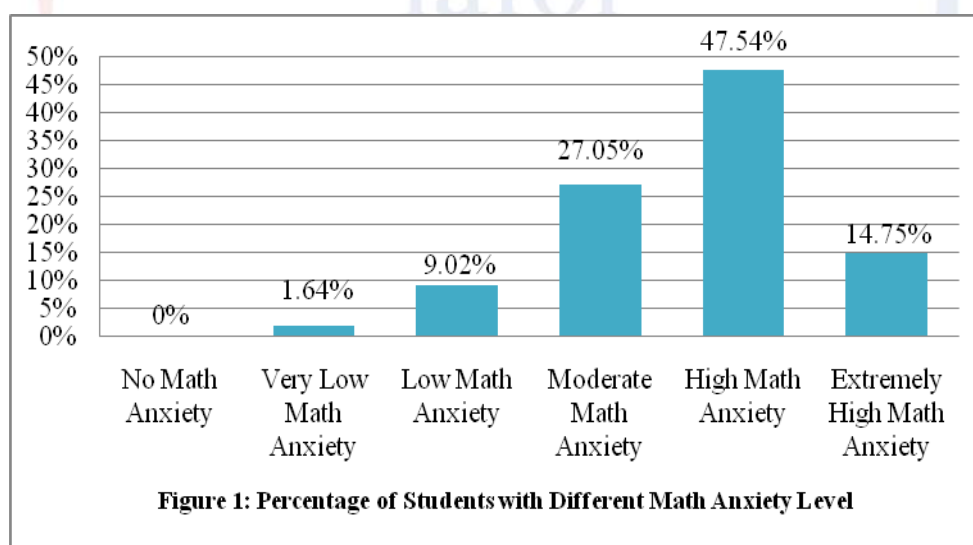
There were 11 questions in MAQ with seven alternate choices of response for each question. Question 2 and 4 were designed in opposite direction. Among the 7 multiple answers, the 1st answer was marked as 1 while the 7th answer was marked as 7 and the rest five answers 2nd, 3rd, 4th, 5th and 6th were marked 2,3,4,5, and 6 respectively. For question 2 and 4 the marks for 1st answer was 7, last answer was 1 and rest of the answers were 6,5,4,3 and 2 for 2nd, 3rd, 4th, 5th and 6th respectively. Math Anxiety score was counted by adding every single marks of a single questions. Consequently, for the 11 questions 11 marks were added and the sum of the marks was considered as the Math Anxiety score. Hence, there were 11 questions and mark 1 was defined as the lowest, 11 were the lowest possible Math Anxiety score and highest possible score was 77. To differentiate the Math Anxiety level the Math Anxiety scores were divided in six levels. Students who scored 11 to 22 in the MAQ their anxiety level were

pointed as “No Math Anxiety”, 23 to 33 were pointed “Very Low Math Anxiety”, 34 to 44 were indicated “Low Math Anxiety”, 45 to 55 were referred to “Moderate Math Anxiety”, 56 to 66 were pointed “High Math Anxiety” and 67 to 77 were interpreted as “Extremely High Math Anxiety”. Students were classified by their Math Anxiety level and also a relationship was drawn with their achievement and Math Anxiety score in the analysis. Boy’s scores and girl’s scores of Math Anxiety level was also compared. To make a clear concept on student’s achieved marks, mean, median, mode, standard deviation and coefficient of variation of achieved marks were calculated and mean, median, mode, skewness of distribution of Math Anxiety scores were analyzed. To make a relation between achieved marks and anxiety score, correlation coefficient were used.

Data collected through the Self Rating Scale was interpreted descriptively. Self-Rating Scale was consisted of 15 questions. Individual interpretation for each and every question’s response was described separately.

Findings

All the students whose Math achievement were not satisfactory for a long time are suffering from Math anxiety and almost half of them have high and extremely high level of Math anxiety where very few of them have low level Math Anxiety and there is no one who has No Math Anxiety. Math achievement is increasing when Math anxiety level is decreasing among the low achiever students.



The self-rating scale is indicating the causes of Math Anxiety. Most of the students do not understand Mathematical problems as well as the examples of the text books when they are studying alone. Some female students’ responses indicating that the teaching style of teacher was not comprehensible for them though male students did

not feel so. Many of them stated that the feelings about Math classes were 'moderate' which indicates they are neither happy nor unhappy with their Math classes. When they were asked about their favorite class/subject, their replies were Bangla (mother language) and English but they do like the Math classes when teachers do not look like angry men and can teach any Mathematical problem in an interesting way. They feel pressure from family for expecting good marks in Mathematics often which also make them worried about Mathematics.

Some of them also said that their confidence level became lower because they were getting poor marks in Mathematics for last two or three years. In order to improve their achievement in Mathematics, these students feel they need extra care; it could be a tutor at home or extra classes at school. All female respondents need help in Mathematics because they want suggestion before Math examinations. Actually, they want short syllabus for Math examinations, so that they can memorize the Mathematical problems easily.

On the other side, all the male respondents need help to understand the Mathematical problems. They are less confident to solve any Mathematical problems alone and that's why they want extra care at home or school. Most of them also perceived that their performance could be better in Mathematics if their Math teachers could teach the hard problems creatively.

Girls and boys had some difference in Math Anxiety but this difference is not significant enough. The correlation coefficient between achieved marks and Math Anxiety of girls is -0.3 and of boys is 0.00016 which indicates that there is no relation between achieved marks and Math Anxiety among boys and there is a negative relation among girls. The skewness is -0.48 for boys and -0.54 for the girls which indicate that the Math Anxiety score has skewed to left, so, most of the students has scored more than mean Math Anxiety score.

Discussions and Recommendations

Worldwide a common problem of students is Math Anxiety which can be a big obligation for the students to get good marks in Mathematics. It is a general view of Bangladeshi society that student who is good in Mathematics and English is a good student. Therefore, parents are sending their children in the school with a pressure on them for getting good marks both in Mathematics and English which is the primary cause of making the pupil worried about Mathematics. Beside that most of the parents are not able to give proper guidance to the students in Mathematics at home as well as teachers in the schools.

Every selected student has Math Anxiety in this study. Therefore, Math Anxiety can be a reason to perform poorly in Mathematics in last two or three years for these students. Students are unhappy with their text books and class time but they don't feel these as reasons for their poor performance in Mathematics. All the reasons that respondents had mentioned as their bad performance are representation the cause of Math anxiety and the reasons are- ineffective teaching style, less number of reader friendly text books, improper parental guidance and past bad experience about Mathematics though teaching techniques and family pressure have been found as the main causes of Math Anxiety.

Women or girls are afraid about Mathematics or they are not good in Mathematics is nothing but a myth as there is no significant correlation found among gender and Math anxiety.

Based on the findings presented in the previous sections this paper wants to shed light on few issues related to Math Anxiety which included:

- a) Math teachers need advanced training on teaching techniques where they can learn about different types of teaching style, student's psychology, Math Anxiety and the techniques to avoid Math Anxiety.
- b) Curriculum should be developed in such a way so that the text books become more attractive, explaining and easy to understand. More practical problem solving approaches need to be incorporated in Mathematics courses.
- c) Evaluation System should not only depend on written examination, rather, different evaluation techniques like class performance, group work, assignment, open book exams should be incorporated.
- d) Parents should be discouraged to put any kind of physical and mental stresses on the students. If necessary, the parental training should be introduced to have the parents aware about child psychology, Math Anxiety and other psychological issues.
- e) Students should get aware about the Math Anxiety and its basic symptoms so that they could have a basic idea of whether they are suffering from this problem or not. Students should also have a clear vision about the importance of Mathematics in their academic and daily life and should be encouraged to talk about their problems.
- f) School administrations as well as all concerned bodies related to education in the country should be concerned and notified about this problem and all concerned should actively participate to mitigate this problem.
- g) Educational psychologists should be introduced in each school for better understanding of this kind of psychological problem of the students and to provide a quick solution to the problem through proper guidance and counseling.

Conclusion:

The Math achievements of students is not satisfactory in Bangladesh as their Math Anxiety is consistently very high, but there is no sufficient data and research work on this topic. It is anticipated that this study might help the students who are suffering from Math Anxiety and the teachers who have limited idea about students' Math Anxiety. This research also can be a reference for future study on Math Anxiety. Although this research work conducted in a small area, it can be a first step towards in-depth studies in the field of Math Anxiety in Bangladesh. There should be large scale studies on Math Anxiety in Bangladesh to ensure the quality education for all students in near future.

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The Washback Effect of National Exam's New Policy towards Mathematics Learning Process in Indonesia

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Abstract

Since the beginning of 2015, national exam in Indonesia was no longer used as graduation standard. This policy was made because of negative effects of this standardized test toward educational system in Indonesia. One of the effects is the teaching method used by teacher that rely on memorization and drill practice. The aim of this study is to see whether this new policy has an impact in teaching learning process in mathematics classroom. The samples of this study were 17 mathematics teachers from six different provinces in Indonesia. Before this policy issued, 12 teachers use conventional learning, while five teachers use unconventional learning methods such as problem solving, open ended problems, and contextual learning. The results of questionnaire reveal that from 12 teachers who use conventional method, only two teachers that change their teaching method after the new policy about national exam released. It means that 83% of teachers who use conventional learning in this study keep using the same method. Easy in the implementation and easy to understand by students are the main reasons of teachers decision to keep implementing this method. This finding shows that the changing of intended curriculum by government as decision maker is not followed by the changing of implemented curriculum-pedagogy- by teachers. Based on the result of this study, the recommendations are given to incorporate the vision and mission of government and teachers in order to reach the desired goal as well as for doing further research on this issue.

Keyword: national exam, policy change, teaching method, mathematics, Indonesia

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Introduction

Standardized test have become a discourse in many countries including Indonesia until today. In U.S. for example, since founded in 2002, No Child Left Behind (NCLB) has led to the pros and cons among the U.S. public because of its 'one size fits all' concept. The support came from government with refer to the statement of President Bush (as cited in Guisbond & Neill, 2004): "Without yearly testing, we do not know who is falling behind and who needs help. Without yearly testing, too often we do not find failure until it is too late to fix". Whilst, cons attitudes towards this system mostly emerged from teachers, students, and parents. According to Behrent (2009), NCLB enforce teachers to focus instruction on test taking rather than learning. Consequently, material or subject content not covered by the test was ignored (Le Cordeur, 2014). Beside that many teachers in U.S. have lost freedom to teach students by their own ways. Their desire to inspire students and to support students in developing their talent and potential have inhibited by the pressure of NCLB on teachers (Behrent, 2009).

In Indonesia National exams (Ujian Nasional) as standardized test were implemented for 9th grade (junior high school) and 12th grade (senior high school) since 2003. In junior high school, there are four subjects tested, namely mathematics, Indonesian, English, and natural science. While in senior high school, there are six subjects tested consist of mathematics, Indonesian, English, physic, biology, and chemistry.

Domino Effect of National Exam in Indonesia

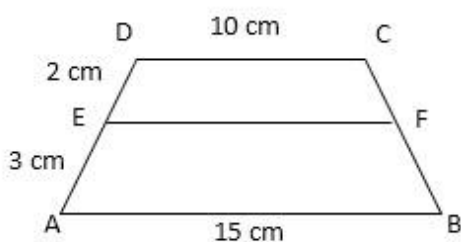
The pros and cons of national exams also happens in Indonesia. While it is still not certain to what extent national exams can measure students' comprehension in mathematics, the effects of this system in math learning process have been seen clearly. As a math teacher, I have experienced that national exams give negative effects for both teachers and students. I called the effects as "domino effect". Why domino effect? Because one effect influence the emersion of the next effect.

The first effect is the teaching method used by teacher. According to Ministry of National Education in Indonesia, the aims of mathematics teaching and learning are to help learners to gain mathematical abilities such as: (1) a comprehensive understanding of mathematical concepts; (2) mathematical reasoning (inductive and deductive); (3) an ability to solve the problem in variant context; (4) the ability to communicate the ideas; (5) good behaviour towards mathematics (Shadiq, Iryanti, Wahyudi, & Subanar, 2010). However, since national exams held in 2003, these noble purposes were forgotten. In order to obtain high scores in national exams, most of teachers in Indonesia tend to use rote learning rather than meaningful learning. Marpaung (as cited in Pujiadi, Kartono, & Asikin, 2015) said that mathematics learning in Indonesian school mostly use conventional learning in which the students are used to do activities such as memorizing the rules and formulas without accompanied by the development of other abilities such as problem solving and creative thinking. In line with Marpaung, some scholars from Indonesia also argued that:

[...] the national examinations have negatively affected curriculum implementation. In order for as many students as possible to pass the examinations, teachers tend to have the students memorize contents of the textbooks and teach them techniques about how to answer multiple choice questions by giving them drills. These students do not learn and understand mathematics and science, but merely memorize mathematical and scientific formulas for the examinations (Hendayana, Supriatna, & Imansyah, 2011, p.47)

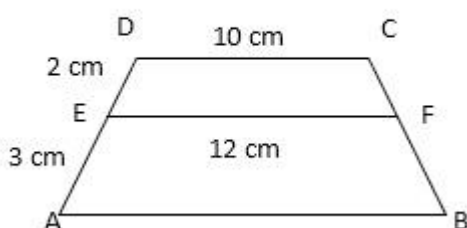
The next effect is the rampant use of quick mathematical formulas. The phenomena that was following “teaching to test” in Indonesia is the emersion of quick math formulas. The presence of this formulas was intended to make students easier in solving problems in national exams. The problems which normally take five minutes to be completed can be resolved in just one minute by using these tricks. Time constraints and a lot of materials that will be tested become the main reasons. Mostly, one quick math formula are only suitable for one type of problem. The effect is each of students will try to memorize as many as possible formulas without knowing the concept and once the test ends, they will forget all of the formulas and finally they got nothing, neither the knowledge nor the formulas. Below, I will provide example about the use of quick math formulas in Indonesia:

Problem 1



$AB \parallel EF \parallel DC$. Find the length of \overline{EF} .

Problem 2



$AB \parallel EF \parallel DC$. Find the length of \overline{AB} .

Problem 1 and problem 2 are resemblant, even to solve these problems we use the same concept about the similarity. However, problem 1 is more popular among students in Indonesia and most of them can solve it easily because they already memorized the quick formula of this problem. On the contrary, students find difficulties in solving problem 2 which is actually easier than problem 2. Therefore, the using of quick math formulas will never increase students' understanding in mathematical concept.

If “teaching to the test” and quick math formulas are the effects before the day of national exams, then the massive cheating action is the effect on the day of national exams. Every year, national media–newspaper, magazines, television–reported cheating action and exam paper leak that happened in several provinces. Surprisingly, this action was not only conducted by students, but also involved teachers, even school principals. In Deli Serdang, North Sumatra, 16 teachers and a principal at a high school were caught by police after correcting students’ answers on exam answer sheet in order to improve the grades. Meanwhile, in Pandeglang, Banten, police have arrested five teachers who leak national exams questions to junior high school students (The Jakarta Post, 2008).

The worst thing is, some principal forced teachers to make and to distribute the key answers to students. Some teachers accepted this command, while others kept maintaining the principle of honesty by rejecting this order and be willing to accept insult from their peers. The desire–to make all students pass the test and to be the best school– have made some principals violating moral values that should be owned by an educator. In order to see teachers’ perspective related to this issue, seven scholars from Indonesia conducted a research with theme “Voices from Local English Teachers”. Below are contradictory responses from two teachers about fraud in national exams that was taken from Mukminin, Haryanto, Makmur, Failasofah, Fajaryani, Thabran, & Suyadi (2013):

[...] For our students who just live in village with poor facilities in school and at home, it is like to kill them. What we can do to help them is to find the key answers for them although it is illegal. But if not our students will fail (Suryani, as quoted from Mukminin et al., 2013, p. 27)

I am a Muslim and I hate cheating in our education. I do not provide my students with the answer keys although was told to do so. I am not afraid if I must stop being a teacher (Diana, as quoted from Mukminin et al., 2013, p.33).

The last effect in the series of “domino effect” is the phenomenon of mismatches. These incongruity was visible after the implementation of national exams. There are two strange facts and both of them related to score that was obtained by students in national exams. Every time the result of national exams published, we would find that there were so many students got high scores, even some of them got the perfect score. But, did these scores reflect their mathematical abilities? As a student who ever get the perfect score in national exams, I confidently say “NO”. “Teaching to the test” method succeeded in making students earns high marks, yet this method lead to a decline in mathematical creativity since there was no space to explore their own creativity in mathematics learning process (Brown, Frederiksen, as cited in Le Cordeur, 2014).

The second phenomenon is the discrepancy between students’ scores and their performance in the classroom. Subhan, an English teacher in Indonesia conveyed his complaint related to the accuracy of the scores:

My question to you as a researcher, if one of your students gets a score of 8 or 9 in the exam for English subject, but you know his or her ability is not that good. Is that accurate? Or your students gets a score of 5, but she or he is actually a good student. So, many factors happen during the test and this is beyond our control as teachers (Subhan, as quoted from Mukminin et al., 2013, p. 26)

This case often happened in Indonesia in which the smartest student in classroom will get lower score compared with other students. There are several factors that influence this issue, such as the high pressure during the test, the rampant cheating action, and the using of multiple-choice questions. Ellerton and Clements (1997) who did research about the effectiveness of multiple-choice questions found surprising facts. There was about 28% mismatch between students' responses and students understanding. Students who lacked understanding of the concepts being tested gave correct answers, or students with partial or full understanding of the concepts gave incorrect answers.

New Policy about National Exam

Now the questions is 'how to stop this domino effect?' Stacking up a set of dominoes sequentially, then roll a marbles to the row of dominoes. What will happen next? Once we roll the marbles, then it will be hard to stop the movement of the dominoes. This is an analogy of standardized test in Indonesia. National exams is the marble that caused "domino effect" in educational system. Hence, in order to stop this domino effect, government as decision maker need to review and to evaluate national exam.

Indonesian government, in this case ministry of education have tried several times to review and evaluate it. Before 2011, national exam had been used solely to determine students' graduation. If students' score do not achieve the minimum standard of national exam, then they would fail and need to take an equivalency test, called as "Paket A and Paket B". However, there was a negative impression in the community in which looked down the alumnus of equality test. This situation have forced school in corporation with teachers striving to make all students passing the test, even by using the wrong way like what we have talked previously. Because of this negative effect, in 2011 government made a new policy in which national exam score only have 60% portion to determine students' graduation, while the remaining 40% was determined by school examination. However, after this new policy, there was no significant change in educational system in Indonesia. Teachers kept using the same method, the quick mathematical formulas still became the common sense in mathematics learning process and the cheating practice kept happens. Therefore, in the beginning of 2015, Indonesian Ministry of Education and Culture (2015) announced the surprising policy in which national exam is no longer used as graduation standard. Through this new policy, government expect that teacher can use variants of methods in learning process to increase students' abilities in other aspects such as creativity, problem solving and critical thinking.

Research Method

The aim of this mini research is to see the *washback effect* – the influence of a test on teaching process – of the national exams' new policy towards teaching methods used

by teachers in mathematics learning process. In this study I give questionnaire to 17 mathematics teachers in 6 different provinces in Indonesia. There are several questions in this questionnaire in which asked about teaching method used by the teachers before and after the national exams' new policy issued.

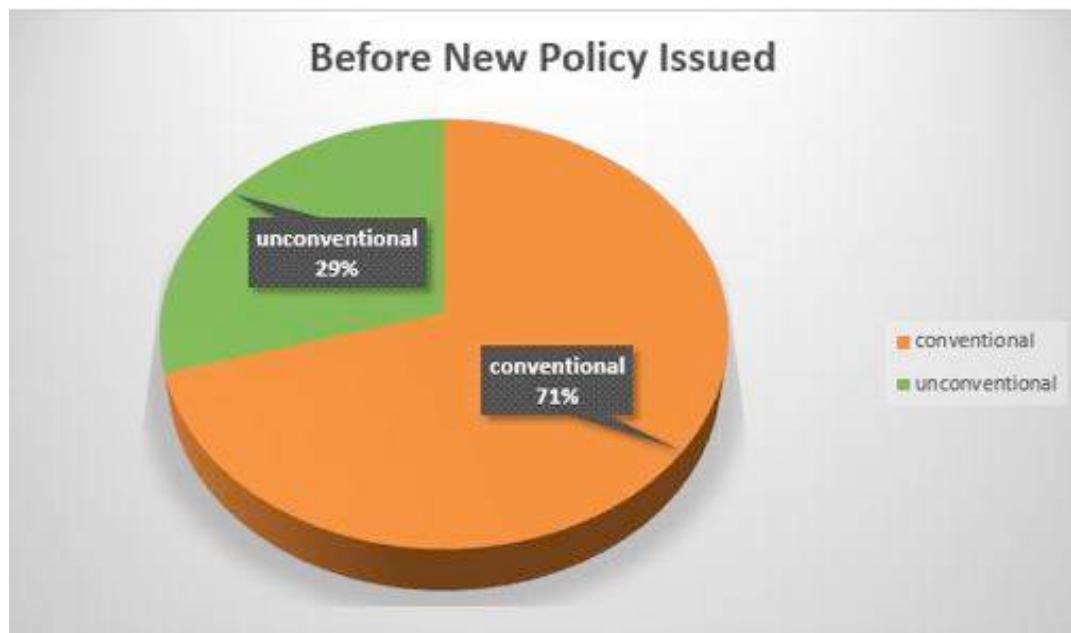


Figure 1

Result

The result of this study can be seen through the charts (figure 1 and figure 2) below. Before the new policy issued, 12 teachers used conventional teaching method that rely on memorisation and drill practice while five teachers have already used unconventional teaching method such as open ended problems, problem solving and contextual learning. After the new policy issued, from 12 teachers who used conventional teaching method, two teachers said that they changed their method in order to make students become more creative, more innovative, and better understand the concept. Meanwhile, the remaining 10 teachers confessed that they kept using conditional method even after new policy issued. These teachers said that there are several reasons why they keep using this method viz.1) it is easy in the implementation; 2) it is easy to understand by student; 3) time constraint; 4) lack of learning facilities in the schools. One of the teachers said that:

“It is hard to implement unconventional method especially at school in remote area. Lack of facilities, time constraint and the low ability of students itself are the main reason of this problem. Some teachers have tried to implement unconventional method such as problem solving, however it only could be done occasionally.”

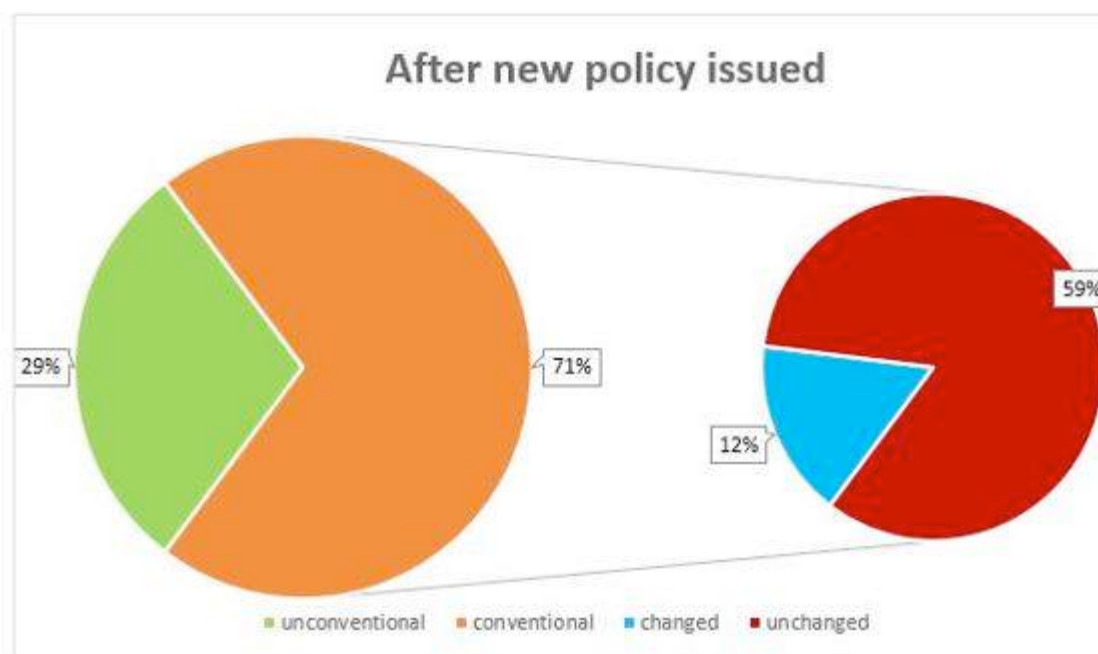


Figure 2

Conclusion and Recommendation

From this study it can be seen that the change of intended curriculum made by government are not followed by the change of implemented curriculum or pedagogy by teacher because teachers are reluctant to implement new method and keep thinking their old method is the best method that they could use in their classroom.

Therefore, I recommend several ways to make government and teachers can walk together in order to reach the better educational system in Indonesia. The first way is, teachers should be involved in shaping new policy. Why? Because teacher is the one who really know the condition in the classroom. Eisner (2000) in his study said that one of the lessons that could be learned from curriculum reform movement in US is the role of teacher in shaping the policy.

Teachers are central to the improvement of schooling and need to have a substantial role to play in shaping the direction, content and form of the changes being proposed. (Eisner, 2000, p. 347)

When teachers are only passive recipient, then the case that we have talked before would happen every time government issue a new policy. If teachers are being involved, then they could give comments and share their experience during their time in classroom. For example, teachers could say that they don't have enough time to use unconventional method since there are too many materials in mathematics curriculum. Through this discussion, then government, teachers, and others educational stakeholders can try to find the solutions.

Second way is a good communication between teacher and government. When government announces new policy, they should give clear explanation about the policy. What is the goal of the policy, what is the expectation of government towards the policy, and the most important one is what teachers should do and how to do it. In many cases, there are so many policy from government that was misinterpreted by teachers because of the lack communication between government and teachers. One of the example is the implementation of character education in Indonesia. Most of teachers do not have any idea about how to incorporate character education into subject like mathematics and science because there is no adequate information about this policy. Consequently, the desired goal is never reached. Therefore, a good communication between government and teachers is one of the key to improve quality of education.

The last recommendation is professional development program for teachers that should be held regularly. Teachers are the key of successful education, hence we have to enhance their effectiveness by giving them a training intensively and provide them an opportunity to improve their skills (Le Courdeur, 2014). In Indonesia, most of teachers have to teach 24 hours per week, while the training about “good-teaching” rarely held. Therefore, by providing this program, teachers would know what method they could use to explain the certain mathematics concept and of course by using variants of method, it would enhance students’ engagement in learning process.

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Chinese-Speaking University Students' Use of Metacognitive Strategies in English Listening

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Abstract

Listening plays an essential role in enhancing oral communication. The goal of training learners' English listening skills is to help them to engage in effective communication in their everyday life or workplace. Educational researchers in the field of cognitive psychology have documented that metacognition may enhance learning. This project held the assumption that students trained in metacognitive strategies can learn subjects more effectively. The project intended to investigate what kinds of metacognitive strategies Chinese-speaking university students in Taiwan use when listening to authentic texts in English. The Metacognitive Awareness Listening Questionnaire (MALQ) developed by Vandergrift, Goh, Mareschal, and Tafaghodtari (2006) was used as the tool to collect the data. A pilot study was administered before the formal data collection for the project. One class of 30 participants studying in a university in Taiwan joined the pilot study. They took an English listening course as an elective course. After receiving four weeks of listening comprehension instruction, the participants filled out the MALQ. This paper reports the adjustments concluded from the participants' opinions elicited in the pilot study. In general, this report provides helpful suggestions to adjust the data collection procedure and the procedure of listening instruction integrated with metacognitive strategies.

Key words: Chinese-Speaking university students, English listening instruction, metacognitive strategies

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Introduction

Listening plays an essential role in enhancing communication. Listening has long been known to be one of the essential skills in language learning because it provides input for the learners. The university students who participated in this study were planning to do internships with international businesses and industries in which they would be exposed to English communicative situations. This study was conducted to help these Chinese-speaking university students to improve their English listening ability and have effective communication in school or the workplace.

Listening is, no doubt, the most important skill, but perhaps the most difficult skill to learn. EFL learners may confront difficulties when listening to natural spoken English (Goh, 2000; Hasan, 2000). Unlike reading, writing or speaking, during which learners can pause to think over the text, consult or apply any explicit knowledge they know, in normal communication settings listeners have no time to do so; they are forced to process information at the same speed at which it is produced by the speakers (Hulstijn, 2003). Field (2008) assumed that listening can be more difficult than other skills because it involves physiological and cognitive processes at different levels.

The Internet provides sufficient learning resources which provide visual and audio support (i.e., videos) for listening comprehension. Most information on the Internet is in English, so the Internet is perhaps one of the best places for EFL learners to learn English. Some educators dedicated to developing advanced computer-aided devices to assist English learning (Chen, 2011a; Chen, 2011b; Hung & Young, 2015; Leveridge & Yang, 2013). The video-based materials adopted from the Internet were used as teaching materials in this study.

The reviewed literature indicates that metacognition strategies may improve students' learning. For a comprehensive listening comprehension, the learners not only draw on bottom-up process of word recognition, the interpretations of syntactic structures, but also grasp main ideas in the text and know what they have learned. To address such learning goal, the learners may learn metacognitive strategies to activate their top-down process to catch main ideas of the text and also monitor their learning process. Cross (2009) indicated that the implementation of listening strategy instruction may be a key component in helping learners to extract meaning of videotexts from the top-down process. The purpose of this study was to teach university students metacognitive strategies.

Literature Review

The Role of Listening

From the aspect of second language (L2) acquisition, Krashen (1996) indicated that listening comprehension has a great impact on language acquisition and the development of other language skills. Without understanding input at the right and proper level, no other meaningful learning can occur. Language input may be the most essential factor influencing L2 acquisition (Kuo & Wills, 1999; Petress, 2000; Rost, 2002). In addition, listening also plays an important role in interpersonal communication through the means of the learner's first language. Almost seventy years ago, Wilt (1950) conducted a study which found that people spent 45 percent of their communication time listening, 30 percent speaking, 16 percent reading, and 9 percent writing. In the 1980s, other researchers verified Wilt's (1950) research results and further confirmed that people undertake listening activities more frequently than reading, writing or speaking in daily life (Martin, 1987; Strother, 1987). Synthesizing the viewpoints from the two research areas, listening can not only be regarded as a skill used to perform different interpersonal communication activities, but is also an essential skill for acquiring a language. Given the importance of the listening skills, there is a tendency for language professionals to emphasize the listening objectives in the context of English as a foreign language. Rost (2002) emphasized that listening plays an important role in L2 instruction. When the instructor intends to improve the learners' listening ability, listening practice should be geared to develop their effective listening strategies. Listening strategies can be considered as part of the overall learning strategies. Learning strategies are first reviewed in the next section followed by listening strategies.

Studies on Learning Strategies before the Year 2000

Learning strategies have been widely investigated for the past four decades. Some researchers started to construct different categories of learning strategies (O'Malley, Chamot, Stewner-Manzanares, Russo, & Kupper, 1985; O'Malley & Chamot, 1990; Oxford, 1990). O'Malley, Chamot, Stewner-Manzanares, Russo and Kupper (1985) proposed three types of strategies : (1) Metacognitive strategies: planning for learning, thinking about the learning process, and monitoring one's comprehension and evaluating the learning process; (2) Cognitive strategies: direct manipulation of the learning materials; and (3) Socioaffective strategies: social-mediating activities and interacting with others (cited from Brown, 2007, p.134). Oxford (1990) classified strategies into two main categories (direct and indirect strategies) and further divided each into three sub-categories. Oxford's direct strategies include memory, cognitive, and compensation strategies, while the indirect strategies include metacognitive, affective, and social strategies.

With regard to metacognitive strategies, Oxford (1990) referred to the strategies centering on the learner's learning, arranging learning, and evaluating learning.

Studies on Learning Strategies after the Year 2000

Macaro (2001) classified language learning strategies as a sequential phenomenon; one part is cognitive strategies while the other involves metacognitive/ social/ affective strategies. Macaro (2006) further classified learning strategies as either cognitive or metacognitive, proposing that metacognitive strategies should be involved in the socio-affective domains.

Differing from Macaro's taxonomy (2006), Dornyei (2006) defined four types of strategies as follows:

1. Cognitive strategies: the manipulation or transformation of the learning materials/input (e.g., repetition, summarizing, using images).
2. Metacognitive strategies: higher-level strategies mainly used in planning, monitoring, organizing, analyzing, and evaluating ones' learning process.
3. Social strategies: interpersonal actions which tend to increase the learner's practices and the amount of L2 communication (e.g., cooperating with peers or setting up interaction with native speakers).
4. Affective strategies: the emotional management and experiences that construct one's subjective involvement in learning (p. 169).

Listening Strategies

Vandergrift's (1997) taxonomy of listening strategies has been widely used in the field of L2 listening comprehension. In his study, Vandergrift's (1997) taxonomy was used to investigate Chinese-speaking university students' application of metacognitive strategies. Vandergrift (1996) proposed a basic framework of listening strategies, and his taxonomy developed in 1997 primarily drew on the versions designed by O'Malley and Chamot (1990, pp. 137-139) and Oxford (1990, p. 21). Vandergrift (1997) adapted the abovementioned lists of strategies, and further proposed three types of strategies, metacognitive, cognitive, and socio-affective. The interpretations and examples are cited from Vandergrift's (1997) study and presented as follows:

Metacognitive strategies: represent mental activities for directing language learning, involving the planning, monitoring, and evaluation stages. Examples include: The planning section involves the strategies for recognizing things that need to be done so as to complete a listening task, making appropriate plans or taking appropriate actions to overcome any interference that may hinder task achievements, while monitoring encompasses the strategies of verifying, checking, or correcting one's understanding or performance during a listening evaluation.

Cognitive strategies: mental behaviors that manipulate the language to finish a task which comprises inferencing, elaboration, summarization, and other strategies. Examples include: In the inferencing part, listeners need to use conversational context or information within the text to guess the unfamiliar item's meanings and then predict the outcomes.

Socio-affective strategies: These strategies are activities involving interaction or affective control in language learning. Examples include: Using the cooperation strategy to solve a problem with someone else, or adopting the lowering anxiety strategy by using mental methods which make one feel more confident to carry out a listening task.

Instructional practices ought to focus on the learners' metacognitive knowledge about listening in addition to constructing and communicating meaning (Goh, 2008). Regarding the listening metacognitive strategies, Vandergrift's classification is presented in Figure 1.

1.	Planning
1.1	Advance organization
1.2	Directed attention
1.3	Selective attention
1.4	Self-management
2.	Monitoring
2.1	Comprehension monitoring
2.2	Auditory monitoring
2.3	Double-check monitoring
3.	Evaluation
3.1	Performance evaluation
3.2	Strategy evaluation
3.3	Problem identification

Figure 1. Categories of metacognitive listening strategies (Vandergrift, 1997, pp. 392)

The present study adopted the metacognitive listening strategies developed by Vandergrift, Goh, Mareschal, and Tafaghodtari (2006). They designed a questionnaire called the Metacognitive Awareness Listening Questionnaire (MALQ). To the best of the researcher's knowledge, this questionnaire has never been previously administered with Chinese-speaking students. The pilot study was administered to adjust the instructional procedure for the experimental and control groups, and to trial the questions included in the questionnaire. This paper briefly reports the data collection process and the adjustments made based upon the findings of the pilot study. In general, this report can provide helpful suggestions to adjust the data-collection procedure and the procedure of listening instruction integrated with metacognitive strategies and the Chinese version of MALQ.

Research Method

Research Procedure and Design

There were two sections in this study. The pilot study was first conducted, followed by the formal study. The formal study used a pre-test/post-test research design. The formal study included two groups: the experimental group and the control group. A pilot study was carried out with a class of

30 students prior to the formal study. The pilot study was administered to adjust the instructional procedure for the experimental and control groups, and to trial the questions included in the questionnaire.

Participants in the Pilot Study

In total, 30 students joined the pilot study in a university in Taiwan. They took an English listening course as an elective course. There were 18 males and 12 females. In terms of their academic background, 36.67% of the students majored in the Department of Shipping and Transportation Management, 30% in Systems Engineering and Naval Architecture, 23.33% in Food Science, and 10% in Merchant Marine. All the participants' first language is Mandarin.

Instruments

The Metacognitive Awareness Listening Questionnaire (MALQ) developed by Vandergrift, Goh, Mareschal, and Tafaghodtari (2006) was used as the tool to collect the data. The questionnaire consists of a total of five dimensions and 21 items as follows: problem-solving (6 items), planning and evaluation (5 items), directed attention (4 items), personal knowledge (3 items), and mental translation (3 items). Vandergrift et al. (2006) used rigorous statistical processes to validate the items.

Data Collection

In 2015, a class of 30 students was invited to join the pilot study. They had been trained in metacognitive strategies for four weeks. The administration procedures were similar to those described in the study by Vandergrift, Goh, Mareschal, and Tafaghodtari (2006). At the end of the pilot study, the students filled out the MALQ. A total of 21 questionnaires were successfully completed and collected as two students dropped out of the course and five students were absent when the questionnaire was administered. In addition, two questionnaire responses were deleted because the students filled out the questionnaire with consistent responses on the same scale of "Unknown".

The collected questionnaire data were first screened by the researcher. Afterwards, the researcher had individual interviews with those students who missed some items in the questionnaire. Since the MALQ instrument had already been verified, the students were not asked to express their comments on the items of this instrument. They offered their opinions only on the procedure and why they did not fill out the whole questionnaire.

Results

Synthesizing the collected questionnaire responses and the interviewees' opinions, the researcher presented three adjustments. Among the 21 questionnaire responses in the pilot study, some participants did not fill out each item. They expressed that they could not understand what the item

truly meant. For example, one student was confused about the two statements, “I translate word by word as I listen” and “I translate key words as I listen.” He thought the two were similar in meaning. He did not respond to the former; instead, he provided his response to the latter.

Adjustment 1: In the formal study, the researcher will lead the participants to complete filling out the instrument. The procedure is that the participants in the formal study will read the English version and the researcher will offer the Chinese translation of each item. The MALQ instrument will be translated for Chinese-speaking participants. The translation will be done by the researcher and further verified by a professional translator.

Another two students mentioned that they did not periodically ask themselves if they were satisfied with their level of comprehension. As a result, they skipped this item. They expressed that they had never experienced the evaluation process, and that the listening process was too swift to check whether they could understand the content or not.

Adjustment 2: In the formal study, the researcher will design an activity to lead the participants to practice the procedure of planning and evaluation by periodically asking themselves if they are satisfied with their level of comprehension.

One student stated that he did not have a goal in mind as he listened to the article, and he questioned what kind of goal he needed to establish as he listened.

Adjustment 3: In the formal study, the researcher plans to exemplify the establishment of the goal during the process of listening for the participants. The researcher will apply cooperative learning activities to help the students practice using metacognitive strategies, especially those related to the dimension of planning and evaluation.

Conclusion

Conducting studies on L2 listening, Goh (2008) emphasized that more research is needed to investigate the role of metacognitive instruction in listening performance in different contexts. Researchers focused on investigating metacognitive strategy usage have identified an important difference between skilled and unskilled L2 learners (O'Malley & Chamot, 1990). The results of these studies show that skilled learners use more metacognitive strategies than unskilled learners do. L2 learners' listening comprehension ability can be fostered by means of training in the use of metacognitive strategies. The purpose of this study was to provide a practical English listening course to train university students in the capacity of using metacognition strategies to evaluate their learning, and hence improve their listening ability. The earlier reviewed literature has confirmed the positive influence of metacognitive strategies on facilitating listening. University students are expected to learn more strategies to improve their English listening and to enhance effective

communication. Therefore, incorporating metacognitive strategies in the EFL listening curriculum at the university level is an urgent need. Language professionals should allocate specific sections of listening class to introduce the concept of metacognitive strategies. To sum up, the educational objective of the English listening curriculum is to meet the students' needs in class or out of the classroom, and further to achieve the ultimate goal of English education – learning in a concrete and meaningful context, with confidence, and for comprehension.



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***Promoting Bioethical Decision Making for Grade 10 Students
Through Socio-scientific Issues based Instruction***

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Abstract

This article describes bioethics that supports bioethical decision making skills and develops of social responsibility in biology classroom. Bioethical decision making of 10th grade students are studied through socio-scientific issues based instruction. Non-participant observation and in-depth interview are employed. The findings will be discussed and implied to biology classroom as well as 21st century learners should be.

Keywords: Bioethical decision making, socio-scientific issues, social responsibility, 21st century skills

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Introduction

During the 25 years after the Second world War (1939-1945), several factors came together to give rise to the birth of the discipline of bioethics. These were the rapid advances in biomedical science, the perceived inadequacy of traditional ethics, the Nuremberg war crime trials, decreasing paternalism and deference and concern for the environment (Bryant et al., 2005). From the 17th century onwards, there in planks of ethical decision making in the Western world were the Judaeo-Christian, philosophy and knowledge. Cultural diversity is something that decision makes in bioethical contexts. The field of bioethics continues to struggle with the problem of cultural diversity: can universal principles guide ethical decision making, regard less of the culture in which those decision take place or should bioethical principles be derived from the traditions of local culture, Cultural diversity is something that decision makers in bioethical contexts (Chattopadhyay & Vries, 2013). According to National Institutes of Health (2009) advances in the life sciences are giving humans new capacities. New medicines, biomedical procedures, and ways of altering plants and animals are bringing benefits to millions of people. However, these same innovations also have the potential to bring harms or to raise other kinds of ethical questions about their appropriate use.

Socio-scientific issues (SSI) involve the deliberate use of scientific topics that requires students to engage in dialogue, discussion and debate. They are usually controversial in nature but have the added element of requiring a degree of moral reasoning or the evaluation of ethical concerns in the process of arriving at decision regarding possible resolution of those issues. The intent is that such issues are personally meaningful and engaging to students, require the use of evidence-based reasoning, and provide a context for understanding scientific information (Zeidler & Nichols, 2009).

Ethics is a standard that guides our behavior, both as individuals and as members of organizations. The ethical principles for this discussion are simple standards of right and wrong that we learn as children, such as being honest and fair and treating others with respect. (FEMA, 2005) Bioethics deals with the complex issues arising from the rapid developments in biomedical science in the last 50 years. Its scope also extends to environmental and global issues.

SSI has been used in science classroom, and numerous published reports describe the resulting experiences with this education method. Several studies showed that positive impact of SSI on communication skills (Chung et al., 2016). In the study of Gutierrez (2015), presents the effects of integrating socio-scientific issues to enhance the bioethical decision-making skills of biology students. Bottcher and Meisert (2013) study the effects of different learning environments on the promotion of decision-making competence for the socio-scientific issue of genetically modified crops is investigated. The comparison focuses on direct vs. indirect instructions. In addition, Gunn et al., (2006) has been used empirically-based instructional techniques to studies the relationships between bioethical issues analysis, and a specific set of critical thinking (CT) skills and attitudes in the science classroom.

In this present study, we designed a SSI based instruction on invasive species explore in field, loss of biodiversity, water pollution, Ecological succession, Peat lands in

Southeast ASIA, Natural Resource conservation, and global warming and implemented it with grade 10 students in Northeast Thailand, with a focus on improving their bioethical decision making skills.

Literature Review

Student practice of scientific argumentation using socio-scientific bioethics issues affects both teacher expectations of students' general performance and student confidence in their own work. When teachers use bioethical issues in the classroom students can gain not only biology content knowledge but also important decision-making skills. Learning bioethics through scientific argumentation gives students opportunities to express their ideas, formulate educated opinions and value others' viewpoints (Hanegan et al., 2008).

When socio-scientific issues are integrated into the classroom biology students can use their scientific content knowledge to analyze complex social problems. Sadler and Zeidler (2005) stated that socio-science education shows students "dynamic interactions of science and society with emphases on not only the science behind contemporary issues confronting all citizens but also the associated social, political, economic, and moral challenges" SSI also, supports nature of science that is heart of science learning. It helps students meet science as it could be, where nature of science stands by socio-scientific issues-based instruction (Nuangchalerm, 2010).

According to Zeidler and Nichols (2009), we present the role of the context (SSI context): "Teachers looking to the Web for SSI fodder may recognize that Internet and issues-based learning activities can also be an invaluable resource in terms of exposing students to diverse perspectives on current scientific reports and claims. Again, current research can suggest important ideas to inform practice. With scaffold learning interfaces, students can spend their time reading and evaluating the multiple perspectives of a given socio-scientific issue instead of "surfing" through a plethora of sometimes misleading information. Of course, this requires that teachers invest the time upfront to find both reliable as well as potentially unsound sources of scientific data and perspectives, so students may be confronted with mixed evidence and learn to assess the validity of varied claims and data." and role of the teacher: "While encouraging students to consider evidence-based alternative arguments is of primary importance, it is equally important that teachers who are interested in using debate or discussion-focused activities also consider the match between their own pedagogical expectations and the theory base guiding the research.

For example, a teacher engaged in SSI would need to rely on research and current information about a given topic to better direct classroom debates through various lines of questioning (e.g., epistemological, issue-specific, role reversal, and moral reasoning probes). The importance of exposing students to discursive activities in the science classroom cannot be overstated if our goal is to increase SL. Putting together an SSI module does not simply mean selecting a scenario where science or technology can save the day. In addition, role of the students: Moving SSI from theory to practice is essential in contemporary classrooms. Science education that includes SSI offers unique opportunities to challenge students' moral reasoning and, in the process, presents concepts that seem to make sense because of the relevance and individual interest. Consistently, we have found that the main competition to

understanding and coherence are core beliefs, pseudoscience, and lack of personal experience in moral decision-making. The challenge to science teachers is to allow students to discredit their own belief system by having opportunities to formulate new perspectives. Our experiences have allowed us to identify several areas that are potentially problematic for students when engaging in SSI. Student impediments to success tend to include moral (core) beliefs, scientific misconceptions, lack of personal experiences, lack of content knowledge, underutilized scientific reasoning skills, and emotional maturity. In presenting this list, we do not mean to dissuade teachers from attempting an SSI approach. In fact, it is our position that insofar as students have such impediments, that we have a responsibility to provide them with opportunities to challenge their personal belief systems about the social and natural world in order to make connections. As the examples in the companion piece will show, the moral component of SSI is what triggers the students' need for more (content) information, critical thinking, constructive argumentation, and compromise.

Bioethics is the critical examination of the moral dimension of decision making in health related contexts and in contexts involving the biological sciences. Many of the problems of bioethics are perennial, and those who have been involved in clinical medicine and in biological research have reflected on the moral limits on their activities as long as those activities have existed medical aspirations that there was rarely any question about whether or not medical intervention ought to be employed (Gorovitz, 1997). National Institutes of Health (2009) found that of four important reasons to teach bioethics: advance students' science understanding, prepare students to make informed, thoughtful choices, promote respectful dialogue among people with diverse views, and cultivate critical-reasoning skills.

When the first papers on genetic modification were published they raised a huge flurry of interest across the bioscience and biomedical communities. Some of this was related to the research potential of these new techniques. Some was related to its commercial potential. However, some of the interest was certainly ethical. Indeed, in the UK in the late 1970s it was not uncommon for students to be set essays along the lines of "Discuss the ethics of genetic engineering", even though most biological scientists were unaccustomed to talking about ethics and many would have been out of their depth in discussion of ethical theory or moral philosophy. Nevertheless, it is from this ethical interest that we can trace one of the strands of bioethics as it is now practiced (Figure 1) (Bryant et al., 2005).

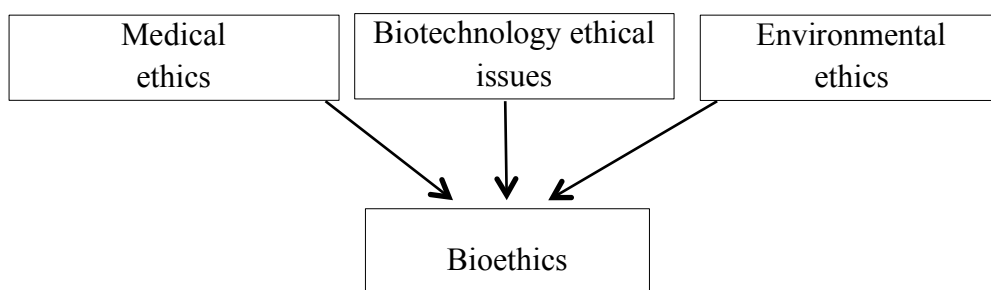


Figure 1: Evolution of Bioethics

Bioethics is a subfield of ethics that explores ethical questions related to the life sciences. Bioethical analysis helps people make decisions about their behavior and about policy questions that governments, organizations, and communities must face when they consider how best to use new biomedical knowledge and innovations (National Institutes of Health, 2009). According to FEMA (2005), "Decision making is a mechanism for making choices at each step of the problem-solving process. Decision making is part of problem solving, and decision making occurs at every step of the problem-solving process." Decision-making process in this study consists of three steps 1) identify the problem: Problem identification is undoubtedly the most important and the most difficult step in the process. 2) Explore alternatives: The second step in the decision-making process is to explore alternative solution to the problem identified in step 1. Techniques for explore alternatives in biology classroom is brainstorming, surveys, and discussion groups. And 3) select an alternative: Selecting an alternative is a critical step in the problem-solving process. When selecting an alternative, student will encounter factors that affect their decision making. These factors may include; Political factors, Safety factors, financial factors, Environmental considerations, and Ethical factors.

Methods

This research was one group post-test only design aims to study effects of Socio-scientific issues based instruction in 30 grade 10 students of Thailand. Strategies to promote bioethical decision making skills consisted of contexts about of life and environment theme such as invasive species explore in field, loss of biodiversity, water pollution, ecological succession, peat lands in Southeast ASIA, natural resource conservation, and global warming with a teacher who was a facilitator when they were practice.

A socio-scientific issues based instruction was implemented in 3 periods each week in total of 4 week for life and environment lesson in basic of biology course. We discussed the problems caused by the increasing human population: loss of natural environments to supply human needs for housing, agriculture, leisure and transport and because of the over-use of other natural resources. In addition to these, human activity has also caused direct damage to the natural environment.

Outcome has been evaluation at after Socio-scientific issues based instruction implementation in bioethical decision making. In data collection, 30 student who had participated in the Socio-scientific issues based instruction completed a 5-items bioethical decision making test with open ended question consisted of 1) identify the problem 2) explore alternatives And 3) select an alternative. In addition, they also completed 4-items open ended question in-depth interviews for the qualitative results.

The inferential statistics (F-test) was used to compare mean score between subscales of bioethical decision making: identify the problem, explore alternatives, and select an alternative. Descriptive statistics such as mean, standard deviation and percentage.

Results

Table 1 was shown demographic data sample size which consisted of 30 student who learned in life and environment lesson in basic of biology course by Socio-scientific issues based instruction. There were 9 male (30%) and 21 female (70%). Grade Point Average (GPA) of them were 3.90 ± 0.11 .

Tale1. Demographic data of samples

Characteristics	Students
Sex	
male	9 (30%)
female	21 (70%)
Grade Point Average	
Mean \pm SD	3.90 ± 0.11

Table2. Was shown bioethical decision making score after 4 weeks of Socio-scientific issues based instruction implementation.

Bioethical decision making	Mean	SD
Identify the problem	11.53	1.40
Explore alternatives	12.33	2.15
Select an alternative	12.27	1.31
Total	12.04	1.68

From table 2 shown that bioethical decision making score after 4 weeks of Socio-scientific issues based instruction implementation. All of bioethical decision making subscales have found explore alternatives were highest of mean score (12.33) and highest of SD (2.15) shown in Figure 2

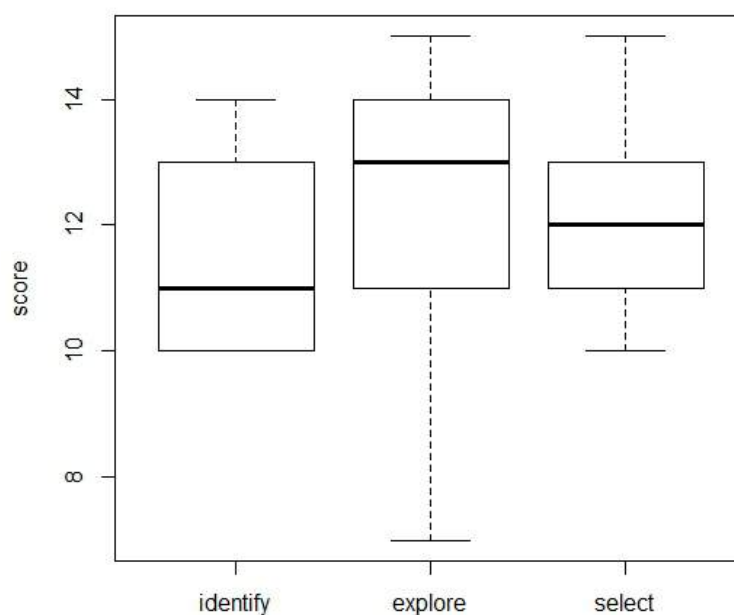


Figure 2: bioethical decision making score.

Table3. Compare mean score between subscales of bioethical decision making in 3 subscales (F-test).

	SS	df	MS	F	Sig.
Between Groups	11.822	2	5.911	2.125	0.126
Within Groups	242.000	87	2.782		
Total	253.822	89			

From table 3 it can be shown that bioethical decision making compare mean score between subscales of bioethical decision making in 3 subscales: identify the problem, explore alternatives, and select an alternative. The score of subscale did not differ statistically significance at the 0.05 level.

The qualitative results of this study in Table4 showed student's answers of 4-items open ended question in-depth interviews after 4 weeks of Socio-scientific issues based instruction implementation.

Table4. Coding of 4-items open ended question in-depth interviews

Items	Criteria modified for coding	Coding
1. What is the environmental problem in your locality?	pollution of air, water and soil. heavy metals, nitrates and plastic are toxins. climate changes, overpopulation, Natural resource depletion, waste disposal, loss of biodiversity, deforestation, ocean acidification, ozone layer depletion, genetic modification of food	Student A: Farmers clear organics leaving before start farm with fires cause of desertification and loss of biodiversity in field, air pollution. Student B: My village has sugar production factories, it produce pollution of air, water and soil, and many invasive plant species in canal. Student C: Farmers use pesticides in the cultivation of vegetables. Student D: There is a lot of garbage each day in village, Noodle factory leave waste water into canal.
2. What is the importance environmental problem in your locality?	deforestation, pollution of air, water and soil, climate changes. (personal)	Student A: Air pollution Student B: Air pollution Student C: Farmers use pesticides Student D: A lot of garbage
3. What is the alternative for problem-solving?	reduce amount of garbage, avoid cutting down trees, protect natural areas. (personal)	Student A: Decomposer and earthworm activate and storage for herbivores in dry season. Student B: Factory audit quality check for social responsibility.

Items	Criteria modified for coding	Coding
		<p>Student C: Made organic farm, balance in ecosystem by predators and producer, use garbage for fermented water.</p> <p>Student D: Reduce garbage for plant nutrients.</p>
<p>4. Which are the possible solutions for the environmental problem?</p>	<p>When selecting an alternative, student will encounter factors that affect their decision making. These factors may include; political factors, safety factors, financial factors, environmental considerations, and ethical factors.</p>	<p>Student A: storage herbs for herbivores in dry season because safe to price of food pet and reduce air pollution.</p> <p>Student B: Factory audit quality check because all participant to help control and citizen no risk respiratory disease.</p> <p>Student C: Made organic farm because reduce toxin in air, water and soil.</p> <p>Student D: Reduce garbage for plant nutrients because safety and good for the environment.</p>

Conclusion and Discussion

Science education must teach students proper decision-making skills that will help them make intelligent choices as both professionals and citizens. Scientific argumentation gives students needed experience in forming educated opinions based on supporting evidence. Most of the students enrolled in this bioethics course will become biology teachers, medical professionals or other biology professionals. Clients and the general public will seek out their opinions and counsel about the controversial issues covered in this class. If their course work incorporates socio-scientific learning throughout the semester and provides them the ability to argue these issues, students will be better prepared to face future bioethical controversies. (Hanegan et al., 2007)

The socio-scientific issues based instruction method has multiple benefits. Engaging in bioethics discussions helps develop students' ability for reasoned dialogue, especially among students with different perspectives. It also encourages students to think about choices from a variety of viewpoints and interests, thus facilitating respectful discussions of potentially contentious issues. These skills are fundamental for an effective democracy.

From the result shown that table 2 shown that bioethical decision making score after 4 weeks of Socio-scientific issues based instruction implementation. All of bioethical decision making subscales have found explore alternatives were highest of mean score (12.33) and highest of SD (2.15). This also supports the study of Gunn et al., (2006) that socio-scientific issues can establish deeper critical thinking and respect of the diversity of opinions among students when they are free to express themselves. The qualitative results of this study in Table4 showed student's answers of 4-items open ended question in-depth interviews after 4 weeks of Socio-scientific issues based instruction implementation. This also supports bioethics provides a real world context for introducing and underscoring the "need to know" science concepts, this supplement gives students an opportunity to prepare for the scientific, medical, ethical, personal, and public-policy choices they will face as adults in the 21st century. Moreover, how the teacher processed previous events in the classroom played a very important role in making students more engaged in their classroom activities.

However, interpretation and generalization of the result should be done with the concern of some limitations. First, outcome assessment of this study has based on perceived skill or perceived knowledge not based on actual knowledge which measure by score on examination. Second, this study was one group posttest only design which have not had control group such as traditional teaching group for true comparison.

The socio-scientific issues based instruction can therefore be a timely approach to enhance the bioethical decision making of high school students. This expands the strategies in basic of biology classroom to be taught in a proactive manner focusing on the enhancement of students' bioethics decision making skills.

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***Measuring Service Quality in Higher Education: The Experience of
Technological Education Institute of Central Macedonia, Greece***

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Abstract

In today's turbulent environment, higher education institutes are facing widespread economic, technological, and cultural changes and increased competition in social and political contexts. Provision of quality services in higher education must be viewed as a strategic issue for development and economic growth. Since students are the driving force in demanding changes and the primary customer in higher education, institutes should place efforts to understand and meet or exceed their expectations in order to succeed in the competitive higher education environment. The paper aims at investigating quality of services in Technological Education Institute of Central Macedonia, Greece. An online survey was conducted. A modified version of HEDPERF, adapted to the institute's needs and characteristics was used in order to assess service quality. Summary statistics of the dimensions of the modified HEDPERF and their correlation coefficients were used in the statistical analysis. An effort was made to investigate how HEDPERF dimensions influence major educational issues. Multiple linear regression and logistic regression techniques were employed in order to detect which dimensions are statistically significant for every educational issue. Both methodologies resulted in two clusters of dimensions that affect service quality whereas the regression coefficients quantify the contribution of each dimension to the specific educational issues. Knowing the relative performance of different dimensions and issues could help institute's managers to gain deeper insights into higher education service quality, draft various managerial strategies on how to improve activities of the organization and the provided services, and make better resource allocation.

Keywords: service quality, higher education, HEDPERF, Greece

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Introduction

Nowadays education worldwide has become one of the primary determinants of employment status, standard of living, and economic development (Prasad & Jha, 2013). Higher education institutions are competing in an open market to offer quality services. Assurance of service quality becomes an essential strategy for guaranteeing their survival (Ramaiyah et al. 2007; Zafiroopoulos & Vrana 2008) and a key factor for socio-economic development (Feigenbaum 1994).

In Greece, the basic requirement for admission to Higher Education (Universities and Universities of Applied Sciences) is the possession of the General Upper Secondary Schools or Vocational Upper Secondary Schools leaving certificate. Graduates participate in the Pan-hellenic Examinations a system which is centrally coordinated by the Ministry of Education, Research and Religious Affairs. The number of students allocated to each higher education institute department annually is laid down by the Ministry of Education, Research and Religious Affairs. Selection is based on the students' performance during in the Pan-hellenic Examinations and the processing of students' preferences. A few places available for candidates who belong to special categories/special circumstances/athletes, etc. and who fulfill certain conditions. Thus, Greek Universities and Universities of Applied Sciences compete to a certain degree. Last years major efforts are currently under implementation of a new quality assurance system for higher education. The independent authority 'Hellenic Quality Assurance and Accreditation Agency' (ADIP) began in 2005 to accredit the quality of Institutes of Higher Education. In order to facilitate the processes of self-evaluation to universities, ADIP has founded independent units in each institute, called Quality Assurance Units (MODIP). These units are responsible of coordinating and supporting the quality assurance procedures. For the moment research for service quality in higher education in Greece is very limited (Trivellas & Dargenidou, 2009; Trivellas et al., 2012; Terzakis et al., 2012; Zafiroopoulos 2005, 2006; Zafiroopoulos et al. 2008; Zafiroopoulos & Vrana 2008) and is restricted to particular Higher Education Institutes. The Quality Assurance Unit of T.E.I. of Central Macedonia has put a strong focus on researching and practicing performance measurement in many modules of the Institute.

The paper aims at measuring the determinants of service quality in TEICM. It uses a modified HEDPERF instrument that fits in the Greek higher education section (Vrana et al., 2015). Additionally, three important educational issues are used to investigate their association to the modified HEDPERF dimensions. Questionnaires were administered both to the undergraduate and postgraduates students of all the departments, as students are now being viewed as the primary customers of higher education services and want to be assured that the university provides quality services (Hill, 1995; Karapertovic & Rajamani, 1997).

Quality in higher education

Quality in education is defined as the 'conformance of education output to planned goals, specifications and requirements' (Crosby 1979, p.68) or according to Parasuraman et al. (1985) as 'meeting or exceeding customer's expectations of education'. The evidence of service quality is provided when the customer interacts with the organization during the 'moment of truth' (Fitzsimmons & Fitzsimmons, 2004) and has evolved in terms of satisfying the needs and wants of customers

(Seyanont, 2007). In this vein Parányi (2005, p. 19) claimed that 'quality is good if it is deemed to be good by the customer'.

The earlier attempts for measuring service quality in higher education emphasized on academic aspects and the quality of teaching and courses (Athiyaman 1997; Bournier 1998; Soutar & McNeil 1996; Yorke 1992). As administrative services compliment academic, Kamal & Ramzi (2002) made the first attempt to measure students' perceptions of registration and academic advising. Later on, Quality Function Deployment was used aiming at answering the question how to deliver quality services based on the needs or voices of higher education customers. The applications were focused on design of engineering education and curricula (Aytac & Deniz 2005; Bier & Cornesky 2001; Burgar 1994; Owlia & Aspinwall 1998) and other academic and administrative aspects (Ermer 1995).

SERVQUAL instrument has attracted the greatest attention to measure the perceived quality in higher education sector (D'Uggento et al. 2006; Gibbs 2004; Oldfield & Baron 2000; O'Neill, 2003; Pariseau & McDaniel, 1997; Shekarchizadeh 2011; Zafiroopoulos & Vrana 2008). The instrument compares the perceptions of the service received with expectations, and there is a set of five gaps (Assurance, Responsiveness, Empathy, Reliability and Tangibles) regarding the executive perceptions of service quality and the tasks associated with service delivery (Parasuraman et al., 1985). SERVQUAL attracted also a lot of criticism. Once an individual has experienced a service, his/her expectations change and are becoming lower if the encounter is dissatisfying or higher if it is satisfying. Thus, Philip & Hazlett (1997) claimed that it would not make sense to measure something that is constantly changing. As a result, performance-only-based measures of service quality models arose.

An alternative instrument which measures performance only, the SERVPERF was developed and tested by Cronin & Taylor (1992). They claimed that 'service quality should be measured as an attitude' (Cronin & Taylor 1992, p. 64) and claimed that SERVPERF has greater predictive power and performs better than any other measure of service quality. The instrument includes five dimensions: reliability, assurance, tangibles, empathy, and responsiveness as SERVQUAL. SERVPERF was also used in higher education sector to measure service quality (Bayraktaroglu 2010; Firdaus 2006a; Lee 2007). However both SERVQUAL and SERVPERF are generic models for measuring service quality. A measuring instrument of service quality that captures the authentic determinants of service quality within the higher education sector would be more adequate (Sultan & Tarafder, 2007).

Use of the HEdPERF in higher education institutes

Firdaus (2006b) proposed a performance-based measuring scale the HEdPERF model (Higher Education PERFORMANCE-only) that attempts to capture the authentic determinants of service quality within higher education sector. During the development of HEdPERF, Firdaus (2006b) conducted a survey at six tertiary institutions throughout Malaysia and collected 409 completed questionnaires. The proposed 41-item instrument was empirically tested for unidimensionality, reliability and validity using both exploratory and confirmatory factor analysis. The six dimensions are:

- *Non-academic aspects*: Consists of items that are essential to enable students fulfill their study obligations, and it relates to duties carried out by non-academic staff.
- *Academic aspects*: The items are solely the responsibilities of academics.
- *Reputation*. Items that suggest the importance of higher learning institutions in projecting a professional image.
- *Access*: Items that relate to such issues as approachability, ease of contact, availability and convenience.
- *Programmes issues*: Items emphasize at the importance of offering wide ranging and reputable academic programmes/specializations with flexible structure and syllabus.
- *Understanding*: Items related to understanding students' specific need in terms of counseling and health services.

Firdaus (2006b) found that many service quality attributes may influence students' perception to a certain extent. However *Access* dimension has significantly influenced the overall service quality perception and is perceived to be more important than other dimensions in determining the quality of the services. Later on Firdaus (2006a) the *Understanding* dimension was permanently removed.

Firdaus (2006a) compared the relative efficacy of three measuring instruments HEdPERF, SERVPERF and the moderating scale of HEdPERF-SERVPERF in order to determine which instrument had the superior measuring capability. 381 questionnaires were collected from students in two public universities, one private university and three private colleges in Malaysia. Findings demonstrated that a modified five-factor structure of HEdPERF, used in the study, with 38 items may be the superior instrument in measuring service quality within higher education.

Brochado (2009) aiming at examining the performance of five alternative instruments of service quality SERVQUAL, importance-weighted SERVQUAL, SERVPERF, importance-weighted SERVPERF, and HEdPERF, gathered data from a sample of 360 students of a Portuguese University in Lisbon. Scales were compared in terms of unidimensionality, reliability, validity and explained variance. According to the findings SERVPERF and HEdPERF present the best measurement capability, but from the study it was not possible to identify which one is the best.

Sultan & Wong (2012) aiming at investigating how one's culture affects service quality assessment in a higher education context, operationalised service quality construct including seven items from HEdPERF seven items from PHED measure, four items from Fornell et al. (1996), one item from Cronin & Taylor (1992) and seven items from discussion with focus groups. Their findings indicate that students do not perceive any differences in academic service quality irrespective of their cultural backgrounds. However, more research is required to fully understand the dynamic nature of culture and its influence on higher education sector.

Wibisono & Nainggolan (2009) claimed that although HEdPERF instrument has good validity, the test of instrument was held only in Malaysia. Thus in their research, they tested the validity of HEdPERF before it was used to measure the quality of higher education in Industrial Engineering Department of Catholic Parahyangan University (IE-Unpar). The result of this research showed that the instrument consists of 7 factors namely nonacademic, academic, reputation, empathy, student-activity, facility, and location. All factors had a good reliability. The instrument had a criterion validity score of 0.69.

Legcevic (2010) aiming at evaluating the relative efficacy of HEdPERF and SERVPERF and at an in-depth exploration of service quality in higher education conducted a survey at the University of Osijek in Croatia. A total of 1,494 questionnaires were collected from students and were subjected to factor analysis. Results indicate that student's perceptions of service quality are changing over the period of study, class attendance and faculty achievement. She carried out a principal component analysis and yielded another factor. Thus the factors suggested are Empathy, Tangibility, Reliability, Competence and confidence, Non-academic aspect and Academic aspect.

In order to ascertain business students' perception of quality of service provided by public and private universities in Kenya, Kimani et al. (2011) conducted a study using the HEdPERF instrument. Findings indicated that most university students were positive about the quality of service they received in their universities. Factors that determined service quality in Kenya universities were administrative quality, academic quality, programs quality, student support, and availability of resources.

HEdPERF was also used by Ravichandran et al. (2012) in order to empirically measure the service quality level among engineering colleges/Institutions which are offering professional courses in Tiruchirappalli, Tamilnadu, India. Findings from the study indicate that standardized syllabus and structure, quality programs, students feedback for progressive measures, empathetic administrative staff to solve students problem and fair and equal treatment are the dominant variables strongly predicts the overall service quality. What is more important is that using factor analysis, it is inferred that a HEdPERF scale is not factor loaded as per the proposed original dimensions, instead they got a loading of eleven factors/dimensions.

Methodology

An empirical research study was conducted from 2/4/2012-25/5/2012, using the online survey module of the Quality Assurance Information System (QAIS). Students were asked to rank their perception in relation to service quality with a seven-point Likert scale. The QAIS is an application suite which was implemented by the Quality Assurance Unit (QAU) of TEICM, in order to put into effect evaluation and quality management procedures in the Institute. In order to raise awareness, the survey was actively advertised via the home page of the Institute's website and students who participated in the survey went into a draw to win a laptop. A total of 469 questionnaires were collected.

The HEdPERF instrument, as provided Vrana et al. (2015) was used. The dimensions used are: *Academic aspects, Facilities, Program issues, Staff, Support services*. Next, an effort was made to investigate how HEdPERF dimensions are linked to students' attitudes about important educational issues. In this vein three educational issues were investigated, namely Edu1: to scientific adequacy and teaching capability, Edu2:

Feedback provided by the professors, Edu3: Special services. Special services items are:

1. web page of TEICM (www.teicm.gr)
2. email services
3. e-Learning platform
4. Electronic secretariat
5. Quality Assurance Unit
6. Employment and Career Center, Liaison Office & Innovation and Entrepreneurship Unit
7. Network operating center
8. Library
9. Lifelong Learning Program / Erasmus

In order to find the statistically significant dimensions of HEdPERF that are associated with the educational issues under investigation multiple regression and logistic regression techniques were employed. All the computations and graphical displays were implemented with R the well-known statistical language (R Core Team, 2016). Specifically, the commands *lm* for multiple regression and *glm* for logistic regression of the *stat* package were used. Additionally, the *scatterplot3d* package was used for 3D scatter diagrams (Ligges and Machler, 2003).

Findings

Sample description

The sample consists of 469 students of the TEICM, 262 males (55.86%) and 207 females (44.14%). Most of the correspondents (246 undergraduate students, 52.45% of the sample) attend to the Faculty of Administration & Economic, which consists of the Business Administration and Accounting & Finance departments. The other major portion of the sample (203 undergraduate students, 43.28%) is derived from the Faculty of Applied Technology, which consists of the departments of Geomatics & Surveying, Civil Engineering, Mechanical Engineering and Informatics & Communications. Only two students (0.43% of the sample) who attend the undergraduate course of the Faculty of Fine Arts and eighteen postgraduate students (3.84% of the sample) studying at TEICM complete the sample.

Table 1. Students sample description

		Frequency	Percentage
Gender	Male	262	55.86
	Female	207	44.14
Undergraduate students	Faculty of Applied Technology	203	43.28
	Faculty of Fine Arts	2	0.43
	Faculty of Administration & Economics	246	52.45
Postgraduate students		18	3.84

The five dimensions of the modified HEdPERF are *Academic aspects*, *Facilities*, *Program issues*, *Staff* and *Support services* and three important educational issues were considered in order to find connections that influence the educational process. Specifically, *Edu 1* corresponds to scientific adequacy and teaching capability of the professors, *Edu 2* to the feedback provided by the professors and *Edu3* to special services of TEICM.

Next, the summary statistics of HEdPERF dimensions and the questionnaire with the educational issues are presented.

Table 2. Summary statistics

Dimensions/Questions	Mean	Standard deviation
Academic aspects	4.87	1.15
Facilities	5.10	1.09
Program issues	4.72	1.21
Staff	4.26	1.55
Support services	4.57	1.24
Edu1: to scientific adequacy and teaching capability (range:1 to 7)	5.07	1.15
Edu2: Feedback (range:1 to 7)	4.44	1.44
Edu3: Special services (range:1 to 5)	4.15	0.72

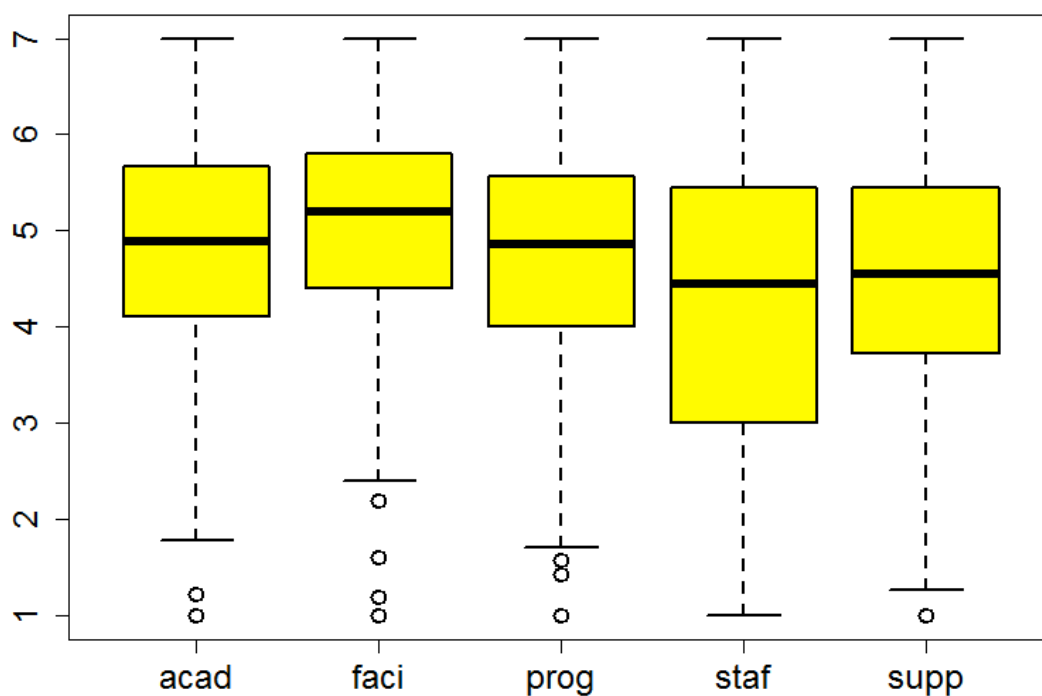


Figure1: Boxplots of HEdPERF dimensions

Boxplots for every dimension reveals a generally positive opinion of the respondents about the service quality provided by TEICM. The *staf* dimension has the lowest mean, the highest standard deviation and the most negative opinions. The other dimensions of HEdPERF have similar statistical characteristics (median and interquartile range).

Statistical models

The following histogram presents the opinions of the respondents about *Edu1*. The distribution is negative skewed showing the positive opinion of students.

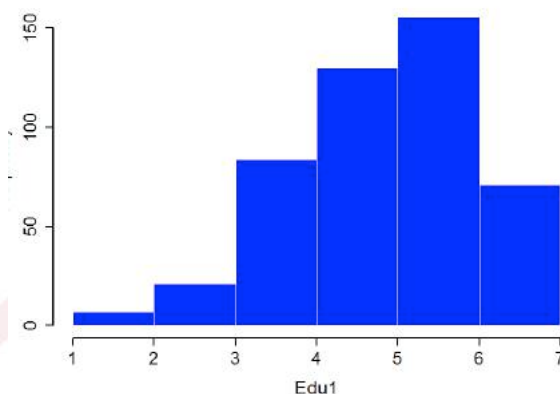


Figure 2: Histogram of Edu1

Multiple linear regression was employed to investigate the statistically significant dimensions of HEdPERF that are associated with *Edu1*. The generated regression model detected only two dimensions that influence *Edu1* with significance level less than 0.001. Specifically, the following table was obtained:

Table 3: Multiple linear regression results for *Edu1*

	estimates	std. error	t value	p value
(Intercept)	0.64782	0.11253	5.757	1.56e-08 ***
acad	0.80348	0.02844	28.250	< 2e-16 ***
prog	0.10718	0.02700	3.969	8.34e-05 ***

The multiple R-squared is 0.7862 indicating a sufficiently fit of the model to the data set that is confirmed by the 3D scatterplot in Figure 3. The generated equation is

$$\mathbf{Edu1 = 0.65 + 0.80 \cdot acad + 0.11 \cdot prog}$$

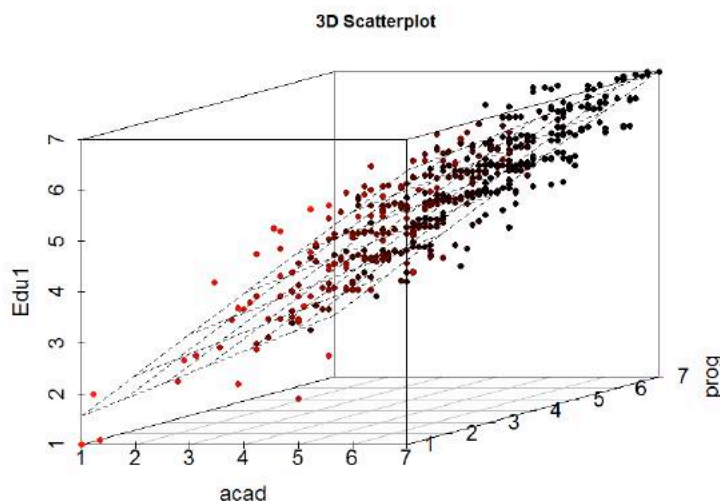


Figure 3: 3D scatter plot for Edu1

The following histogram represents the opinions regarding *Edu2* that is very close to a Normal distribution.

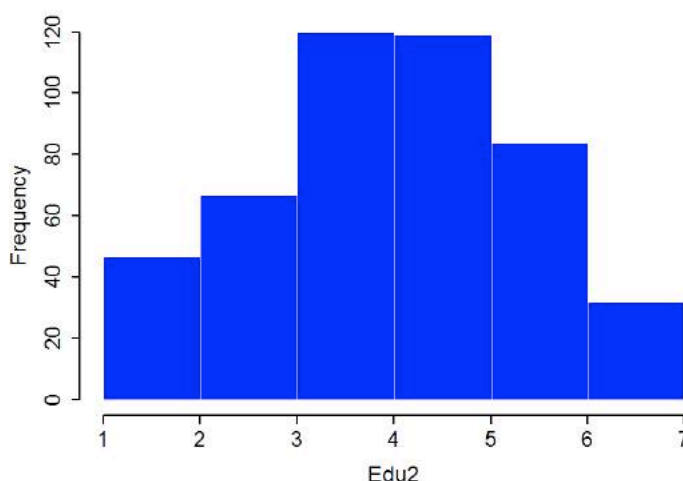


Figure 4: Histogram of Edu2

Then logistic regression technique was used to estimate the probability p of the event “a student is satisfied from feedback”. The logistic regression model estimates the probability p as a linear function of the explanatory variables (HEdPERF dimensions). Only acad and prog are detected as statistically significant. The model is described by the following equation:

$$\ln\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 \cdot \mathbf{acad} + \beta_2 \mathbf{prog}$$

The above equation can be rewritten as

$$p = \frac{\exp(\beta_0 + \beta_1 \cdot acad + \beta_2 \cdot prog)}{1 + \exp(\beta_0 + \beta_1 \cdot acad + \beta_2 \cdot prog)}$$

In this case,

$$\ln\left(\frac{p}{1-p}\right) = -11.68 + 1.98 \cdot acad + 0.41 \cdot prog$$

Figure 5 describes the probability p of the event “a student is satisfied from feedback” taking into account the *acad* and *prog* dimensions. Each dot is the center of a cycle and represents the opinion of a student. Only 50 out of the total 469 points are shown in the figure, for the sake of clarity/readability. The bigger the radius the higher the probability of being satisfied. Also the higher the value of *acad* and *prog* the higher the probability, p . From the *acad* and *prog* coefficients it is evident that former dimension is more important.

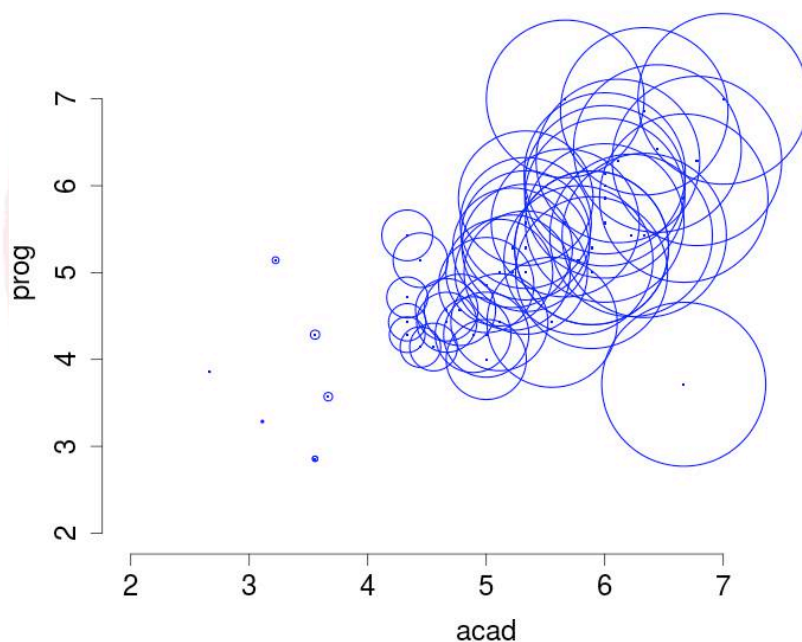


Figure 5: Probability p of the event “a student is satisfied from feedback” taking into account the *acad* and *prog* dimensions

The following histogram represents the opinions regarding *Edu3* that is also negative skewed.

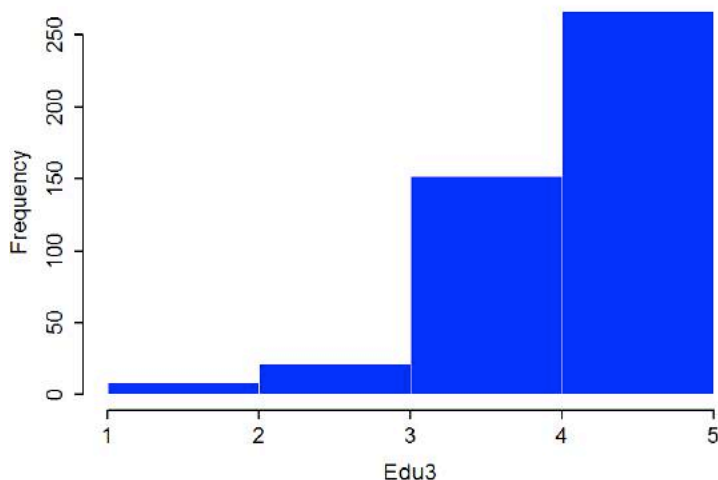


Figure 6: Histogram of Edu3

In this case,

$$\ln\left(\frac{p}{1-p}\right) = -5.84 + 0.43 \cdot \mathit{faci} + 0.92 \cdot \mathit{supp}.$$

Figure 6 describes the probability p of the event “a student is satisfied from special services” taking into account the supp and faci dimensions. Again, only 50 out of the total 469 points are shown in the figure, for the sake of clarity/readability. From the supp and faci coefficients it is evident that former dimension is more important.

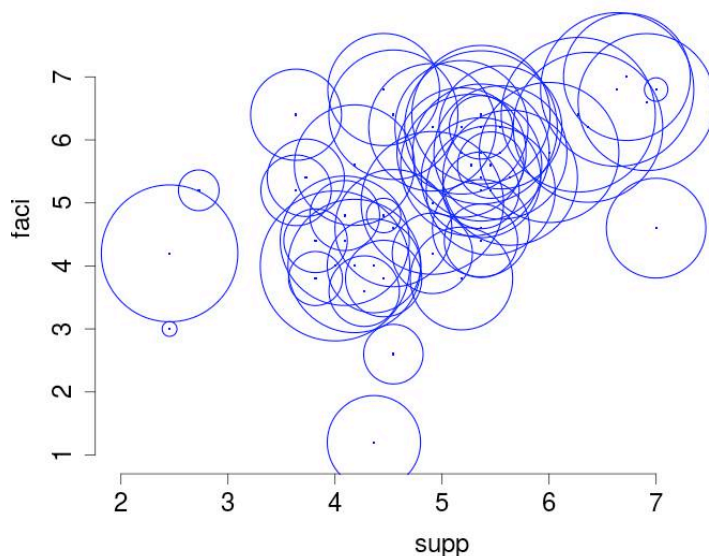


Figure 6: Probability p of the event “a student is satisfied from special services” taking into account the supp and faci dimensions

Conclusion

In the present paper initially the outcomes from a modified HEdPERF questionnaire are presented that was used to assess the service quality provided by a Greek educational organization, TEICM. Extending these results, the association of the five dimensions of HEdPERF with three important educational issues was investigated. Multiple linear regression and logistic regression models were employed in order to extract the statistically significant impact of the dimensions on aspects of the educational process of the institution.

The results regarding *Edu1* and *Edu2* which are associated with the core of the educational process showed that *Academic aspects* is, as it was expected, the most important dimension. However, *Program issues* dimension was emerged as a statistical significant dimension that influences *Edu1* and *Edu2*. The results provide strong indications that the reputation, flexibility and absorption from the labor market of the TEICM graduates are the essential quality components of *Program issues*. The indicated associations contribute to the fundamental elements of the institute, the teaching capabilities and the feedback about students' progress. Furthermore, the student's satisfaction about *Edu3* is linked mainly to the *Support services* and secondly to the *Facilities* dimension. The *Edu3* consists of 9 services whereas 4 of them are offered fully on line. This could partly explain that the *Staff* dimension was not statistically significant in any model of the above statistical analysis but could also mean that role of the non-academic staff is very weak at the age of online technologies especially in a higher education institution.

In this study HEdPERF was used together with some items which investigate important issues education quality. Their association provided some indications that HEdPERF can be effectively used to record education service quality. TEICM could benefit from this exploration and focus its efforts to alter the conditions that provoke low quality rankings. Knowing the relative performance of different dimensions and issues could help institute's managers to gain deeper insights into higher education service quality, draft various managerial strategies on how to improve activities of the organization and the provided services, and make better resource allocation. A qualitative research may give insights regarding what causes low quality rankings. As this is one of the first attempts to use HEdPERF to measure quality and other important education issues in Greece, other higher education institutes in Greece or other European countries with similar higher education systems should replicate the study.

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Realistic Mathematics Education: An Approach for Overcoming Math Anxiety of Junior High School Students in Semarang, Indonesia

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Abstract

There are some different levels of students' achievement in Mathematics across various skills such as understanding, communication, critical thinking, and problem solving. It implies that the low-achieving students get the most consideration to be evaluated what the factors affecting it. This study focused on analysing the nature of maths anxiety that is suffered by junior high school students in Indonesia. Subsequently, it investigated the coherence between the strategies to overcome maths anxiety and the characteristics of Realistic Mathematics Education (RME). Essentially, research has shown that mathematics achievement can be influenced by psychological factors in which math anxiety is one of it (Zakaria *et al.*, 2012).

A research indicates that some factors such as mathematics myths, teaching-learning process, and motivation become a complexity prompting students' math anxiety (Wicaksana & Saufi, 2013). Besides, there are two findings from my teaching-learning experiences which are: (1) students' failures in mathematics either in the learning process or the test are not always due to cognitive factors; (2) two possible significant factors triggering to the low-achieving students are maths anxiety and less meaningful learning. The findings reveal that the RME approach confirmed to overcome math anxiety based on the analysis of five notions, which are the positive atmosphere of teaching-learning process, making sense mathematics, more practice for students, students' collaboration, and process-led rather than content-led objectives. Additionally, the implementation of RME needs some considerations concerning time allotment, math topic and teacher's skills.

Keyword: Math Anxiety, Realistic Mathematics Education, Junior High School

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Introduction

The Indonesia's curriculum was cultivated relatively abruptly because within ten years there have been three times of transformations. These curriculum changes included the objectives and indicators of learning achievement in which later implicated in the matter and burden of teaching and learning process. Consequently, mathematics as one of the main subject has considerable burden and weight of matters then conveying a significant responsibility for teachers and indirectly forcing students to learn more until attaining the marks passing standards.

The situations resulted a significant differences of students' achievement in mathematics across various skills such as understanding, communication, critical thinking, and problem solving. It implies that the low-achieving students get the most consideration to be evaluated what the factors affecting it. Essentially, research has shown that mathematics achievement can be influenced by psychological factors in which math anxiety is one of it (Zakaria *et al.*, 2012). A research indicates that some factors such as mathematics myths, teaching-learning process, and motivation become a complexity prompting students' math anxiety (Wicaksana & Saufi, 2013). Besides, there are three findings from my teaching-learning experiences in Semarang area, which are: (1) students' failures in mathematics either in the learning process or the test are not always due to cognitive factors; (2) two possible significant factors triggering to the low-achieving students are maths anxiety and less meaningful learning; and (3) students need a meaningful learning which connect them with a real-life so that mathematics becomes not abstract subject. Those three things are closely associated to how teachers organize the teaching-learning process. Muir, Beswick, and Williamson (2008) underpin that mathematics learning process depends on the learning approaches that are used.

Therefore, this study investigates this issue justifying in finding the nature of maths anxiety and students with maths anxiety. Furthermore, an advanced analyses of this study includes the appropriate teaching-learning approach for overcoming math anxiety.

Discussion

Limitation

The analysis about the math anxiety that is possessed by a junior high school students in Semarang. Selecting junior high school students because the formal operation should be conducted in early 11 years old which is Junior High School stage involving abstraction and symbolization thinking (Ojose, 2008). Generally, sociocultural environment is change when students move to junior high school. Therefore, they need an early treatment for their math anxiety. The scope of analysis is also justified in Semarang region of Indonesia because the different regions might have different factors and levels of mathematics anxiety for example students in Semarang and in Papua where there are differences in facilities, infrastructures, cultures and human resources.

Math Anxiety in Junior High School Students in Semarang, Indonesia

The teacher begins the classroom activity with some clarifications about learning objectives which students should engage in that day. After that, the teacher continues to make sense of notations, representation, terms and formula. The students only listen and sometimes take notes what teacher is explaining without any participation spaces.

Imagine the illustration above to evoke on how mathematics class is frequently just in the form of listening and writing and teacher's authority is dominant now then. In some cases, the teacher often comes into the class and intends to teach with a lesson plan containing learning objectives, materials, and even assessment guide as if the day would be a joyful learning for students. Inversely, there are also common negative responses from students as a kind of rejection or low self-esteem to enjoy the activities of such things. One of the general factors is a negative stigma attached to mathematics educators, subject matter or mathematics learning process (Siswono, 2014). Those negative stigma which is overshadowing students might trigger a psychological symptoms called math anxiety. Federici, Skaalvik and Tangen (2015) conceptualize math anxiety as an affective variable comprised with uneasiness and fear when working with math later constructing negative responses of math from students. Additionally, math anxiety is also defined as loosely regarded of feelings of fear, avoidance and dread when dealing with any situations relating to mathematics (Zakaria et al., 2012).

According to Ruffins (2007), math anxiety has some symptoms including feeling nervous before a math class, flustering, feeling defenseless while doing homework or going blank during a test. Based on my experiences, the junior high school students in Indonesia particularly in Semarang region are also experiencing the same thing. First, they feel nervous before entering math classes especially for new students. The students began to worry when they heard various negative stigma that later proved by the existence of different lesson material and more abstract than what they got in elementary school. For instance, the negative voices about so many formula should be memorized by them and the amount of materials should be mastered as the condition to achieve the high marks in math class.

Second, students feel increasing panic when following the lessons. It could impact them become more passive. In some my observations, this is often because the teachers who employ inappropriate learning approaches and unexpected behaviors. Finlayson (2014) argues that students face math anxiety in schools because teacher behaviors like focusing on repetition and students rote memorization. These lack of compliances can be understood because there are some changes in achievement standards from the process standard of mathematics education in junior high school level in Indonesia which has been stated in Ministerial Regulation No. 65 year 2013. Besides, teachers are also under pressure by the regulation that they should employ some learning approaches to enhance students' math achievement as well. Although, it sounds like easy to be applied by teachers but, these changes have not occurred in a comprehensive manner so that the subject matter is still explained by the teacher traditionally as repressive as the students have to memorize all of the material (Wicaksono & Saufi, 2013). Whereas, based on the regulations, teachers should

involve active participations of students in teaching-learning process. Taylor and Fraser (2013) also suggest to teachers for creating a positive classroom environment to reduce students' math anxiety.

Thirdly, the worst experienced by students is high anxiety while working on assignment and math test. At the moment, students may feel blanks simultaneously fearing the results obtained. According to Roth and Washlaw (2015) profess the view that the anxiety before math examinations is the indication of a possible loss of control over the task condition resulting failure rather than success. Generally, students probably feel nervous in math test because: (1) the lack of understanding and exercises implies the unpreparedness of math test indicators; and (2) some pressures from their environment particularly their parents who expect them to gain the highest achievements and they could get some punishments for the contrast. In Indonesia, there are three kinds of mathematics test which are routine exam, semester exam and national exam in which its passing grade is increasingly rising. The prime notion of the anxiety in math exam is national exam that still becomes a scourge for students because they only have 'one day test' that decide whether they graduate or not and later it will be one of requirement for enrolling in the university level. Consequently, students undergo the higher anxiety.

Those three cases are generally suffered by junior high school students in Semarang, Indonesia. Nevertheless, Ruffins (2007) clarifies that people who fear math does not mean they are bad at it but there is a dense relationship between math ability and anxiety. It can be affirmed that people who already had math anxiety would have a tendency to avoid math-related classes and later imply in decreasing their achievement. Thus, an effort to create a positive teaching-learning process of mathematics could be a significant suggestion.

Realistic Mathematics Education

Several studies have been conducted to analyze how to overcome the students' math anxiety. Based on Finlayson (2014), math anxiety is usually linked on teaching style so, the discussion of the strategies to overcome math anxiety is dwelled with teaching-learning process. In a short, math anxiety has caused by three main factors that come from students-self, mathematics stigma and the teacher' behaviors. Yet, the main actor both as major factor and the one who can devote to counter math anxiety is the teacher. McGraner, VanderHeyden dan Holdheide (2011) also assert that teacher plays important role in teaching-learning process so they have to create an effective learning approach.

It has been a persisted discussion that a teaching-learning process of mathematics often potentially promotes student stress instead of creating a meaningful learning. Thus, the notion of learning approach is the second prominent in the teaching-learning process which is also essential in reducing math anxiety because it talks about on how teachers planning, action and evaluation. Moreover, teachers should arrange the lesson plan by regarding to the characteristics of students self, the learning objectives, the burden of materials and time allocation then counterweighing with the positive attitude from the teacher.

Realistic Mathematics Education (RME) is one of learning approach concerning the strategy that would be analyzed for conquering math anxiety. It was a learning approach which has been developed by Heuvel-Panhuizen (1996) because the Dutch reform movement in education encourage to prevail home-grown mechanistic approach to arithmetic education. Moreover, RME approach has also already employed by some teachers in mathematics class in Indonesia including my research experiment in applying RME approach with some math teachers in Semarang. Negara, Sujadi and Pangadi (2013) investigated the comparison analysis of applying RME in elementary school which is denoted that RME is not a strange notion for teachers.

According to Heuvel-Panhuizen (2003), a learning approach of RME allows students to learn mathematics by developing and applying mathematical concept linking to tools in the daily life problem situation that make sense to them. In addition, Stephan (2009) underpin the idea of Heuvel-Panhuizen by articulating that the teaching-learning process should design the instructions reinforcing students' reasoning from concrete to the abstract notion with imagery. The concept of real-life context means that teacher cannot urge students to master and think of mathematics in the abstract ways by magic because every students have their own level of understanding and ways of thinking. Therefore, teacher should organize the instructions intentionally convey student thinking gradually toward more mathematically abstract.

Teacher wants to explain about the concept of positive and negative values and she take a daily life story before starting math class.

'Yesterday, I climbed mountain Ungaran in Semarang with some friends. I felt that it was sunny day with the air temperature was about 32 degrees. However there was a difference of weather extremely when we reached the top of the mountain. Surprisingly, it was (-2) degrees when I checked the temperature then.

Anyone know what is the difference of the air temperature I experienced yesterday?

The illustration above is the example of stories which could be delivered to students so that they are interested then imagine how it was. The story can be supported by using any tools like when the teacher want to deliver geometrical material. Heuvel-Panhuizen (2003) claims that mathematics aid tools (models) are beneficial to ease students' imagination of the reality and understanding of the other formal system. The next, teacher may continue to some questions guiding students to construct their preliminary knowledge bridging to the core material.

In a brief, Üzel and Uyangör (2006) state that there are three guiding heuristics of RME approach: (1) *reinvention through progressive mathematization* in which students should be provided a series of instructional activities using real-life context and informal solution strategies to invent more formal mathematical concepts; (2) *didactical phenomenology* refers to students' engagement in class discussions related with progressive mathematization so that students can renegotiate sophisticated solutions toward some real-life context problems individually or in group discussions; and (3) *informal to formal mathematics* means that students are guided to explore a model-of a situational problem activities later altering it to more mathematical reasoning using symbolizations. Based on those heuristics, Realistic Mathematics Education is not just a learning approach to overcome math anxiety potentially but

also enhance other math abilities such as reasoning, critical thinking, problem solving and communication.

Overcoming Math Anxiety with Realistic Mathematics Education

The discussions of a conformity of RME approach for reducing math anxiety are going to be demonstrated by analyzing between the strategies to conquer math anxiety and the characteristics of RME.

Positive atmosphere of teaching-learning process

The motivation to study can be encouraged by creating a well-being learning environment. This first notion concerns to what J. Martinez & N. Martinez (2003) recommend that the teachers should accentuate their positive experience of mathematics and obstruct the knowledge gap to conquer math anxiety. The positive experiences of mathematics could be delivered by sharing some stories telling like on how in the past, the teacher can achieve the best mark in math test after feeling enjoy to study math, or what amazing part of math which is triggering to problem solving in daily life. The positive experiences might stimulate the spirit of students to enjoy math and realize that a negative stigma about math is not always true. In this regard, teachers also need to provide stories related to daily life as the beginning of teaching-learning process within the framework of the RME approach (Heuvel-Panhuizen, 2003). Additionally, teacher could introduce some historical value of mathematics including the mathematicians and their inventions to motivate students (Ruffins, 2007). The way of telling some stories could emerge students' interest of math and their engagement toward teachers' stories. Besides, teachers would not be considered as a strange who have to be feared or avoided in math class. If the positive atmosphere which may be in the form of math team could be generated then all students will relieve in engaging with math class.

Making sense mathematics

The next exploration relates to the investigation of Jain and Dowson (2009) that one of strategy to overcome math anxiety is by increasing the self-regulation referring to self-directed cognitive and metacognitive activities. Thus, the correlation appears between the concept of making sense and self-regulation. When students really understand either the concept or the application for every part of math lesson, it means that they can more elaborate students' self-regulatory capacities. As a result, students' math anxiety are gradually reduced. In the step of making sense mathematics, Hough and Gough (2007) suggest some of the key features: (1) the use of informal strategies; (2) informal to formal progression; and (4) the use of models. Those key features actually are a series of representing mathematics to be more concrete with a logical justification toward the students. They might hold their own prior knowledge so that they can only represent their voice in the informal methods. Therefore, teacher could begin the class with informal strategies providing a space for students participatory. Some contextual stories like in the previous explanation or using the models underpin the stage of teaching-learning process. It is also delivered by Ruffins (2007) who claims that it is required to employ some visualization of math problem in more concrete terms like using real-life context.

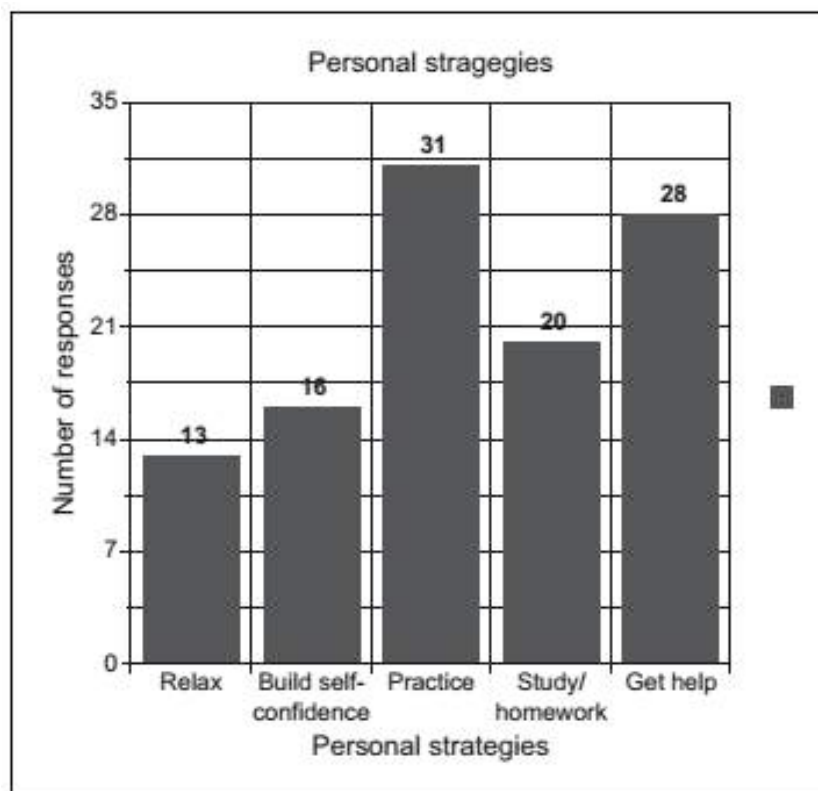


Figure 1. Personal Strategies (Finlayson, 2014)

The next two notions are a consideration of what Finlayson (2014) discovered in his experiment about the personal strategies employed by students to lessen math anxiety. From the bar chart, it is obvious that students tend to choose the strategies of practice and get help as their strategies for overcoming their mathematics anxiety.

More practice for students

Thorndike strengthened the existence of practice by his theory “the law of exercise” emphasizing that exercise can reinforce the connection between stimulus and action (Mulyati, 2005). Similarly in the teaching-learning process, where students should often have some mathematics problem exercises to improve their mathematics ability so that they could feel more organized in joining math class. In the notion of practice, Stephen (2009) affirms that one of heuristics in RME approach also underscores a set of tasks consisting of word problems, in which students are expected to show progression involving presenting the problems both with words and symbols. In this phase, teachers plays important role in guiding students’ confidence to demonstrate their strategies of problem solving. Teachers need to give positive attitude embracing students’ questions when they got stuck.

Students collaboration

The other personal strategies to overcome math anxiety is students favoring to get help from peers and teachers. The notion of get help refers to the need of others to share and create a comfort zone to learn math. The need for sociocultural is also corroborated by Vygotsky who has said that students need help from others to provide a sense of comfort and strengthen the understanding obtained previously (Trianto,

2007). However, there are some factors causing math anxiety come from people around him/her. Therefore, the teacher as a main role in math class should learn on how to provide a good behavior then elaborate a class collaborations. For that case, teacher could harness one of the RME approach by making some groups of students to discuss about math problem tasks so that they can feel a meaningful investigation and comfortable atmosphere (Ruffins, 2007). This group is not only set up to discuss the ways of problem solving, but also be able to jointly understand the concept of a material that day. For instance, the teacher can promote a discussion to reinvent a certain mathematics formula by giving a series of team-work guide, and workbook as well. In this step, it should be emphasized that every students' participation can be harnessed as the contribution to help others looking at problem. Students could get a peer role models and social support that allowing correction without grading, showing alternative ways of problem solving and emphasizing residing with problem until it could be solved

Process-led rather than content-led objectives

The last notion denotes the theory from Hough and Gough (2007) emphasizing process-led rather than content-led objectives. This concept significantly relates to the recent paradigm of school mathematics in Indonesia ascribing to the results rather than the process. In fact, students tend to do all the efforts even not advisable ways like cheating to achieve the best mark. Toward math anxiety, the more pressure the more tensions students gain. Thus, teacher have to appreciate for every progression which students have demonstrated in the midst of their work. Students who get positive response for their work might feel that they have satisfied teachers' expectations prompting their enthusiasm to strive more. Inversely, students could only have result-oriented affecting in increasing their stage of math anxiety. Based on the research which is conducted by Yusuf (2013) has been shown that students will more easily memorize various types and steps when the teacher gives appreciation and confirmation for their working processes.

Unfortunately, there will be also some groups of students who demonstrate slow progression of their mathematics work. As the response, teacher should be keeping alive the sense for concerning the characteristics of every students and choosing treatments for them. Toward this last theory, the nature of junior high school students in Semarang, Indonesia particularly in math anxiety symptoms is afraid to attempt for solving the problem in their own way, so they prefer to keep quiet rather than participate. Accordingly, when teachers can employ this theory of RME approach properly, it could encourage students' confidence to participate more.

Departing from the question: *How are the significance of RME as teaching-learning approach toward the solutions for overcoming math anxiety?*, we found that there five main terms considerably constituting the answer of that question. Those five main terms include the positive atmosphere of teaching-learning process, making sense mathematics, more practice for students, student collaboration, and process-led rather than content-led objectives. Nevertheless, it strongly requires the roles and competence of teachers supporting every single steps for employing RME approach.

Conclusion

The math anxiety is one of the psychological factors that can hinder the achievement of student learning. Based on the analysis, math anxiety belongs to the reasons why the interpersonal relationships are very important in understanding mathematics. This is because that anxiety itself can proliferate, has subjective characteristic and tends to be difficult for understanding. Students who are more anxious will attempt ever harder, but their understanding might be inferior, so that they got more anxieties. Several factors cause mathematics anxiety both externally and internally which are negative stigma about mathematics, teaching and learning process are less meaningful, the attitude of teachers who are less motivated and high standard of learning achievement.

A learning approach is significant suggested in case of conquering math anxiety. Realistic Mathematics Education is one of learning approach that has three main concept consisting of the real-life context, collaboration and cooperation, and guided reinvention. Based on the analysis of the things that need to be done to overcome math anxiety and characteristics of RME, and then obtained the conformity between the two. As we saw, Realistic Mathematics Education (RME) has some key features not only as a solution for reducing students' math anxiety but also enhancing math ability such as understanding, critical thinking, problem solving, and communication. Thus, teachers are encouraged to apply RME approach as one of the strategies, which certainly needed an understanding teacher beforehand about the procedures. It seems that an effort to implement RME as a teaching-learning approach need some considerations concerning time allotment, math topic and teacher's skills.

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***School Head's Sense of Efficacy and Climate among
Private Schools***

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The Asian Conference on Education & International Development 2016
Official Conference Proceedings

Abstract

This survey - correlational study attempted to determine the level of school head's sense of efficacy and climate among schools in Iloilo City and their relationship as a whole and when grouped according to sectarian, non – sectarian, elementary, secondary or both elementary and secondary levels. The respondents of the study were the 30 principals of established private schools and 150 selected faculty. The selection of the principals was done purposively while the faculty was randomly selected. The researcher adapted two instruments: the Principal's Sense of Efficacy Scale developed by Tschannen – Moran, et al. (2001) which was answered by the selected principals and faculty to determine the level of school head's sense of efficacy; and the Organizational Climate Descriptive Questionnaire for Elementary Schools (OCDQ-RE) developed by Hoy, Tarter, and Kottkamp (1991) was used to determine the climate among private schools in Iloilo City to be answered by both selected principals and faculty. The use of frequency, mean, standard deviation, the Independent sample t-test, One-way ANOVA, and Pearson-r were utilized for the data analyses. The study revealed that level of school head's sense of efficacy among private schools in Iloilo City is HIGH and the existing climate is OPEN and was attributed to the awareness of the principals of their responsibility and accountability to demonstrate school effectiveness and promote the schools shared values in creating a conducive climate. Likewise, there is a significant relationship between school head's sense of efficacy and school climate among private schools as affirmed by the results.

Keywords: school head's sense of efficacy, climate, private schools

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Introduction

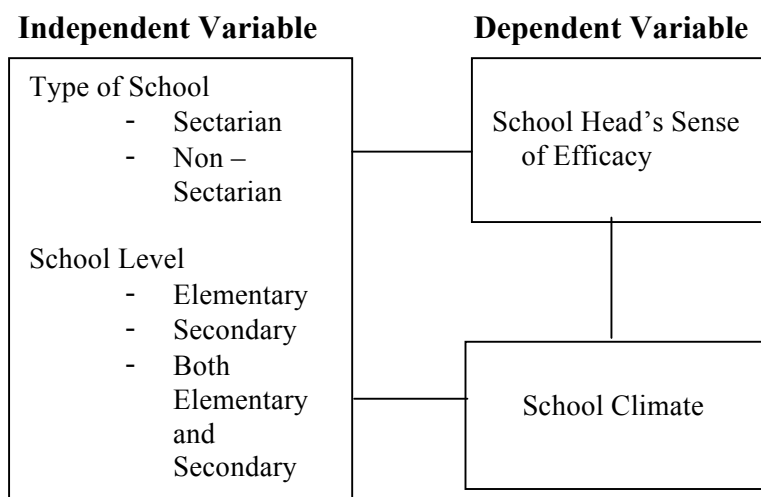
Aside from teachers, parents and students, the principal plays an integral role in the existence of an academic institution. The principal is seen as the key agent in initiating change in school. The responsibility of demonstrating school effectiveness is bestowed in the principal or school head. The principal sets the tone of the school and in many ways shape its organizational conditions. Thus, a school needs an efficacious principal to create a school climate conducive for learning and development. The school head's sense of efficacy influences the kind of climate a school has. His actions may help shape the school climate positively or negatively. Principals with high levels of sense of efficacy believe in their ability to inspire positive change and to motivate others to assume greater responsibility in the school's decision making processes (Schunk, 2012).

This study is indeed timely, for not all schools particularly in Iloilo City have the ideal climate which may be attributed to the school head's sense of efficacy. Likewise, this study wanted to discover schools which were able to cultivate a positive climate due to the school head's sense of efficacy and learn from them. The results will help academic institutions to have efficacious school head and cultivate a school climate that ensures harmonious relationship among the academic community and therefore, improving its effectiveness. With the changing educational culture as attributed by the advent of technology, paradigm shift in the curriculum and the like, there is a need for a study that will help school improve its climate by nurturing efficacious school heads.

Theoretical Framework

This study is anchored in the social – cognitive theory of Bandura pertaining to self-efficacy. A principal/school head's sense of efficacy is a judgment of his capabilities to structure a particular course of action in order to produce desired outcomes in the school he leads (Bandura, 1997). Likewise, this study is anchored on the idea that the principal and his sense of efficacy affect the school climate. The principal, as the leader of the educational environment has a direct impact on the climate of the school as studied by Hallinger & Heck (1998).

In view of the proceeding theoretical background, the conceptual framework is shown below.



Statement of the Problem

This study on “School Head’s Sense of Efficacy and Climate among Private Schools” aims to address the following questions:

1. What is the level of school head’s sense of efficacy among private schools in when taken as a whole; when grouped as a) type of school; and b) school level as perceived by the principals and faculty?
2. What is the type of climate existing among private schools in when taken as a whole; when grouped as a) type of school; and b) school level as perceived by the principals and faculty?
3. Is there a significant difference in the school head’s sense of efficacy and climate among private schools when grouped as a) type of school; and b) school level?
4. Is there a significant relationship between school head’s sense of efficacy and the type climate existing among private schools?

Materials and Methods

This survey – correlational study attempted to determine the level of school head’s sense of efficacy and climate among private schools in Iloilo City and their relationship as a whole and when grouped according to sectarian, non – sectarian, elementary, secondary or both elementary and secondary levels. The respondents were the 30 purposively selected principals of established private schools and 150 randomly selected faculty. They answered the researcher adapted two instruments: the Principal’s Sense of Efficacy Scale developed by Tschannen – Moran, et al. (2001) to determine the level of school head’s sense of efficacy; and the Organizational Climate Descriptive Questionnaire for Elementary Schools (OCDQ-RE) developed by Hoy, Tarter, and Kottkamp (1991) to determine the climate among private schools in Iloilo City. Descriptive analysis was aided by the use of frequency, mean and standard deviation. For Inferential analyses, the Independent sample *t*-test, One-way ANOVA, and Pearson-r were utilized with the level of significance set at alpha 0.05 using SPSS.

Results and Conclusions

The findings show that the level of school heads’ sense of efficacy among private schools in Iloilo City is HIGH as perceived by both the principals and the faculty and when grouped according to school type and school level. The type of climate existing among the private schools in Iloilo City is OPEN. When grouped as to school type, the climate for sectarian is ENGAGED and OPEN for non – sectarian. When grouped as to school level, the climate for elementary is OPEN and ENGAGED for secondary and both elementary or secondary. There is no significant difference in the level of school head’s sense of efficacy among private schools in Iloilo City when grouped as to school type and school level. There is no significant difference in the existing climate among private schools in Iloilo City when grouped as to school type. However, there is a significant difference in the existing climates when grouped as to school level. Moreover, there is a significant relationship between the school head’s sense of efficacy and

climate among private schools in Iloilo City as perceived by both the principals and faculty.

The study concluded that level of school head's sense of efficacy among private schools in Iloilo City is HIGH and the existing climate is OPEN and was attributed plausibly to the awareness of the principals of their responsibility and accountability to demonstrate school effectiveness and promote the schools shared values, therefore, creating a conducive climate. Likewise, there is a significant relationship between school heads' sense of efficacy and school climate among private schools as affirmed by the results indicating that efficacious principals played an integral role in having a positive climate. The principal's sense of efficacy influences the kind of climate a school has. Principals with high level of sense of efficacy believe in their ability to inspire positive change and motivate others to assume greater responsibility in the school's decision making process hence, creating a positive climate. This was evident among sectarian and non-sectarian schools in Iloilo City.

Tables

Table 1

Level of School Head's Sense of Efficacy among Private Schools in Iloilo City as Perceived by both the Principals and Faculty

Categories	N	SD	M	Description
A. Entire Group	180	.57	4.35	High
1. Type of School				
Sectarian	84	.53	4.37	High
Non-Sectarian	96	.61	4.33	High
2. School Level				
Elementary	54	.56	4.41	High
Secondary	41	.63	4.35	High
Both Elementary & Secondary	85	.56	4.30	High

Legend:

<u>Scale</u>	<u>Description</u>
3.51 - 5.00	High
2.51 - 3.50	Average
1.00 - 2.50	Low

Table 2

Type of Climate existing among Private Schools in Iloilo City as Perceive by the Principals and Faculty

Categories	N	Principal Openness		Teacher Openness		Climate Description
		Mean	SD	Mean	SD	
A. Entire Group	180	500	73.01	585	95.45	Open
1. Type of School						
Sectarian	84	485	71.05	571	97.51	Engaged
Non-Sectarian	96	513	72.64	597	92.49	Open
2. School Level						
Elementary	54	513	78.74	592	87.61	Open
Secondary	41	493	70.22	573	106.52	Engaged
Both Elementary & Secondary	85	496	70.39	585	95.26	Engaged

Legend:

- Open climate** - both teacher and principal openness scores > 500
- Closed climate** - both teacher and principal openness scores < 500
- Engaged climate** - the principal openness score < 500 and the teacher openness score > 500
- Disengaged climate** - the principal openness score is > 500 and the teacher openness score is < 500

Table 3

Independent t - test on the Differences in the Level of School Head's Sense of Efficacy among Private Schools in Iloilo City when grouped as sectarian and non-sectarian.

Category	N	M	df	t	Sig
Type of School					
Sectarian	84	4.37	178	.43	.67
Non – Sectarian	96	4.33			

Table 4

One – Way ANOVA Result on the Differences in the Level of School Head's Sense of Efficacy of Private Schools in Iloilo City when grouped as elementary, secondary or both elementary or secondary.

Category	N	M	df	f	Sig
School Level					
Elementary	54	4.41	177	.60	.55
Secondary	41	4.35			
Both Elementary & Secondary	85	4.30			

Table 5

Independent Sample t - test Result on the Differences in the existing climate among private schools in Iloilo City when grouped as sectarian and non-sectarian.

Category	<i>N</i>	<i>M</i>	<i>df</i>	<i>t</i>	<i>Sig</i>
Type of School					
Sectarian	84	2.78	178	.19	.85
Non – Sectarian	96	2.77			

Table 6

One – Way ANOVA Result on the Differences in the existing Climate among Private Schools in Iloilo City when grouped as elementary, secondary or both elementary or secondary.

Category	<i>N</i>	<i>M</i>	<i>df</i>	<i>F</i>	<i>Sig</i>
School Level					
Elementary	54	2.85	2	3.80*	.03
Secondary	41	2.69			
Both Elementary & Secondary	85	2.78	177		

Note: * $p < .05$

Table 7

Pearson – r Result on the Relationship between School Head's Sense of Efficacy and Climate among Private schools in Iloilo City.

Category	<i>N</i>	<i>r-value</i>	<i>r²</i>	<i>p</i>
School Heads' Sense of Efficacy	180	.641*	.41	.000
School Climate	180			

Note: * $p < 0.05$

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The logo for the International Association for Educational Research (IAFOR) is centered on the page. It features the word "iafor" in a light blue, lowercase, sans-serif font. The text is enclosed within a circular graphic composed of two overlapping, semi-transparent arcs: a red one on the left and a blue one on the right, which together form a partial circle around the text.



Assessing the Metacognitive Awareness among the Foundation in Engineering Students

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Abstract

The transition phase is a critical moment to the students who have completed their secondary school education and are proceeding to pre-university education. The long duration of exposure to rote learning and examination-oriented education system at school has somehow shaped these students' perception about teaching and learning. Thus, this paper aims to examine the quality of the first year students' experience in constructing their knowledge and skills throughout the Foundation in Engineering (FIE) programme. This experience refers as metacognitive awareness, namely students' learning experience from one mode of thinking to the other and construct meaningful knowledge and skills. The researchers used the Metacognitive Awareness Inventory (MAI) (Schraw and Dennison, 1994) as a rating tool to trace the students' baseline in metacognition and access their successive levels of metacognitive awareness throughout their first semester in the FIE programme. The students showed improvements in a number of metacognitive sub-processes. The findings provided the details of the quality of the programme's efficacy and served as a benchmark for future development of effectiveness of teaching and learning approaches.

Keywords: metacognition, metacognitive awareness, teaching and learning, academic achievements, MAI

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Introduction

The term “metacognition” is coined by John Flavell (1979) simply described the state of consciousness of one’s own thinking and learning processes (Kayashima, *et. al.*, 2004). Learners are acutely aware of the knowledge content in his or her mental resources and possess the ability to control and monitor these cognitive activities to perform higher order thinking skills (Ozsoya & Ataman, 2009; Pennequin *et. al.*, 2010). Thus, two essential components play a dominant role in the central of metacognition i.e. metacognitive knowledge and metacognitive skills (Hollingworth & McLoughlin, 2001). Metacognitive knowledge refers to what one recognizes about his or her own potential in processing information, about knowing the feature of a task and also allocating appropriate strategies that can be applied to successfully accomplish a task (Flavell, 1987; cited in Hollingworth & McLoughlin, 2001). Metacognitive skills simply direct to the ability to use the metacognitive knowledge effectively (Ozsoya & Ataman, 2009). It involves metacognitive activities that help to control and monitor one’s own cognitive system and functioning process. The self-regulation exercises commit one to demonstrate high order executive skills such as prediction, planning, monitoring and evaluation (Ozsoya & Ataman, 2009; Schneider & Artelt, 2010).

Engineers by definition are real life problem solvers, critical thinkers and innovators. It is expected from the engineers to develop solutions for various application problems. In other word, they are self-regulated learners and possess the ability to think “*metacognitively*”. The path to become an engineer regardless of specialization primary relies on the engineering education. Thus, the development of engineering students’ thinking abilities highly depends on the teaching and learning process and the contextual learning environment during their academic years. This includes the exposure of students to various engineering concepts and provides hands-on experience to develop their technical skills. In other word, metacognitive skill is an integral part of the knowledge development that engineering students should cultivate and master as early as possible starting from the Foundation in Engineering (FIE).

Problem Statement

The transition period from school to university is a critical moment to upgrade the students’ ability to university students’ status. Students’ performance at the primary and secondary school level is constantly assessed by how many “A”s they achieved in their examinations. In the process, they fail to develop an inquisitive mind and analytical skills as most of their time is spent attending tuition classes, extra classes, and examination workshops to better prepare them for the upcoming examinations. As a result, these students retain the rote learning mindset and studying pattern when they enter the university. With the recent criticisms that FIE programme does not do enough to prepare students for the undergraduate studies, the Foundation Engineering School has begun to review the performance of its programme to ensure that it provides students with top notch engineering education. Thus, this study aims to assess the FIE students’ baseline and follow-up levels of metacognitive awareness throughout the programme.

Literature Review

The importance of metacognitive awareness in teaching and learning has been widely acknowledged (Hurme & Jarvela, 2001; Ozsoya & Ataman, 2009; Schneider & Artelt, 2010; Stillman & Mevarech, 2010). Nevertheless, metacognition is an inner awareness rather than an observable behavior which is crucial to measure such ability. Several explorations have been carried out by researchers to discover appropriate instruments to measure the metacognitive ability. Schraw and Dennison (1994) developed the 52 items Metacognitive Awareness Inventory (MAI) to measure the adults' metacognitive awareness. The findings indicated that the MAI provide a reliable initial test of metacognitive awareness among older students. Kazemi and Ghoraishi (2012) measured the university students' metacognitive awareness in mathematical problem solving by using two methods i.e. protocol analysis and self-questionnaire. 64 university students were asked to write their total mental process during the problem solving and subsequently they responded to a metacognitive inventory that rated their metacognitive abilities. The results showed that both methods were applicable for measuring the metacognitive awareness.

As a matter of fact, self-questionnaire is the most extensively used method to measure metacognition, whereby it allows the participants themselves to rate their metacognitive skills without researcher interference. Young and Fry (2008) assessed Schraw and Dennison's MAI to ascertain how its metacognitive rating associates to single tests and cumulative GPA as well as end course grades for college students within one semester. The findings revealed a positive significant correlation between the MAI and the overall academic performance. However, they were amazed to discover the insignificant correlation between the MAI scores and a single test of a course. According to their report, single test performance might be influenced by the affective behaviors of students over a particular course. Kesici *et. al.*, (2011) examined the difference of metacognitive awareness strategies in prediction of high school students' mathematics and geometry course achievements. Schraw and Dennison's MAI (1994) was also adapted in the study and discovered that declarative knowledge is a significant predictor of mathematics course achievement while evaluation and procedural knowledge of metacognitive awareness strategies are significant predictors of geometry course achievement. Ciascai and Lavinia (2011) employed the Junior Metacognitive Awareness Inventory to scrutinize the potential gender differences in metacognitive abilities among a group of eight grade pupils. Their statistical analysis indicated that the boys and girls adapted differently in their metacognitive knowledge and skills in the learning process.

However, subsequent research reports inconclusive findings regarding the differences in metacognition according to pupils' gender. Abdolhossini (2012) reported the effects of cognitive and meta-cognitive methods of teaching mathematics subject for high school students. The results showed that cognitive and meta-cognitive methods of teaching had positive effects on educational progress of male and female students. Nevertheless, no positive relation between the boys and girls average grade. Ayazgok and Aslan (2014) examined the science and mathematics university students' reflective thinking skills and level of metacognitive awareness according to age, gender and the level of class and found that there was no significance difference according to gender metacognitive awareness as well as reflective thinking. Thus, there are a variety of challenges related to metacognition investigation. For instance,

Bersley and Spero (2014) compared three groups of college students who received different instruction methods of the same course material. They revealed that the group receiving the direct infusion of critical thinking increased the students' knowledge of what they knew and did not know. In other word, the students' metacognitive awareness was stimulated through the act of intervening. Hoorfar and Taleb (2015) studied the correlation between mathematics anxiety and metacognitive knowledge for 323 seventh grade female students. Results showed that mathematics anxiety was negatively correlated with metacognitive knowledge. On the other hand, Bayat and Meamar (2016) investigated to what extend the algebra problem solving performance, metacognitive strategies and cognitive strategies served as predictors of mathematics achievements in a public university in Malaysia. The findings revealed the significant contribution of algebra problem solving performance and the overall metacognition to the mathematics achievement.

The purpose of the study is to trace the students' baseline in metacognition and access their successive levels of metacognitive awareness throughout their first semester in the FIE programme. Furthermore, the researcher would like to measure to what extent the metacognitive awareness served as a determining factor to students' overall academic performance.

Methodology

In this study, a quantitative method was used. The quantitative data helped to trace the students' baseline in metacognition and access their successive levels of metacognitive awareness throughout their second semester in the FIE programme. The researchers also examine to what extent the MAI scores served as a determining factor to the students' overall academic performance.

Participant

A 173 survey questions were distributed to the FIE students, out of which 75 were disqualified and 98 valid surveys were analyzed. About 23.5% of the survey participants were female and the rest were male (Figure 1), as this is the usual phenomena in any engineering department. Though gender is perceived to be a factor in the outcome of the MAI score, however prior report (Abdolhossini, 2012; Ayazgok & Aslan, 2014) revealed insignificant gender differences on metacognition abilities, thus in this present study the gender factor has been disregarded.

The programme consists of three semesters and the study was conducted when the participants were in their second semester. There were six modules offered in Semester 2 i.e. Calculus 1, Mathematical Techniques, Computer Method, Electricity and Magnetism A, Thermal Science A and Study Skills. Study Skills was delivered as a project based subject where the students worked in group to organize charity events such as marathon, blood donation drive, concert and etc. The aim of this module is to develop the students report writing skills and soft skills in order to prepare them for undergraduate studies and for future career.

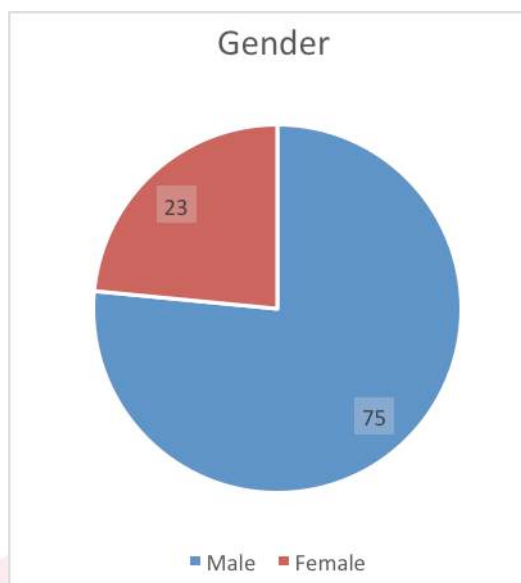


Figure 1: Gender Composition

Instruments

Schraw and Dennison's MAI (1994) was used in this study. In the MAI inventory, there are 17 items related to Knowledge of Cognition (declarative knowledge, procedural knowledge, conditional knowledge) and 35 items related to the Regulation of Cognition (planning, monitoring, evaluation, debugging strategies and information management strategies). The 52 items were measured by a 5-points Likert scale ranging from "strongly disagree" to "strongly agree". A list of abbreviations describing the metacognitive components of Knowledge of Cognition and Regulation of Cognition is exhibited in Table 1 while Figure 2 shows the composition of questions in percentage at each metacognitive component.

Table 1: List of abbreviations represents the metacognitive components of MAI

Abbreviation	Meaning
IMS	Information Management Strategies
DK	Declarative Knowledge
M	Monitoring
P	Planning
E	Evaluation
PK	Procedural Knowledge
CK	Conditional Knowledge
DS	Debugging Strategies

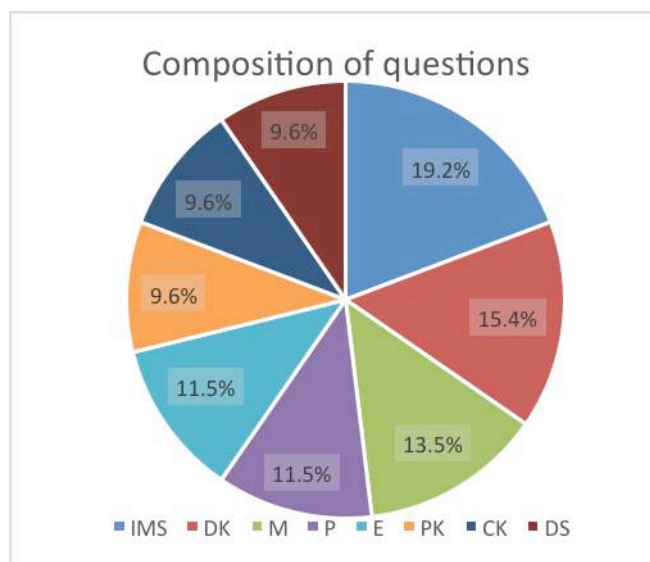


Figure 2: The percentage of items at each metacognitive component.

Procedure

The participants were given the survey on the 1st, 6th and 10th week of the Semester 2. An introduction about the study was presented to the students before the first survey was conducted. The participants were informed about the confidentiality of their responses and their participation was on a voluntary basis. During the second survey, the results of the first survey were reported to the participants and were explained briefly about their baseline in metacognitive skills. At the final survey, the students were given a brief statement about their metacognitive progression based on the second survey's results before they filled in the questionnaire.

Data Analysis

The quantitative data were analyzed using SPSS 15.0 to measure the descriptive status and distribution of the data set. In order to examine the significance of metacognitive awareness as an influential factor on students' academic performances, Spearman's Rho non-parametric correlation analysis was carried out.

Results and Discussions

Overall, there is a gradual increase in positive responses from Survey 1 up to Survey 3 (Figure 3), with a significant decrease in the Strongly Disagree sector.

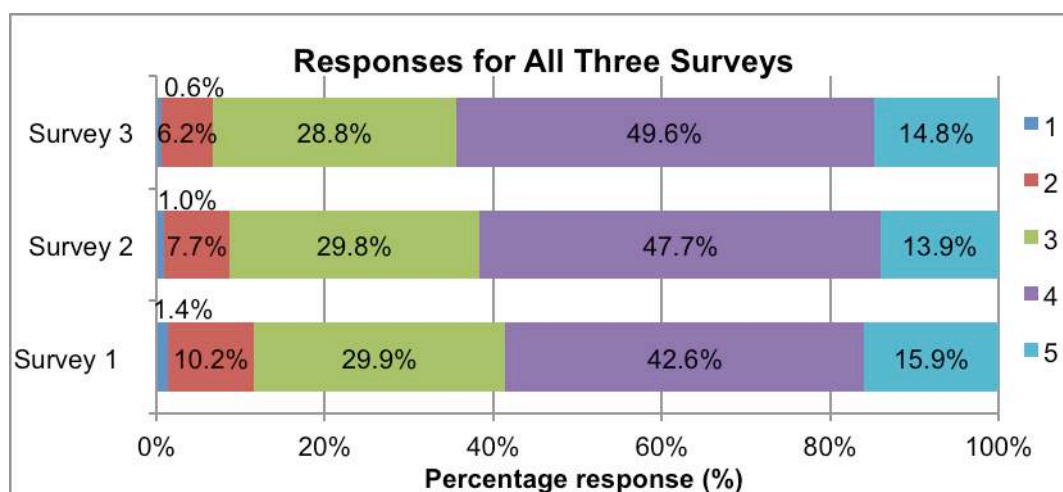


Figure 3: The distribution of the agreement and disagreement scales for the three conducted surveys

Note: 1=Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree and 5= Strongly Agree.

Though no intervention was carried out in this study, the positive response is perceived due to students' persistent exposure and awareness of the various skills in learning. The students were briefed about all the skills involved in metacognition during the three surveys. For instance, when Survey 2 was conducted, the students were given feedbacks on the overall MAI score in Survey 1 before they answered a series of questions reflecting their metacognitive awareness. Similarly, prior to Survey 3, feedbacks on Survey 2 were given with extensive explanations on the students' strengths and weaknesses. This could have initiated the students to recognize and reflect on their self-abilities and explore more on their untamed metacognitive skills during the whole semester.

In an in-depth study focusing on the Knowledge of Cognition and Regulation of Cognition, both sectors show a gradual increase in the mean score over the three Surveys conducted as shown in Table 2. As aforementioned, with three surveys conducted within a short duration (one semester), the students were constantly reminded of the learning skills available for them to explore to enhance their learning experience. This could have played a huge role with the positive outcome on both sectors of Knowledge and Regulation of Cognition. Metacognition is seen as a self-awareness ability, which the students are often not conscious about their knowledge and skills of the learning process (Kazemi & Ghorashi, 2012).

Table 2: Mean and standard deviation of the MAI score

		Mean and standard deviation					
		Survey 1		Survey 2		Survey 3	
Overall MAI score		3.62	± 0.350	3.66	± 0.322	3.72	± 0.340
Knowledge of Cognition		3.56	± 0.827	3.64	± 0.753	3.68	± 0.702
Regulation of Cognition		3.64	± 0.822	3.67	± 0.757	3.74	± 0.713

Responses Difference between the Surveys

Figure 4 compares the score for all the 8 components categorized in the MAI based on Agree, Neutral and Disagree division. Initially, the students revealed their strong awareness especially in their regulation abilities and their strength in debugging skills, which exhibited the highest. However, the ten weeks of teaching and learning sessions exposed the students to variety of activities that revamped their metacognitive knowledge and experiences. At the Knowledge of Cognition, the level of agreement on the subdivisions, such as declarative knowledge and conditional knowledge showed a continuous increment. However, the students’ opinion about their procedure knowledge decayed slightly after the second survey.

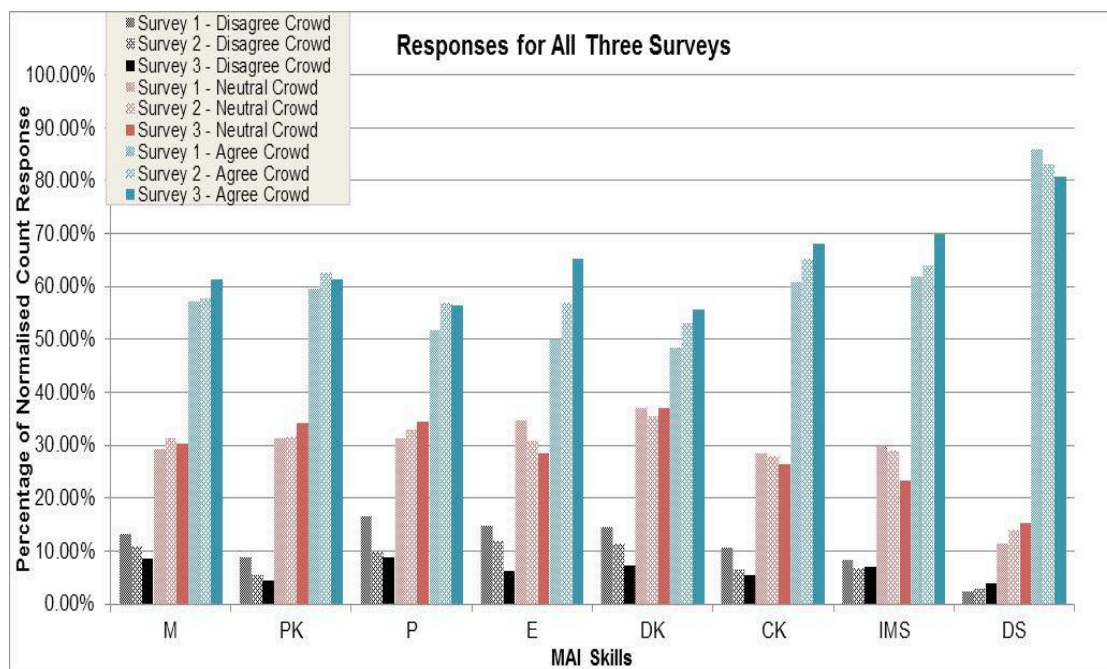


Figure 4: The breakdown of the responses of participants on the eight MAI skills based on three types of crowds (Agree, Neutral, and Disagree)

When it comes to the students’ metacognitive experiences (Regulation of Cognition), the students showed stronger strengths in their abilities such as management, evaluation and information management strategies. It is interesting to observe that the students’ awareness about their debugging skills was degrading over the three surveys.

The discouraging response for debugging skills could be due to the fact that initially (during Survey 1) the students were unfamiliar with the contents and depth of knowledge required from each module as well as the lecturer’s expectations. However, as the weeks of teaching and learning passes, the students began to realize the demands and challenges from each module and thus the low response in debugging skills. These would be especially felt in modules that require theoretical knowledge and applications (problem solving skills), such as Calculus 1 and Thermal Science A. Anxiety and low confidence has been found to be directly related to negative metacognition (Hoorfar & Taleb, 2015).

When responses between surveys were compared, more than 5% difference in the evaluation skills were observed between Survey 1 and 2 (Figure 5). In other word, the students showed higher positive responses when it comes to items such as “*I know how well I did once I finish a test*”, “*I summarized what I’ve learned after I finish*”, and “*I ask myself how well I accomplish my goals once I’m finished*”. On the other hand, the students’ disagreement responses in term of planning skills exhibited a difference of more than 5% between the two surveys. Some students seemed to be inferior in planning when they answered the items such as “*I pace myself while learning in order to have enough time*”, “*I think about what I really need to learn before I begin a task*”, “*I set specific goals before I begin a task*”, “*I ask myself questions about the material before I begin*”, “*I read instruction carefully before I begin a task*”, and “*I organize my time to best accomplish my goals*”.

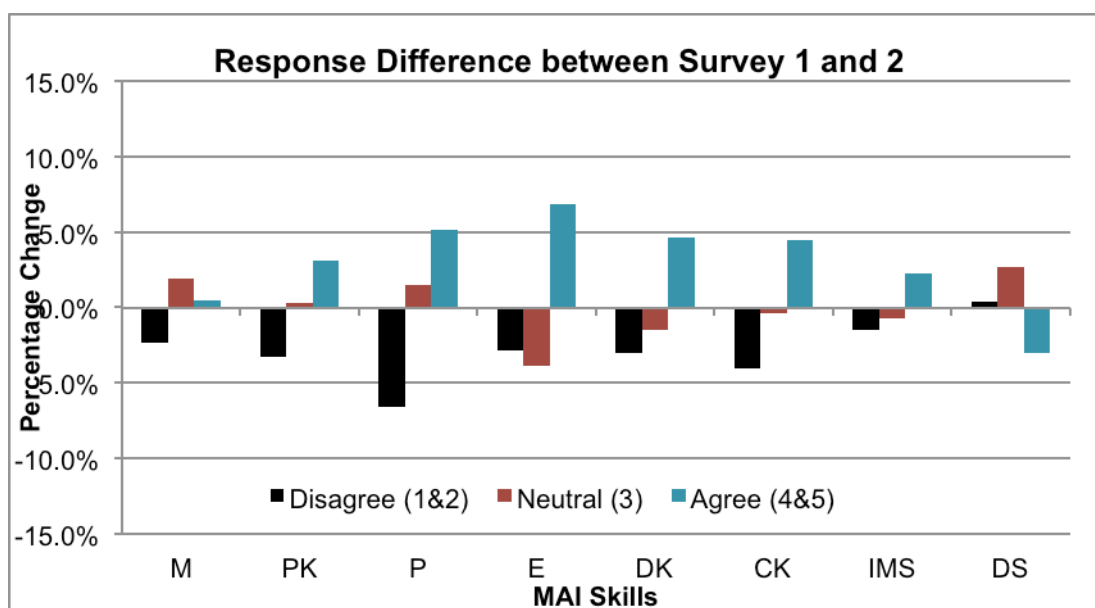


Figure 5: Differences in students’ responses between Survey 1 and Survey 2.

The students also showed a degrading response in debugging strategy after five weeks of teaching and learning session. The students seemed to be hesitant about their debugging strength when they responded to items such as “*I change strategies when I fail to understand*”, “*I reevaluate my assumptions when I get confused*”, “*I stop and go back over new information that is not clear*” and “*I stop and reread when I get confused*”.

After the third survey, the students’ responses in planning showed minimal differences i.e. less than 1% between the Survey 2 and 3 (Figure 6). However, many students focused on their strengths and weakness in their regulation skills especially on the monitoring, evaluation and information management skills. There were some students that felt their strength in evaluation was improved over the ten weeks of teaching and learning session. At the same time, some students were more aware of their information management skills and monitoring skills when they responded to the items such as “*I ask myself periodically if I am meeting my goals*”, “*I consider several alternatives to a problem before I answer*”, “*I slow down when I encounter important information*”, “*I consciously focus my attention on important information*” and etc.

Nevertheless, there was a tremendous drop in the students’ response for debugging strategy.

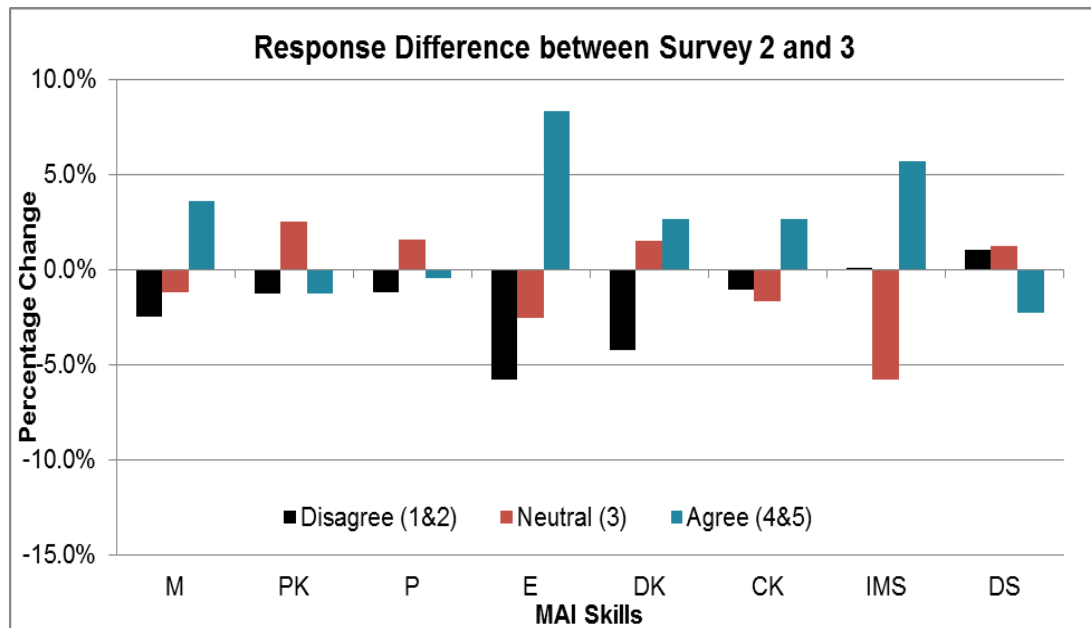


Figure 6: Differences in students’ responses between Survey 2 and Survey 3.

Obvious positive responses were seen for all the 8 MAI components except the deficiency in debugging strategy (Figure 7) over the ten weeks of teaching and learning session. As there are 6 modules taught for the semester, there is a wide spectrum of learning skills experienced by the students. For instance, the Study Skills module which is a project based that requires the students to organize a charity event focuses heavily on management proficiency, thus the acquisition of related skills such as monitoring, planning and evaluation.

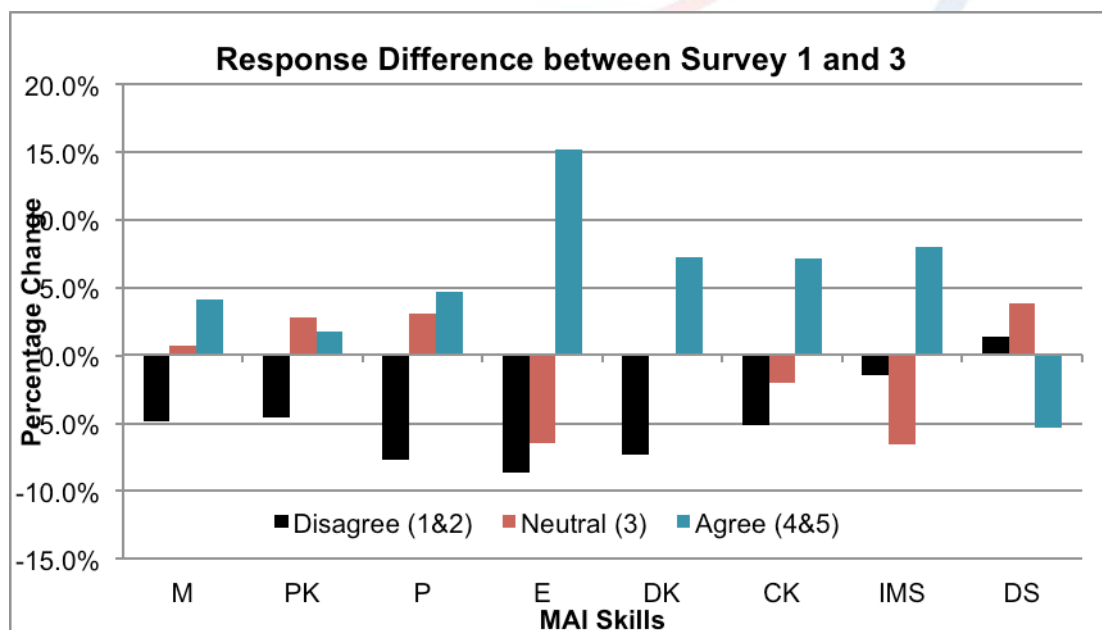


Figure 7: Differences in students’ responses between Survey 1 and Survey 3.

MAI Score and the Overall Academic Achievement

A Spearman's correlation was conducted to determine the relationship between the overall academic achievement and the MAI subscales. The MAI scores were based on the survey 3 where the students have completed their Semester 2 teaching and learning session. Findings from the analysis are summarized in Table 3.

Table 3: Correlations between MAI components' scores and the overall academic achievement

	Exam Result	Mean M	Mean PK	Mean P	Mean E	Mean DK	Mean CK	Mean IMS	Mean DS		
Spearman's rho	Exam Result	Correlation Coefficient	1.000	-.185	-.037	-.203*	-.054	-.013	.141	-.163	-.066
		Sig. (2-tailed)	.	.068	.717	.045	.595	.896	.167	.109	.520
		N	98	98	98	98	98	98	98	98	98

*. Correlation is significant at the 0.05 level (2-tailed).

According to the findings of the study, there is no significant correlation between the overall academic achievement and all the MAI components. However, there appears to be a weak correlation between planning and the overall academic achievement $r = -0.203$, $p < 0.05$. This could be mainly due to the fact that this study serves only as an awareness program rather than an intervention to the existing teaching and learning delivery system. In addition, the survey was conducted based on all the 6 modules in the semester, whereas a more focused survey on a particular module is presumed to have brought a significant correlation between MAI score and academic achievements. As previously reported, intervention or direct infusion and continual reinforcement are necessary to improve the metacognitive skills among students, especially for mathematics subjects and subjects that require problem solving or critical thinking (Kesici *et. al.*, 2011; Bensley & Spero, 2014). In this case, intervention would be necessary to improve the students' debugging skills along with the other seven MAI skills. In addition, a mixed methodology (protocol analysis and self-questionnaire) would be needed to validate and substantiate the measurements of metacognitive awareness (Kazemi & Ghoraishi, 2012).

Conclusion

Based on the findings, the aim of increasing awareness among the FIE students on their metacognitive skills has been achieved which will be a useful tool in learning efficiency, critical thinking and problem solving (Kesici *et. al.*, 2011). There was an obvious improvement in the eight tested metacognitive skills based on a preliminary (Survey 1), intermediate (Survey 2) and end of the semester (Survey 3) surveys, with exception to debugging skills. Nevertheless, there is no relation between the MAI score and the overall academic achievements of the students. Despite this limitation, the current study serves as an awareness program for the students and as a preliminary data for the lecturers. As a future study, intervention on a specific module will be carried out with great emphasis on improving the students debugging skills.

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Exchanging Knowledge and Building Communities via International Networking

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Abstract

This paper is linked to a doctoral study focusing on the impact of international networking and knowledge exchange on the professional identity of teachers. It explores the experiences of teachers from the Balkans working with colleagues in the UK. In this paper I first outline a conceptual framework which illuminates some of the challenges and rewards of constructing a professional identity within a professional community that crosses national boundaries. Previous studies have often portrayed professional relationships as being by definition unequal when involving nations in differing economic positions. However, these have not presented the entire picture. In fact the levels of self-efficacy and self-confidence amongst teachers engaged in such programmes from all nations can be very high. The paper explores the proposition that these teachers may not primarily be interested in transferring practice but may have a broader democratic agenda. This may reflect a self-perception as skilled professionals and societal leaders. They may also have valid reasons for participation in terms of their own professional growth. The data for this paper was drawn from interviews with three education professionals from the Balkan nations (specifically from Macedonia) who have been involved in working on and developing teacher leadership programmes in their own settings in connection with larger international programmes. The discussion of data includes an exploration of a series of interrelated themes derived from a concept framework, which is presented in the first half. These encompass a discussion of the extent to which these teachers share a common professional identity; whether this therefore constitutes a professional community and whether involvement in networking projects was significant in shaping their professional identity in other ways. Also discussed are issues and challenges related to the exchange of knowledge between teachers working in different cultural and economic contexts.

Keywords: democracy, teacher, leadership, professionalism, networks

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Introduction

At the ECER conference in 2014 in Porto I presented a paper titled ‘The impact on teacher identity of international connections’ (Underwood, 2014). In this paper I outlined a conceptual framework in terms of how identity may be constructed within a professional community especially one that crosses national boundaries. In it I also then discussed the data from three interviews with British teachers who had worked on projects with colleagues from other nations. These colleagues were all primarily involved in international work via the International Teacher Leadership project (Frost, 2011) connected to the HertsCam programme in the UK.

This second paper builds upon this paper that I presented in 2014. In the first part I shape a concept framework in which I look at the potential rewards and challenges faced by teachers from differing nations in terms of building a shared identity and of recognising a common professional community. I specifically present three themes, these are: a professional theme looking at the process of exchanging practice, a political theme of sharing democratic values and a personal theme of building a community with like-minded individuals. In the second part I discuss, in the context of this concept framework, three interviews with professionals working in education in the Balkan nations, specifically Macedonia, who have all been involved in international networking with teachers from the UK.

Part 1: A conceptual framework

In the paper that I referred to above (Underwood, 2014) I concluded by stating that for those teachers who seek and build professional communities that exist beyond the boundaries of their own workplace the process is a deeply rewarding experience. For these teachers the multitude of communities they belong to enables them to build fluid professional identities and to build self-efficacy. I also concluded that among all my interviewees there was considerable interest in talking to teachers from other nations about teaching. However, this was expressed in a more nuanced way than having an expectation that practice could be easily transferred. However, I did also note that as this community becomes broader the way this community defines itself becomes narrower. These teachers from the UK who perceived themselves as belonging to this global community of outward looking and innovative teachers tended to define themselves as having distinct values in comparison to those that they work with locally but who do not engage professionally with others outside their own workplace (Underwood, 2014). In the rest of this section I present three further concepts. I then use these to develop my discussion of the interview data in the second part.

Sharing practice

There is considerable debate among academic researchers over whether a search for transferable practice from the West among non-Western nations is a positive or even an achievable goal. A discourse has emerged expressed by a range of writers which questions whether Western teaching styles, which tend to emphasise child-centred teaching strategies and critical thinking are necessarily appropriate for non-Western cultures and even whether they are part of a broader post-colonial agenda (Steiner-Khamsi, 2004). According to this discourse Western teaching methods are often impractical and inappropriate for developing nations, where the political culture is

different and where simple issues such as class size and lack of resources present specific challenges (Bajaj, 2010; Osei, 2010).

This discourse however is not entirely dominant. There is also an argument that says that teachers and researchers from nations outside the West tend to seek transferable practice avidly and that they also do so in sophisticated ways appropriate for their context. Following from this, it can then be argued that, if this is a professional ambition of teachers and others working in education in terms of developing their own classrooms then therefore perhaps this should be welcomed rather than criticised (Chiriac et al., 2014).

Democratic debate

As alluded to above, there is an established history of non-Western nations seeking to import practice from the West. In relation to this there is also a long history in Western nations of the process of linking with and learning from the education systems of other nations being connected to highly idealistic goals regarding the building of a better society rather than improving classroom practice. Further context to the origin and nature of these idealistic rather than pragmatic goals of learning from other nations is given by Fujikane (2003) in an historical account of changes in the language of comparative studies. He writes about how the following terms dominated this field over successive decades within Europe, the US and the wealthier nations of the Far East: 'international understanding' in the 1950s, 'development education' with its implications of supporting poorer nations in the 1960s and 70s, and 'multi-cultural education' and 'peace education' up until today. He describes how all of these have an emphasis on societal change rather than on classroom practice alone, although changing classroom practice may be a part of this goal.

In contrast to this though and to some extent in opposition to these highly idealistic goals, within the West there has also been a long-running concern that international exchange or comparison, whether conducted by academics or teachers, seems ungrounded in the reality of the classroom. Brickman in 1954 at the first annual conference on Comparative Education wrote about the 'widespread feeling that the comparative study of foreign systems of education is decorative...of little value to the teacher.' (as cited in Brickman, 1977). These concerns have been echoed more recently by others including Chabbott and Elliott (2003), Baker and LeTendre (2005) and Steiner-Khamsi (2011). They specifically see much government support for the process of comparison as policy makers seeking around the world for justification for solutions that they already have in mind, especially in the context of political responses to large scale studies such as TIMSS and PISA.

Commonalities between teachers

In the paragraphs above I have presented two rival but interweaving debates regarding the process of international networking between teachers and other education professionals. However, there is a smaller but I think equally significant body of literature that focusses on the personal experiences of these professionals. This research looks at how the relationships that are built by international networking may be motivating and rewarding enough to be regarded as a valid reason for such projects, regardless of greater goals. The dominant discourse here suggests that

teachers will often find a high degree of commonality in the practice, experience and definitions of professional identity among colleagues from other nations. According to this account it is possible that one reason why some argue that relatively little practice is transferred between nations is simply that there is no more to import to or from the Far East, Finland, UK or indeed any other country, than there is from the school or even classroom next door (Manzon, 2007; Mason, 2007).

The writers who have framed this discourse also often stress that it is important not to assume that a school is representative of a nation or a nation representative of a region, (Bray, 2007). Instead they tend to focus on individual teachers emphasising that colleagues, that one may find oneself attuned to, may come from another nation or one's own locality. This could potentially become a reductionist perspective in which the lack of lessons to be learnt from national models could be taken to mean that facilitating international networking between teachers is meaningless. However, in this paper I argue that it could be that any way that teachers have of exploring and expanding the community that they belong to is potentially positive in terms of building self-efficacy and as a corollary such concrete goals of achieving better teacher retention or more successful schools.

Part 2: Themes emerging from these interviews

In the concept framework above I identified a series of common themes that have shaped debates around international networking and partnership between teachers and schools in recent decades. They are not exhaustive. However, they are sufficient for the purposes of this paper and I use them to structure the second section. In short the three areas of current debate presented are as follows:

- debates around sharing practice including a discourse that problematizes this and another that embraces it. Both of these can also be seen to be part of a broader neo-colonialist debate about the influence of Western ideas on other nations.
- debates around the role that international networking between teachers can play in terms of enabling democratic debate and also the potential limits of such lofty goals.
- debates around the personal rewards for teachers of engaging with professionals from other nations and also around whether such rewards are of enough significance to justify supporting networking processes in their own right.

The data that informs this second half of this paper was gained from three interviews with education professionals who had worked in schools in the Balkans. It should be noted that their professional experience is varied and therefore inhibits the ability to generalise. However, that is not the purpose of this paper, which has been written to generate discussion and is embedded within a larger research process, namely the writing of my doctoral thesis. A brief description of the professional role of each is as follows, names have been changed.

· *Jana* is an education professional working in a senior position in an NGO, she has worked in schools and has taught at secondary level. She has also lived and studied in both the USA and the UK. She has been involved in international networking through a variety of projects including those connected to the International Teacher Leadership Programme (the ITL programme). The ITL

programme supports a sophisticated network of teachers involved in school development through research projects into their own practice (Frost, 2014).

Anna is an experienced primary teacher working in Macedonia, who has also been involved in international networking through a variety of projects including those connected to the International Teacher Leadership Programme.

Simona is an experienced secondary teacher who taught in Macedonia but now teaches in an English state secondary school in North London. She has been engaged in international networking primarily through the British Council rather than the International Teacher Leadership programme.

Sharing practice

As regards the first theme of the challenges and benefits of attempting to share practice between nations in different economic circumstances; the debates presented in the section above were very much reflected in the responses that the interviewees gave.

There is certainly a perception among these Macedonian teachers that there are models of excellence within the UK education system. However, this was perceived by all three interviewees in a nuanced way. The only aspect of practice in the UK that was universally seen as distinct, positive and transferable was the methodology that shapes the teacher leadership project. This was unexpectedly most clearly affirmed by the two interviewees who had been involved in this project. However, similar comments were made by *Simona*. In this context it is worth noting that the teacher leadership project although highly developed and with a distinct ethos, is part of a wider academic discourse that has seen practitioner and action research increasingly becoming part of the mainstream. Even as regards this though it was recognised that developing such a culture in nations where it is not yet embedded takes time.

Anna spoke of her engagement with this project. Very much like the English teachers interviewed for the paper that I wrote for the ECER in 2014 (Underwood, 2014) she felt that her involvement made her distinct and part of a smaller community of innovative teachers. Again therefore a similar challenge was thrown up. By defining herself as part of a wider community of innovative teachers she simultaneously created alternative boundaries that excluded other teachers. These boundaries were defined by her perception of their approach to practice. This was a viewpoint also supported by comments made by *Jana*.

In terms of sharing classroom practice there was again a nuanced response. Both *Anna* and *Simona* had considerable confidence in their abilities as teachers and therefore whilst interested in the practice of UK colleagues did not expect there to be significant changes to their practice, that would be brought on by a dialogue with teachers working in English schools. This is not to say that they rejected dialogue, in fact they embraced it. However, they saw it primarily as a positive reflective process. *Simona* stated that her perception was that although there was some very good practice in the school that she worked at in London that there was also some of what she perceived to be weak practice. This included copying and rote learning, whilst she had also seen excellent practice in Macedonia. She also referred in her interview to her experience of the current political zeitgeist in the UK, of embracing teaching ideas that come from China and Singapore, whilst her former colleagues informed her of a

political discourse in Macedonia, whereby teachers were being directed to look for ideas from the UK. This illustrates the complex nature of the search for good practice in education in a partially globalised world. In Macedonia she felt Western methods were highly idealised, whereas in England she found that Far Eastern ones were. I use the term partially as it can be argued that education systems and teaching practices are still very much localised and that we idealise practices from other nations and portray them in deeply simplistic ways largely to justify changes emerging from local pressures.

Democratic debate

Whilst there was a large degree of commonality as regards the discussion above, in terms of this second theme differences were more wide ranging. Simona certainly saw all education exchange being about sharing in a democratic dialogue just as much as it was related to the process of teaching. Anna and Jana also saw a remit in building social cohesion but they too saw this as being closely linked to teaching, with both being an aspect of a common process. In Anna's case this was described as being linked to the entire process of classroom interaction, of building respectful and discursive relationships with children together and of teaching strategies that enabled the children's voice. This may reflect the fact that Anna teaches at the primary age range, where any political debate or discussion is more likely to be expressed in terms of being kind and caring citizens within a community rather than as big 'P' political discussion. However, it could equally reflect the different organisations both had worked with and the subtly different visions that these have. The ITL project embeds a political role more deeply within the teaching process, as is reflected by the central concept of the teacher as leader of change.

Although Simona was enthusiastic about the link between education and civil society she was also wary of Westernisation and of what could be defined as a neo-colonialist approach. She felt that while she had shown sensitivity when working with teachers from other nations, there was a risk that a set of supposedly 'British values' could be portrayed as a moral absolute, with the vehicle of an overly idealised education system used to promulgate this. In conclusion to this sub-section therefore it seems that teachers as with policy makers see the political process of building civil society as being intertwined with the process of teaching. However, fears of an unequal relationship are not limited to academic discussion and this area of international teacher relationships needs to be approached with sensitivity.

Personal engagement

All the interviewees viewed the experiences that they had had when engaging in international networking to be positive. Simona felt that she had built life-long friendships that had helped her to build resilience in terms of remaining in the teaching profession. They had affirmed her perception of her own professional status and thereby her sense of self-efficacy as a teacher. Meanwhile, Anna had not built long term personal relationships in the same way but had found short conferences when she had had the chance to meet other teachers deeply affirming and rewarding. She used strong and extremely positive language in describing these events. Jana was someone who had taught but whose main professional role now lay in facilitation. This gave her a distinct perspective. She saw the value of international working but

she also saw the value of more localised processes. This reflects the idea that was presented earlier, that there may be as much to learn from teachers in neighbouring schools as there is by crossing national boundaries. They all acknowledged that the process of working with teachers from other nations is positive in that this other audience of people, outside those from familiar professional contacts, can be significant in developing self-efficacy and a perception of belonging to a larger and valued professional community.

Conclusions

In the title of this paper I presented two potential goals that may be achieved by facilitating networking and dialogue between teachers from different nations, these are 'exchanging knowledge' and 'building communities'. I then presented a concept framework that linked these together under three themes of: sharing practice, democratic debate and personal engagement. In terms of the first of these 'sharing practice' it seems that via international networking, knowledge is exchanged in terms of know-how. Teachers are interested in learning from the practice of others and are open to interesting ideas for lessons. However, those teachers who take part in such programmes also tend to be a self-defining group of innovative teachers with high self-efficacy. Therefore their confidence in their own practice is high and their belief in their skills as teachers and lesson designers also noticeably strong. So although they are interested in practice, for them the greater goal is a reflective goal. This then links to the second of the three themes that I have presented: democratic debate. In all three cases they perceived themselves as having a political role but they expressed this in a nuanced way. They felt that their contribution to building a civic society happened implicitly through the processes of teaching. Finally, all saw the significance of both international networking, and local networking in terms of reinforcing their sense of belonging to a global professional community from which they took pride. This they used to build a positive professional identity. This links to the third theme of the importance of the relationships that are built by such processes.

In short it seems that for teachers in dialogue with teachers from other nations, the learning of know-how is important. However, by sharing practice with others who they do not commonly work with teachers also develop know-why, this is perhaps more significant in sustaining them throughout their career.

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A Study for the Elderly Assistive Device Design and Learning Assessment

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Abstract

In recent years, along with the process of economic growth and political democratization, concerns and needs of the rapid increase in social welfare. With the national fertility rate is declining, the average life expectancy increased year by year, the age structure of the population pyramid shape quickly tend to bowling pins. The transformation of society and the aging population will undoubtedly bring a considerable impact, associated research indicates that 17% of people already born with disabilities, and another 30 percent were caused by acquired, the older When the probability of resulting higher.

Through the power of technology assistive device can help elderly people lacking the ability to part, so that the elderly because of age are not physiological or psychological degradation of the problems brought to bring, young people living a normal life, reduce the formation of subjective incomplete physiological degradation caused by obstacles, but assistive device the design method for the assessment of not much, especially for the elderly person is part.

After finishing methods and research related to the design and use of assistive device to assess the present study, and then through the literature of consolidation after induction,, proposed addition to the most commonly used way assistive device the design and assessment of learning, with its elderly health, psychological and other characteristics, helping to meet the elderly when the user uses the product design and learning assistive device planning.

Keywords: elderly, assistive device design, evaluation

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Introduction

1. Research background and Motivation

The purpose of this research is to organize assistive devices the design and evaluation of the review of the literature and then through the rear, after collate, and then focus on the way it presented its related accessories with the design and assessment, of the elderly person can live more ancillary product design able to meet its users to use and meet their real needs, so the more of the motivation based on the following purposes;

- (1) To investigate the physiological characteristics of the elderly because of age and the changes arising from the psychological and social.
- (2) Discussion of different methods existing product design assessment of assistive devices.

2. Discussion of relevant literature

2.1 assistive devic

In short, assistive device that is to help people living in a variety of activities to complete tools to comply with a disability or impaired functioning individual needs. In general, the auxiliary equipment has two characteristics: the user can be compensated defects or loss of function; furthermore its use is life long. With these aids to help them play their biggest independent function at home, school, work or in society, and to play an appropriate role. Therefore, the use of assistive devices can help patients learn not only independent, on the other hand, may be appropriate to reduce the burden on caregivers. (Lu Yucheng, 2002)

2.1.1 Design Trends

In recent years, increasing emphasis on domestic elderly person with a disability and assistive devic to raise R & D, but still close to the main design (Accessible Design), and be adaptable design (Adaptable Design) address barriers to the handicapped and elderly person physically, the attention to social well-being of many advanced countries, assistive devic R & D needs to pay attention to universal design universal Design concept.

Aassistive devic product has a small variety of properties, profit considerations for manufacturers, the market is not easy to achieve economies of scale in product development, and if the appropriate application of Universal Design concept, the product will meet the needs of more than 80% of adults (Guo Lian, 1992)

2. 3. Related physiological and psychological characteristics of the elderly

2. 3.1. Age influence on physiology of the elderly

With age, will have on the degradation function, and this study will be divided into three characteristic physiological and psychological and physical in and so do the explanation and discussion; as shown in Figure 2-1.

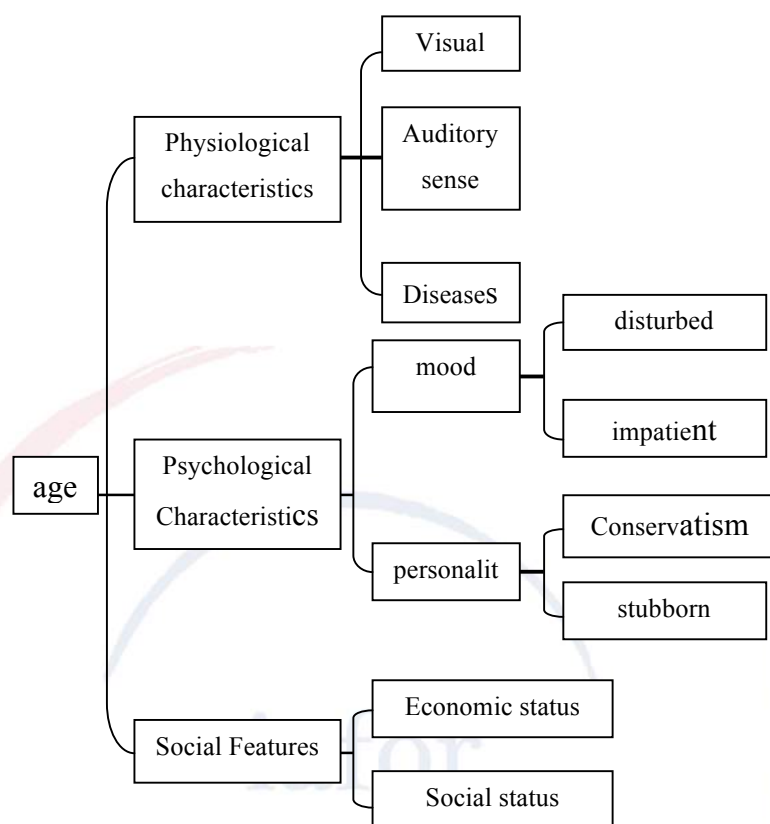


Figure 2-1 elderly person related to physical and psychological characteristics of the body diagram

(1) Visual

Pyykko (1990) found that visual information input elderly, providing 50 percent of posture stability. The elderly on the accuracy of visual contrast sensitivity, spatial sensitivity and resilience of darkness, obviously lower than the young (Pitts,1982; Carter,1982;Duncan,1993;Lord,1994)

Decline in visual function, ability to identify and detect older environments and visual positioning of obstacles will be reduced. For visual impact of the balance in advance to detect obstacles, which led to a series of subsequent reaction constitutes a significant role, and therefore in many sensory systems, the elderly are less dependent on the visual system (Winter, 1991)

(2) Proprioception

Proprioception is conscious and non-conscious awareness of body posture, position and movement direction. He feels the need to integrate peripheral receptacle of information, Skinner (1984) found that elderly knee and plantar knuckles reset Accuracy, namely the ability to detect motion significantly less than young people. Michael (1998) also pointed out that the test reset the elderly knee joint position sense (Joint position sense) was significantly worse than young people. Lord (1994) test vibration sense ankle and knee touch older than the young poor.

(3) Vestibular

Vestibule and three semicircular canals of the inner ear can detect the position of the head relative to the body, to play an important role in stabilizing the head. (Skinner 1984).

Studies have shown that patients with unilateral vestibular damage 18-85 years old, it is difficult to maintain a balance in the visual frame and load plate shaking tests. (Pozzo, 1990). Another study also found that vertical write vestibular tests, its decline will affect the elderly gait. (Black, 1989).

(4) Musculoskeletal System

Muscle function not only generate power and move, also received one of the sense organs proprioceptive messages. Muscle mass and strength from start to slowly decline after the age of 25, to 50 years of age about 10% reduction in muscle strength, to 80 years of age on the left half of the muscle. (Lexell 1988)

(5) Central Nervous System

The peripheral nervous system plays a high-level integration of information coming from the feeling and action commands issued. If this system is damaged, cognitive, behavioral and reaction both bedamaged.

Studies have shown that the elderly receiving stimulation to muscle action in the middle of the reaction time increased the phenomenon (Duncam, 1993; Lord, 1994). Patla (1993) and Chen (1996), who studied the elderly face obstacles when walking reactions and regulatory mechanisms, found that there is different from the young people, it is generally required longer reaction times.

Seen from the above literature, balance and posture control response mechanisms different from the elderly generally young and feeling - motor function is also worse than the young, but the effect of age on the balance control has many levels.

"Elderly person" because many physiological functions of attenuation, it is also gradually appeared on the body of many diseases, such as heart disease, hypertension, Alzheimer's disease, Basson Kim, depression and so on.

a. resulting in restrictions on physical
As the level of the ladder, is set escalators or elevators, pedestrian semaphore whether longer effective green time. Such as hypertension and heart disease and diabetes.

b. bone disease

Such patients because of bone lesions, and makes elderly people in the use of transportation facilities will be limited. Such as arthritis and gout and osteoporosis.
c. out of control: including elderly dementia and Parkinson's disease.

2.3.2 Psychological characteristics of elderly person

Personality of elderly person, usually widely quoted Cavan (1949) data, the following points; (1) Health and economic unrest; (2) a life not fully meet the anxiety caused; (3) In the spirit of loneliness caused due to a reduction of Interest; and (4) increasing physical comfort of interest; (5) decreased activity; (6) decreased sex drive; (7) to learn and adapt to new situations have difficulties; (8) a person feel lonely alone; (9) Heart suspicion, jealousy increased; (10) becomes a conservative; (11) chatter, whiny; (12) Total good recollection of events; (13) stubborn temperament ; (14) does not trimming rich, sloppy; (15) likes to collect junk.

Uneasy on health and the economy, as well as not fully adapted to life caused by anxiety, loneliness due to reduced interest in the spirit of the scope and cause of increased interest for physical comfort, mobility impairment, to new situations have difficulty learning and adaptation, became a conservative and stubborn temperament, etc., but the phenomenon which caused psychological factors as described as follows: (1) on anxiety (2) on the impatience (3) become a conservative personality (4) becomes stubborn personality.

2.3.2.1 Quality of life assessment of the way the elderly

In terms of psychological perspective (psychological perspective) cut, objective indicators of a healthy ESR situation, living conditions and other factors; subjective experience, there are indicators of self-concept (self concept), self-esteem (self-esteem), life satisfaction (life satisfaction), the control sense (sense of control), psychological well-satisfaction (psychological well-being), morale (morale) and the like. (Baltes & Baltes, 1990; Coleman, 1999; Ryff, 1989a; 1989b).

Many studies explore the lives of older persons based on adaptation, and Rudinger and Thomae of longitudinal research results: the satisfaction of psychological well-being, life satisfaction and other subjective perception the elderly evaluation, compared to health status, socio-economic status and other survey data and more help us to effectively explain and predict the behavior of the elderly and emotions. This index shows that subjective experience more predictable than the objective indicators of quality of life of the elderly.

2.3.3 Relations with the elderly person's physical activity

Exercise on physical and mental health of the elderly Pynn, in psychological terms, King, Taylor, and Haskell(1993) research suggests that the experimental group consciously low from stress and anxiety than the control group sports training.

American College of Sports Medicine (1998) report notes that regular exercise can prevent and reduce injury; has been confirmed in epidemiological studies, engage in physical activity can reduce cardiovascular disease (Wilmore & Cositll, 1999; Paffenbarger et al, 1986. ; Pate et al, 1995;. Berlin & Colditz, 1990). Chia instrument (2002) study found that the elderly physical activity and perceived health status was positively correlated negatively correlated with age, namely the elderly physical

activity level and perceived health is closely related to the quality, age and physical activity are closely related. Fuli Lan (2001) survey found that physical activity score and the elderly suffering from several diseases negatively correlated.

2.3.4 Elderly Social Characteristics

The aging is a biological process of the objective laws of life, biological whole body morphology, structure and function of the decline is a gradual, relatively slow process, for a man, this feeling is not self-evident. But in the off (back) Hugh, their respective environment, conditions have played a full range of change in the social status of the first performance of a downward trend.

A. Economic Status

(1) reduction in income (2) an increase in expenditure

B. Social status

Because older people facing physical or economic recession, not like the relatively young with others close to "fair" type of interaction, it will get less support. Both of them are likely to reduce the phenomenon of social support the elderly (Ren Xiao Zhao, Lin Yaosheng, Zheng Yi, such as translation, Min 86). Social support is particularly important for the elderly.

2.4 Universal Design

Universal Design concept put forward, can be traced back to the latter half of the period in 1970, Ron Mace, director of North Carolina State University Accessible Housing Center presented "Universal Design" term, 1998 The Center for Universal Design further amended to "in within the maximum extent possible, regardless of gender, age and ability, and easy to use for everyone's environment or product design.

The seven principles of universal design is currently the most commonly used definitions have been proposed and, by ten advocates edited to December 7, 1995 announcement of version 1.1, within as described below:

(1) .Equitable Use: do not use a particular ethnic group and distinguish objects, to provide a consistent and equal significance.(2).Flexibility in Use:with accommodation of use, such as providing a variety of use, consider the right hand of the user, depending on the person using the speed adjustment and other operations. (3) Simple and Intuitive Use: straightforward design, regardless of the user's experience, knowledge, etc., can easily get started operation. (4) Perceptible Information: provide a visible or can feel the message, giving the user the appropriate response. (5) Tolerance for Error: allowable error design considerations, in order to reduce the risk of errors caused by the use. (6) Low Physical Error: allow users to easily operate and use, do not spend too much effort or skill. (7) Size and Space for Approach Use: planning appropriate scale and space, so that different user activity in space.

2.4.1 Universal design assessment model

Try universal design concept will have the ability to defect to be integrated with the normal users of various properties both sides to find a mutually acceptable to the intersection, and then design the two sides of the product or device is suitable for. In general, the assessment of the concept of universal design is to have the ability to investigate defects and general users who demand both sides of the original product. (Li Cong, 2001)

2.5 Comfort Discussion

On the "comfort level" to make a basic induction Description:

1. Comfort is a subjective feeling, which may be due to the different length of time, the object or action and have a different feeling reaction.
2. The so-called comfort is the feeling of physical and psychological experience. Review of the amount of comfort, often need to measure the physiological basis to infer subjective experience of.

Basic measuring and evaluation method of comfort (Shackel,1969) sorted out the four basic assessment method to measure the degree of comfort as follows:

(1) anatomy and physiology of the way:

Some are physiological factors on the human body as a comfort index assessment, research methods more commonly used disc containing research, EMG muscle mass measurement, the flow of blood pressure research other methods. This is the comfort of the most important indicators of assessment.

(2) The body posture and movement of the observation:

Mainly record human body movements and observation of posture, to evaluate the relationship between the comfort of the seats gives.

(3) Work performance of the observ -ation:

Observation of users at different work chair, in a period of time, the performance of its work to assess the amount of seat comfort.

(4) Subjective methods:

That method is the use of subjective rating scale to do against the subject's subjective description, and the use of statistical analysis to do finishing evaluated to expect an objective of statistical data.

In many comfort studies, often several cozy metric measuring method to do with the application, the desired physiological response and psychological feeling of doing a

better explanation, such as Buckle P. and Fernandes (1996) is the amount of pressure applied measuring instruments and subjective rating scale 10, the comfort of the mattress material to do the assessment; comfort Chen dao Yuan (1999) Assessment bike is also physiological reaction pressure and vibration of each other and subjective comfort scale applications. Similar with the application of such methods, the reaction may be physiological fatigue and discomfort psychological connection between the do, more in keeping with Lueder (1983) referred to: evaluate the comfort, the need to measure the physiological basis for objective and subjective assessment of inference to the comfort

2.6 Usability and usability engineering assessment

2.6.1 Define the use of:

For a system, if properly and efficiently help users to complete the job they want done, while allowing the user to have a positive and enjoyable user experience and are happy to use the system, which is the use of the definition. Whereby the definition can know, with high use of a user interface must have efficiency, effectiveness. (Andre W. Kushniruk, 1996)

2.6.2 Usability engineering:

That is the way some of the methods used to assess the use of the system, in which the observational assessment method is most common. Implementing this method comprising the steps: First, record a video, or an automated way to capture the user performs "reference job" performance and operating conditions. Next, in order to investigate or interview marking the way to collect comments or data on the user. Finally, so use the data collected from engineering analysis and discussion. Jakob Nielsen's ease of use of the project (discount usability engineering), the main steps of (1) user work observation (2) situation analysis (3) simplified thinking.

2.6.3 Use the engineering steps:

(1) Situational Analysis (2) Typical work and step (3) user and job analysis (4) heuristic evaluation (5) recommendations

Conclusion and Suggestion

In this study, the following is from the "Taiwan Boshuo paper News" to assistive device, design, evaluation, the elderly (the elderly) and the use and comfort archive search keywords such as finishing their studies in the following table.

Table 3-1 assistive device design and evaluation studies

Researcher	Thesis Title	Abstract	School / Department
TSAI, SHENG-PING	Carbon fiber is added to the biomechanical function of the foot assistive device assessment	In this study, patients with amputation of the foot part, use the shoe pad measuring system and finite element analysis, to explore different assistive device when changing material combinations and add carbon fiber plate in the sole change to the patient's foot biomechanics.	Jhong Yuan University Institute / Medical Engineering

WANG JIANJHANG	Foot section Foot amputees and biomechanics of assistive device material evaluation	In this study, amputees wearing assistive device front foot to experiment and finite element analysis, and the existing assistive device material analysis processes do establish.	Jhong Yuan University Institute / Medical Engineering
HUANG, YUAN-HAN	Computer assistive device to simplify the selection and evaluation of the decision tree logic Jhong Yuan	This study will simplify input device sub-tree, and the tree is divided into sub "click input device" and "text, numeric input device" two sub-tree, the three mutually exclusive categories for the independent assessment process to improve each other, to comply with a disability of assistive device needs. Followed by nine disabilities obstacle characteristics of the test tree for the main case to seek appropriate assistive device.	National Taiwan University of Science and Technology / Industrial Management
LI, JIAN- CONG	Universal design evaluation and application of assistive device - Take sanitary system of care facilities in Taiwan.	In this study, sanitary system case care facilities of an example, the generic design assessment and evaluation results recommendations.	National Yunlin University of Science and Technology / Industrial Design Master Class
JHU, JIA- WEI	Biomechanical assessment of functional foot assistive device	In this study, using the finite element method to perform stress analysis between the foot and assistive device. Research based on the CT image slice foot and with this study, as well as foot ligaments dimensional finite element model of assistive device with three-dimensional model for analysis of stress neutral plantar pressure distribution.	Department of Chung Yuan Christian University / Medical Engineering
LIU, CIAN-SIOU	Moderate to severe cerebral palsy put special sitting position to assess the efficacy of supporting assistive device	In this study, biomechanics, neuromuscular control theory, human factors engineering and rehabilitation engineering among technology in medical rehabilitation assistive technology field, select the six main cerebral palsy patients with a single object the experimental design, with repeat clinical evaluation, muscle Telecommunications No measurement and assessment of upper limb function, discuss with moderate to severe cerebral palsy using a special wheelchair with individualized support positioning assistive device specific therapeutic effect of the treatment and rehabilitation.	National Cheng Kung University Institute / Medical Engineering

Table 3-2 assistive device design and development

CIU, CHUN- CIH	Planning and development of clinical indexable assistive devices	In this study, through fieldwork observation, to understand the nursing work environment, job characteristics required to use assistive devices; and by interviews and questionnaires distributed to caregivers understand the inconvenience during translocation generated, and understand the use of design missing indexable assistive device encountered and needs. The demand for the import QFD technology to effectively convert the users' needs in the new product development process, and the conversion results on demand to design demand for new products and explore the elaboration of a strategy to improve the design and lack of recommendations.	Nan Tai University of Science and Technology / Industrial Management Institute
JHANG,	Science and techno	In this study, observation and interviews to	Nan Tai

JHIIH-CHUN	logy of the product planning assistive devices - remote transitional wheelchair carrier Case	explore the needs of users in the use, and the use of quality function deployment method to convert user requirements into engineering parameters to determine the quality requirements demand weights, determined to analyze the level of procedural law, and the use of failure mode and effects analysis as QFD reserved bottleneck technology to design and develop a transitional assistive device comply with physical disabilities who operate it.	University of Science and Technology / Industrial Management Institute
CHEN, JHIIH-HAO	Wrist and elbow rehabilitation, assistive devices of mechanism design	The present study is to present the relevant patent wrist and elbow rehabilitation of the exerciser, analyze and compare, understand its design focus, the action principle, advantages and disadvantages; at the same time, through the expertise of rehabilitation doctors, as this design agencies required conditions, enabling them ergonomic hand movements.	National Taipei University of Technology / Manufacturing Technology Institute
CHEN, SHIH-JIANG	Application of QFD method in product development and research of medical assistive device a manual wheelchair Case	The main purpose of this study is to apply QFD design study investigated the manual wheelchair, get customer needs through surveys, product user's point of view, introducing QFD method, via QFD matrix to analyze, compare, judged after development of new methods to PDPC wheelchair concept design, design development to solve the inconvenience of users of the new wheelchair.	Nan Tai University of Science and Technology / Industrial Management Institute
HUANG, CHAO-CYUN	Development of disabilities assistive devices	This paper, we propose a new method that combines Kohonen self-organizing feature map network (SOM), and a pattern matching method to be applied to identify the word phonetically.	National Central University / Information Engineering Institute
LI, GUO-RONG	Science and technology assistive device development fall detection and alarm device.	The objective of this study is to test by simulation of experiments to develop a fall detection - alarm; the elderly or persons with disabilities to wear it once fall disaster occurs, can automatically signal the close of the person for the first time take the necessary actions in the hope that the future can be integrated with other biomedical signals to complete the physiological detection of fall prevention - early warning notification system.	Machinery Research Institute of Tsinghua University
HUANG, HAI	Dismemberment by the assistive device developed.	In this paper, especially for hand dysfunction designed an alternative input of the computer system that can be used as a keyboard in addition to the use of outside, and immediately switched to mouse function; In addition, users can also be learned from the LED display device the key to type the information. The experiment proved that this system can really meet the needs of the impaired hand function.	Tamkang University Department of Electrical Engineering
CIOU, YU-SIAN	Bit digital mobile assistive device controller design and testing.	The purpose of this research: application of mechanical and electrical integration, digital micro-processing technology and handicapped functional considerations, research and development of digital electric wheelchair / scooter controllers, in order to improve the traditional analogical low efficiency and functional shortcomings, enhance compliance with personal disability function rehabilitation needs of science	Institute of Medical Engineering, National Cheng Kung University

		and technology and assistive devic.	
SU, YU-REN	Stroke patients with lower limb assistive device design.	The main purpose of this study was to develop a suitable stroke patients rehabilitation assistive devic, hoping that stroke patients recover the ability to walk, to make daily life more convenient, and by daily walking exercise to maintain good health.	Tamkang University Department of Electrical Engineering
SIE, YUE-YUN	Diabetic patients with foot finite element contact stress analysis of assistive devic	The purpose of this study is to analyze the finite element method for reducing Keys plantar plates of the required plantar pressure in patients with diabetes, analyzing Keys plantar plate with treatment with plantar pressure distribution junction ask situation.	Chung Yuan Christian University Department of Biomedical Engineering

Cook and Hussey(2002) proposes supporting science and technology evaluation process, from understanding the needs of the case, assessment of the case action, cognition, after feeling, language ability, select assistive devic be trained. Anson (1997) in the flowchart of way to guide the therapist select the appropriate computer assistive devic. Kollodge (1997) proposed to use the principle of a disability assessment of computer assistive devic include consideration of computer keyboard, mouse, screen, control portion (control site), input methods, and provide individual assistive devic description of the nature and possible user. These are different ways to assess assistive devic Design.

From the above study of literature in many assistive devic assessment methods can be found in different assistive devic category has its commonly used assessment methods, each one assistive devic also difficult to simultaneously achieve its assessment of the requirements of each, so working in different When assistive devic must be on the characteristics and needs of their assistive devic needed to finalize its assessment of the way, and this research hopes to sort out especially for elderly people whose elderly person's health, psychological and other relevant characteristics so as to provide the induction of the elderly One of those assistive Resources devic design.

Because elderly person lifting age makes it students, psychological characteristics have changed. However, its physiological characteristics of the visual, auditory, disease (aging) resulted in the ability to pay attention, responsiveness, reduce operational capability; and anxiety on psychological features, irritable and personality conservative, stubborn cause a decline in the ability to adapt and response capacity . However, due to their ability to pay attention, responsiveness, operational capacity, reduced ability to adapt, it is caused by the elderly person shown by the behavior of its unique characteristics, including its non-responders (error) and action can not fit, etc. Also due to changes in the social characteristics of the elderly, making it economic status, social status decline, so elderly person's ability to fall and cause them to choose self-esteem, so the resulting behavioral characteristics of elderly person chosen for psychological and physiological action of thinking are often not very cooperation; and from the demand characteristics of elderly person's life that, assistive devic design characteristics of their elderly person in addition to its own products for the user's convenience and comfort for its use to be outside more psychological satisfaction with the dignity of the individual to do the thinking, its elderly as long as the person is not only convenient to use, the more we have to pay attention to product design in general when less attention to the psychological level, reducing loneliness add a personal ability to control the environment and to improve

the product satisfies the soul, rather than the pursuit of an unobservant its a quantity of comfort and convenience operability.

So far there are many assistive device design and evaluation are based on an objective and quantitative assessment to do as a way of aging product evaluation, but with respect to the relevant information can be seen in this study to assess the needs of the elderly products, but should the assessment is to be subjective or objective indicators indicators to replace more in keeping with evaluators after elderly person really needed to know, and thus further increase the use of a spiritual fulfillment and dignity recognized when ownership and participation, so that the elderly are willing to use assistive devic various activities, thereby improving the quality of life and the body's movement ability, so that it can help elderly people actively participate in social activities with the help of the required personal life, so in order to really assistive devic spirit of play, but alsoIt is the focus of this study.

Therefore, this study was collected by literature investigate the analysis and induction and other elderly person's psychological and physiological characteristics, and explore the related research needed to enable them to provide senior citizens closer to the user of the relevant information needed to learn about the elderly person's , thereby avoiding the pursuit of technology to improve a unobservant but ignored the basic characteristics of the user, so the value and significance of this research, especially inquiry.

The logo for 'iafor' is centered on the page. It consists of the lowercase letters 'iafor' in a light blue, sans-serif font. The text is surrounded by a large, faint, circular graphic element composed of several overlapping, curved lines in shades of blue and red, creating a sense of motion or a globe.

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Curriculum Leadership Practices of Administrators in Ateneo De Manila University

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Abstract

The purpose of this research were to understand the curriculum leadership practices of administrators in Ateneo De Manila University, Philippines by which there actual leadership practices were observed and analyzed. This is based on the interview gathered, pertinent curriculum data reviewed and actual curriculum transactions of the respondents. The research is a qualitative case study. The Interviews were conducted face to face, and then transcribed. The findings from this study describe practices used for actual administration of a university in its curriculum related developments. Administrators recognize that their curriculum leadership practices would help them establish curriculum patterns related endeavors of the university especially in the review of the university core- curriculum. As administrators continue to face challenges associated with providing adequate curriculum leadership practices for future curriculum leaders, building capacities with teaching and administrative curriculum leaders are recommended, so that a continuum of curriculum leadership supports could be provided to meet the diverse curricular needs of the university. Given the complexity of curriculum leadership practices, identification of a singular comprehensive analysis of actual leadership practices is not reasonable but should be done in a variety of ways and methods.

Keywords: Curriculum, Core Curriculum

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Introduction

This modern time is characterized by different changes and demands that administrators are to become leaders of continuous curriculum development. This constant reviewing of the curriculum in the changing society is important to education today and its future for the students and the community it belongs to.

The primary concern of administrators as educational program leaders is no longer what is used to be that of overwhelming institutional problems and generating support for and assistance with instructional improvement. It should be concerned with how to get the faculty, staff and the community to change and to influence the direction of leadership change. The current pressures, demands and issues in Philippine education system like the K to 12 educational reforms is more complex than in many other countries. Today, all schools are under the jurisdiction of the government that advocates the educational concepts of democracy. The administrator's effective leadership is a key that opens the said kind of working atmosphere. What our teachers teach, and what our students learn is heavily influenced by the school administrators' curriculum leadership practices.

Methodology

This study is a qualitative approach. In general, qualitative research methods are especially useful in discovering the meaning that people give to events they experience (Bogdan & Biklen, 2003; Denzin & Lincoln, 2000). The purpose of this study was to discover the meaning that administrators give to the their collection, analysis and use of curriculum related data to improve the overall curriculum standards of the school.

For the current study, I explored participants' experiences by asking the following *what* questions: (a) To what extent do administrators have access to curriculum related data that inform their decisions on how to improve the over all curriculum success of the school? (b) To what extent do administrators use curriculum data to improve success in school? (c) What do administrators perceive it would take to enhance the effectiveness of their current efforts to improve the curriculum standards of the school?

Qualitative research methods used in this study included: purposive sampling, semi-structured interviews, and systematic and concurrent data collection and data analysis procedures. This study, based in the constructivist paradigm, used a case study approach to explain the curriculum leadership practices of administrators' perceptions and experiences with understanding curriculum as an important component of the overall leadership framework of managing the university. This chapter describes the research paradigm, approach, and design used to achieve the purpose of the study.

A qualitative approach is most appropriate for this study because it fosters a better understanding of the curriculum leadership experiences of the participants (administrators) and their own understandings of how they collect, navigate, and work with curriculum related matters. This study allows participants the opportunity to articulate the ways they collect and analyze the university curriculum as to its processes and future. The use of rich, critical description provides in-depth, detailed

accounts of the participants' experiences. The essential elements of a qualitative research process are generally defined as including epistemology, a theoretical perspective, and methodology (Crotty, 1998). This chapter defines and discusses each of these components in relation to this study.

Research Findings

The results of this qualitative semi-structured research dealt on the curriculum leadership practices of administrators. Through this section, the results are important, to look into the curriculum leadership practices of administrators in Ateneo De Manila University. Relevant themes regarding the problem are presented followed by narrative discussion.

Theme# 1 – Curriculum Profile defined as Curriculum leaders will have an understanding of the university core curriculum processes (standards, essential skills, and essential knowledge) as he/she transitions from one leadership role as a teacher and administrator.

The Administrators as key curriculum leaders can sympathize with the frustration like what athletes feel when their coaches call play after play but never manage to call the play that will help the athletes get the ball into the end zone. Likewise, administrators as curriculum leaders often are expected to make reform efforts work after the important decisions are made by curriculum “experts.” But it seems with the vast years of curriculum exposure to the university they have been molded to become experts.

An Institution's curriculum development transcends beyond curriculum leadership practices of their leaders. This is not to say that curriculum background as to educational degree are not essential to an administrator's success toward Curriculum Leadership practices, but it contributes easier in understanding the processes and procedures of curriculum. Administrators as Curriculum Leaders does not need to be curriculum experts, but they do need to lead their schools with full knowledge of the university Core Curriculum processes, the new assessments tied to those standards, and the rigor embedded in both as presented by the three respondents.

Theme # 2 – Curriculum defined as the concept of Curriculum is dynamic as to the experiences and changes that occur in a university, its narrow-sense, it is viewed as a listing of courses to be taught. In a broader sense, it refers to the total learning experiences of a person not only in schools but in society as well.

This definition of curriculum leads us to view that discipline and influence of a university defines the meaning of a curriculum. This is evident in the Ateneo de Manila University educational system as made mentioned the respondent: “That is why the origin of the Jesuit curriculum from the Ratio Studiorum, a document that was created for the need to have a system of education. This document was fundamental in giving structure to the Jesuits and making their educational system, as a system, possibly the greatest in the history of the world. Its colleges, universities, and high schools spread throughout the world. The document is not a theoretical treatise on education; it is a practical code for establishing and conducting schools. It sets up the framework, gives statements of the educational aims and definitive

arrangements of classes, schedules, and syllabi, with detailed attention to pedagogical methods and, critically, the formation of teachers. It is a plan of studies and a structured plan that determines what will be taught, when and how will it be taught". Curriculum has been defined as chunks of knowledge and competencies called the core as it includes Humanities, Sciences, Languages and many more.

Theme # 3 – Leadership defined as the focusing both on what is being learned (the curriculum) and how it is taught (the instruction). Being the administrator, one is responsible for making sure that the university has a quality curriculum and that it is implemented effectively.

Respondent put emphasis: "Setting things right and preparing the school to make sure it is ready to move forward and definitely a lot more than just management". Leadership is seen as the balancing of the present and future curriculum endeavors as mentioned by their current underpinning of the curricular changes brought about by the K to 12 educational reforms and the Association of South East Asian Nation (ASEAN) 2015 integration. Leadership in the minds of the administrators means the shaping of the values and standards of the university.

Theme # 4 – Leadership Style defined as the ways and methods through which a person influences his or her subordinates as well as followers. It is also the way a person represents a style for his being a curriculum leader.

Empowering leadership has very high values for individuals and their opinions. That's why they encourage critical thinking and in turn get blessed with highly innovative, motivated followers. They understand that they are most effective when their followers are the most empowered. This way their goal becomes finding the perfect spot for every individual's gift and talent-mix, celebrating great ideas and honoring excellent workers.

The qualities required to show curriculum leadership can be demonstrated by all types of people in many different ways and as we have seen with many differing styles. They can all be equally effective in performing a curriculum leadership role. However, to be successful, especially over the longer term, people need to understand their style of leadership and how this may impact on others as given by the three respondents.

Theme # 5 – Curriculum Leadership defined as the role an administrator plays in helping enable the university to achieve its goals and vision as well as referring to all the experiences that learners go through in a program of education. It pushes a person to exercise functions that enable the achievement of one's goal to provide quality education to the learners

The Role and Functions of an Administrator as a Curriculum leader is that one needs to know how the curriculum design informs instructional design. Glatthorn (1997) provides us with essential functions of curriculum leadership carried out at both the school and classroom levels. Curriculum leadership functions at the school level to: Develop the school's vision of quality curriculum. One respondent put emphasis on this: It should remain relevant in the global larger scheme of the Loyola Schools.

Theme # 6 – Vision sets out what the university wants to accomplish, and should inspire members of the community. It can be described as to how things would be different as a result of the university's activities, how it wants to be seen by others, describe objectives that are achievable in the near future. It helps establish the unique contribution that the university makes to society as well as a memorable way to describe the university's reason for being.

Communicating ones vision to others in very important as curriculum leaders because no one can decide to follow them until they know what direction they are headed in. If your vision is one that touches a chord with many people and if you can communicate it well, people will join you in reaching towards your goals.

As a curriculum leader, one should be communicating his vision all the time as exemplified by the three respondents. The community sees curriculum leaders as inspiring and keeping them on the right track. The more curriculum leaders are enthusiastic and clear about where they are going, the more likely it will be that they will follow their leader.

Theme # 7 - Guiding Principles are the very foundation of every curriculum leader in an organization of which defines what is truly important for its success. It also serves as a template for building and growing an organization.

The core curriculum, the prime tool of development through which the university spirit of excellence and service are expressed and delivered on to students Through this, students are brought to appreciate the key ideas and systems of analysis of the fields that contain their academic origin, as well as the range and extensiveness of human knowledge. It emphasizes unity among different disciplines by communicating how they are related to each other and how they bring unique viewpoints to the same issue or problem. The core curriculum mirrors the universal goal of developing men and women who are academically competent as well as deeply rooted in values. Guiding principles create a university culture where everyone understands what's important. In the case of the respondents, it's the core curriculum that defines the wholeness of the university.

Theme # 8 - Systems, Structures, Resources and Processes provides guidance to all administrators as curriculum leaders by laying out the official reporting relationships that govern the workflow of the organization. It is the formal outline of an organization's structure makes it easier the transformation of the organization's curriculum, as well, providing a flexible and ready means for development. Without systems, structures, resources and processes the university community may find it difficult to know who they officially report to in different situations, and it may become unclear exactly who has the final responsibility for what.

Curriculum Leadership and community issues turn out to be much more important than we may have realized. On the surface, everyone talks about the importance of the community and curriculum leadership but too often, administrators puts this on the back burner when the heats on to deliver results or meet the guidance. Structure is strategy.

Systems, Structures, Resources and Processes are linked with each other. A decision to change one requires an all out effort to change the other. But that structural change must be well thought out and based on a thorough cause and effect analysis. A Curriculum Leader does not just change a structure to change it. One has to make sure the changes will support that strategy. At the same time, you do not just implement a better leadership and engagement approach in a company or alter the organizational chart without evaluating how that is going to effect the firms ability to carry out its current strategies.

Theme # 9 - Research, Teaching and Community Service: The Curriculum leader role as a faculty and member of a university whose role generally encompasses three areas of responsibility: Teaching, Research, and Service. Curriculum leader spends in each area varies generally by institution type and more specifically from institution to institution.

The university has clearly stated missions supporting community-university engagement and calling for broad conceptions of scholarship; yet these are often juxtaposed with very traditional ways of viewing the curriculum leader role. As expressed by respondents in the study, the research university culture directs curriculum leaders to focus on progressive means and outlets for research, teaching and community service. However, the respondents view that when they have been involved in the community through their teaching, research, and service, they have been highly productive as curriculum leaders.

Theme # 10 – Changes is the application of a structured process and set of tools for leading curriculum innovations to achieve a desired outcome. It emphasizes the “people side” of it and targets curriculum leadership within all levels of a university including administrators, faculty, staff, students and other members of the community. When changes are done well, the community feels engaged in the change process and work collectively towards a common objective, realizing benefits and delivering results.

The challenge for many organizations is finding or building sufficient quantities of Curriculum Leaders open for changes and then giving them the time required to effectively undertake the role.

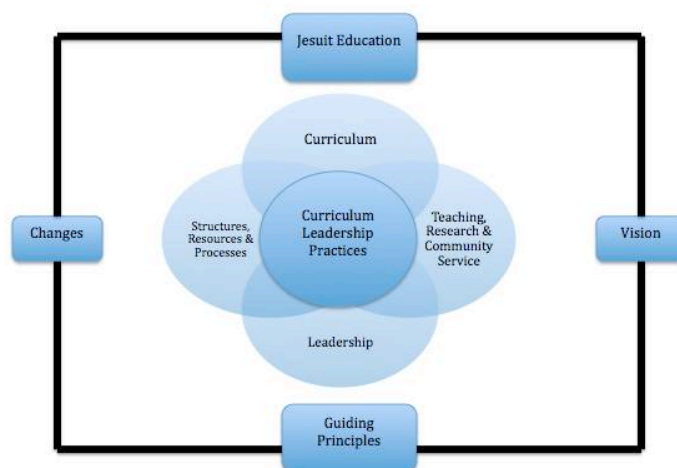


Figure 1: Emerging Conceptual Framework of the Study

Discussion and Conclusion

The result of the study along with related literatures show the curriculum leadership practices of the administrators in Ateneo De Manila University goes beyond the walls of the institution. All stakeholders are involved as to actual curriculum leadership practices. Stakeholders include two bodies namely first the internal stakeholders which composes of the administrators, faculty members, curriculum leaders, staff, students and parents. The second are the external stakeholders including different government educational agencies, the corporate and private institutions as well as foreign related educational bodies.

Curriculum Leadership practices of administrators would help the university to establish patterns of behavior among the community throughout the curriculum development processes undertaken. The aim for university administrators should be to use research-based curriculum leadership strategies, practices, and programs that have proven successful when they plan interventions and programmatic changes for the university curriculum.

The data collected from the interviews in this case study have generated numerous topics for discussion, including the use leadership styles of administrators in character education programs and/or school wide leadership development programs—which include protocols to administer, supervise, model, and implement consistently the core curriculum initiatives designed to improve the over all learning outcomes for all students.

The results of this study suggest that emerging themes extracted from the university administrator's curriculum leadership practices is that having consistent data collection and analysis of curriculum leadership practices will lead to improvements of the over all curriculum development processes of the university.

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***The Effectiveness of Using Touchstone 1a to Promote
Low English Proficiency Students at College***

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Introduction

EFL textbooks are perceived as a vital and important element in English language teaching and learning as it not only provides a framework for teachers in reaching the aims and objectives of the course, it also serves as an effective resource for students' self-directed learning. Being at the core of the language learning and teaching process, it is considered imperative for educators to make the appropriate selection and implementation of EFL textbooks within a course that would cater to the needs of a particular learning group. Researchers such as Cunningsworth (1995) and Miekley (2005) have developed textbook evaluation checklists that serve as way for educators to select the materials that closely reflect the aims, methods, and values of an English language program. Although there is significant research related to textbook evaluation, the majority of the research on the essential components of an appropriate and effective EFL textbook focuses on educators' evaluative perspectives while limited research examined students' perspectives as end-users. Therefore, the purpose of this study was to explore low English proficiency students whose overall average CSEPT score was 100 level students' perception toward the effectiveness of using *Touchstone 1A* in the 24-credit General English courses at Wenzao Ursuline College of Languages.

Wenzao Ursuline College of Languages (Wenzao) in Kaohsiung, Taiwan has run the 24-credit General English courses for twelve years since 2003. The overall aims of the 24-credit program are to improve students' English proficiency and to broaden their learning horizon. The students come from a variety of vocational high schools. Many of them are preparing for tertiary level study through English, and therefore have to develop their English proficiency to a point where they are able to encounter the most useful and widely language in spoken and written context. Not long ago, many educators at the school felt that students were making minimal progress in their English proficiency. Although there were dedicated English classes five hours per week, it seemed that the English classes themselves were insufficient for students' development of adequate English language ability. Therefore, the school set up a "corpus-informed" English course, and implemented the Touchstone series as its textbook since it was a large database of everyday conversations and written texts to show students how people can actually use English.

To elicit low proficiency students' perception toward the effectiveness of using *Touchstone 1A* in the 24-credit General English courses at Wenzao Ursuline College of Languages, data was collected through a questionnaire. The questionnaire consisted of 30 items toward students' perception of the use of *Touchstone 1A* in the General English

course context. 102 low English proficiency level freshmen were chosen as the study participants. The findings revealed that most participants held positive perceptions toward the use of *Touchstone 1A* in the General English course. Findings also revealed the areas that students believe should be improved.

Literature Review

In explaining the vital role of textbooks in English language teaching, Hutchinson and Torres (1994, p. 315) claim that the textbook is “an almost universal element of [English language] teaching . . . No teaching-learning situation, it seems, is complete until it has its relevant textbook.” As Skierso (1991, pp. 432-453) observes, very few teachers manage to teach without textbooks. Indeed, most teachers rely heavily on them in seeking to ensure that students attain prescribed teaching goals and objectives. With specific reference to language teaching, Harmer (2000, p. 117) notes that textbooks not only give teachers ideas about what to teach, but also about how to teach, often functioning as a basic syllabus for a class. Thus, textbooks can reduce a teacher’s workload and can also provide a link between school and home (Brewster & Ellis, 2002, p. 152). Furthermore, students often have strong expectations about using a textbook in the language classroom and believe that published materials have more credibility than teacher-generated materials (Sheldon, 1988, p. 237).

Cunningsworth (1995, p. 7) identifies a number of roles that textbooks can serve in the curriculum, including provision of (a) a syllabus based on pre-determined learning objectives, (b) an effective resource for self-directed learning, (c) an effective medium for the presentation of new material, (d) a source of ideas and activities, (e) a reference source for students, and (f) support for less experienced teachers who need to gain confidence. Although some educationalists believe that there is a danger that inexperienced teachers may become over-reliant on textbooks, others argue that textbooks can actually save students from a teacher’s deficiencies (O’Neill, 1982; Williams, 1983; Kitao & Kitao 1997). Furthermore, it has been argued that textbooks can provide an important source of innovation and can support teachers through potentially disturbing and threatening change processes by introducing change gradually, creating scaffolding upon which teachers can build, and demonstrating new and/ or untried methodologies (Hutchinson & Torres, 1994, p. 323).

While there are many educationalists who point out the benefits of using textbooks in teaching additional languages, there are others who take a more negative view of textbooks. Sheldon (1988, p. 239) sees them as the “tainted end-product of an author’s

or a publisher's desire for quick profit", with many of them making false claims and being marked by serious theoretical problems, design flaws, and practical shortcomings. Fullan (1991, p. 70) notes that approved textbooks may easily become the curriculum in the classroom whilst failing to incorporate significant features of the policy or goals that they are supposed to address, the result being that a textbook may actually distract attention from behaviours and educational beliefs that are crucial to the achievement of desired outcomes. Allwright (1981, pp. 6-8), argues that textbooks are not only inflexible, but also generally reflect the pedagogic, psychological, and linguistic preferences and biases of their authors, and Levis (1999, p. 37) maintains that textbooks are culturally and socially biased and contain inauthentic language. As far as Litz (2005) is concerned, textbooks do not present an adequate reflection of the different types of pronunciation, language structures, grammar, idioms, grammar, idioms, vocabulary, and conversational rules, routines and strategies that learners will need to use in the real-world. Whether one perceives that textbooks are instrumental in English teaching and learning or that they are too biased and inflexible, it cannot be denied that textbooks are still predominantly popular and still maintain an essential role within the classroom.

Tok (2010) points out that evaluation is a fundamental part of teaching and learning; it provides educators extensive information in terms of classroom practice, course planning and task design. Evaluation is also essential for the use of instructional materials such as textbooks in the classroom. Cunningsworth (1995, p.7) suggests that in choosing and evaluating textbooks, educators should ensure that "careful selection is made, and that the materials selected closely reflect [the needs of the learners and] the aims, methods, and values of the teaching program". A number of textbook evaluation checklists that are intended to be applicable irrespective of context have been developed (see, for example, Byrd, 2001; Chambers, 1997; Cunningsworth, 1984, 1995; Ellis, 1997; Harmer, 1998, 2001; Miekley, 2005; Sheldon, 1988; Skierso, 1991; Tomlinson, 2008, 2010; Tsai, 1999; Ur, 1996; Williams, 1983). These generally include factors such as physical characteristics, methodology, consistency with the overall curriculum, and extent to which teacher needs are met, as well as linguistic and cultural content, skills, topics, and gender representation. For example, Cunningsworth (1995) divides evaluation criteria into eight categories - *aims and approaches, design and organization, language content, skills, topics, methodology, teacher's books, and practical considerations*. While evaluative checklists are many and varied, the central aim is to make the teaching and learning environment more effective by identifying the particular strengths and weaknesses of the textbooks. For example, by evaluating the strengths and weaknesses of the textbooks adapted in class, Mc

Grath (2006) points out that teachers are able to analyze their own presuppositions about the nature of teaching and learning English. Although extensive research has been conducted in regards to textbook evaluation, the focal point has been on educators' perspectives, limited research have provided insight into whether or not students view their textbooks as conducive to their English language learning. To address this gap in the literature, this study was conducted as a means to explore 102 low proficiency level students' perceptions and evaluations of *Touchstone IA*, the textbook adapted for use in their 24-credit General English course at Wenzao Ursuline College of Languages.

Objectives and significance of the study

This study aims at investigation low proficiency students' perceptions toward the effectiveness of using *Touchstone IA* for general content, self-access proficiency improvement, supplementary materials and learning difficulties. .

In order to achieve the objectives of the study, the following research questions are addressed:

1. What are low English proficiency students' perceptions of general contents of *Touchstone IA*?
2. What are low English proficiency students' perceptions of their English proficiency improvement (listening, speaking, reading, writing and grammar) through *Touchstone IA*?
3. What are low English proficiency students' perceptions of supplementary materials of *Touchstone IA*?
4. What learning difficulties do low English proficiency students encounter when they use *Touchstone IA*?

The findings of this study are expected to provide valuable information to supplement the literature about EFL textbook use in the college level in Taiwan. This study may also provide a potential point of reference in quantitative literature and establish grounds for further research in the vocational college EFL context.

Research Method

The participants in this study were 102 freshmen (M=44; F=68) who were attending four of the classes in the 24-credit English program at Wenzao Ursuline College of Languages in the second semester of the academic year 2009/2010. Their overall average CSEPT score was 100. The anonymity of the respondents was established by specifically asking them not to write their names on the questionnaires copies.

Questionnaires were used as the initial survey instrument for students and the final questionnaires consisted 30 items. The questionnaires were written in Chinese (see Appendix). Questions 1 to 29 used a five-point Likert scale, (1) strongly agree, (2) agree, (3) somewhat agree, (4) disagree, (5) strongly disagree. In addition, the survey had one open-ended question (30) to elicit additional opinions from the students.

The reliability of the questionnaire was established using test-retest on twenty-eight EFL students who were excluded from the sample. Chronbach alpha was calculated and found to equal 90.4%.

The questionnaire data were gathered in the last 20 minutes of the students' class time, via prior agreement with the teachers. Of the 140 copies distributed, 102 copies were returned to the researchers, yielding a response of rate of 73%.

Finding and discussion

In this section, the findings are presented and discussed according to the four research questions posed in the study. The first question are discussed together after the presentation of tables 1 and 2, while the second, third and fourth questions are discussed independently after that.

To answer the first question, which investigates low English proficiency students' perceptions of general contents of *Touchstone 1A*, 13 questionnaire items were used. The participants' responses are presented in Table 1 and 2.

Table 1: The Percentages of Students' Responses Concerning the Objectives of *Touchstone 1A*

Items	Statements	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree
1	<i>Touchstone 1A</i> clearly presents its learning objectives.	11	64	25	0	0
2	The content of <i>Touchstone 1A</i> matches its learning objectives.	12	57	29	2	0
3	The content of <i>Touchstone 1A</i> meets my learning needs.	11	41	33	14	1

Table 2: The Percentages of Students' Responses Concerning the Contents of *Touchstone 1A*

Items	Statements	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree
4	The difficulty level of <i>Touchstone 1A</i> 's content fits my proficiency level.	16	38	28	16	2
5	There is sufficient content in <i>Touchstone 1A</i> .	9	41	34	14	2
6	The content of <i>Touchstone 1A</i> increases my English learning motivation.	12	37	29	20	2
7	The content of <i>Touchstone 1A</i> increases my confidence in learning English.	18	45	29	6	2
8	The content of <i>Touchstone 1A</i> improves my English learning strategies.	13	47	28	11	1
9	The content of <i>Touchstone 1A</i> helps develop my integrated English skills.	17	32	46	5	0
10	The unit topics in <i>Touchstone 1A</i> are interesting.	13	44	33	10	0

11	The content of <i>Touchstone 1A</i> helps me have a better understanding of multi-cultures.	19	43	29	9	0
12	The content of <i>Touchstone 1A</i> increases my daily English communication skills.	24	46	24	5	1
13	The content of <i>Touchstone 1A</i> expands my theme-based vocabulary.	12	31	33	22	2

The findings suggest that about 75% of the respondents (strongly) agree *Touchstone 1A* clearly presents its learning objectives, while 69% and 52% of the respondents (strongly) agree the content of *Touchstone 1A* matches its learning objectives and their needs. In addition, 54% and 57% of the respondents (strongly) agree the difficulty level of *Touchstone 1A*'s content fits their proficiency level and the unit topic in *Touchstone 1A* are interesting. Half of the respondents (50%) (strongly) agree there is sufficient content in *Touchstone 1A*, respectively.

The findings also show that 49%, 63%, 60%, 70% and 43% (strongly) agree the content of *Touchstone 1A* increases and improve their, English learning motivation, confidence in learning, English strategies, daily English communication skills and theme-based vocabulary, respectively. 49% and 62% respondents (strongly) agree the content of *Touchstone 1A* helps develop integrated English skills and have a better understanding of multi-cultures.

To answer the second research question, which investigates participants' self-access proficiency improvement through *Touchstone 1A*, five questionnaire items were used. Table 3 presents the percentages of the participants' responses.

Table 3: The Percentages of Students' Responses Concerning the *Self-access Proficiency Improvement* through *Touchstone 1A*

Items	Statements	Strongly Agree	Agree	Somewhat at Agree	Disagree	Strongly Disagree
14	<i>Touchstone 1A</i> improves my English listening proficiency.	18	50	24	6	2
15	<i>Touchstone 1A</i> improves my English speaking proficiency.	15	51	27	5	2

16	<i>Touchstone 1A</i> improves my English reading proficiency.	9	33	41	16	1
17	<i>Touchstone 1A</i> improves my English writing proficiency.	4	34	46	15	1
18	<i>Touchstone 1A</i> improves my English grammar usage.	7	36	44	11	2

Table 3 shows that 68%, 66%, 42%, 38%, and 43% of the respondents reported (strongly) agree *Touchstone 1A* improves their, English listening proficiency, speaking proficiency, reading proficiency, writing proficiency and grammar usage. In general, the findings indicate that reading proficiency, writing proficiency and grammar usage improvement are comparatively weak.

Table 4 presents the percentages of the participants' responses to the third question which investigates participants' responses concerning the supplementary materials of *Touchstone 1A*. Nine questionnaire items were used.

Table 4: The Percentages of Students' Responses Concerning the *Supplementary Materials of Touchstone 1A* (response frequencies in percentages)

Items	Statements	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree
19	The videos in <i>Touchstone 1A</i> increase my interest in learning English.	15	41	32	11	1
20	The videos in <i>Touchstone 1A</i> familiarize me with its content.	17	45	31	7	0
21	The videos in <i>Touchstone 1A</i> help me incorporate the content in daily life.	19	47	27	6	1
22	The self-recording function of <i>Touchstone 1A</i> helps me have a better understanding of English pronunciation and intonation.	15	49	26	9	1
23	The supplementary CDs in <i>Touchstone 1A</i> increase my chance to practice its content.	12	37	37	12	2

24	The supplementary CDs in Touchstone 1A help me practice my English listening and speaking after class.	12	38	37	12	1
25	The supplementary CDs in Touchstone 1A help me practice my English vocabulary after class.	8	30	44	16	2
26	The workbook in Touchstone 1A familiarizes me with its content.	16	54	27	2	1
27	The workbook in Touchstone 1A helps prepare me for English proficiency tests. (Example: CESPT)	3	29	36	29	3

As shown in Table 4, 56%, 62% and 66% of the respondents (strongly) agree the videos in *Touchstone 1A* increase their interest in learning English, familiarize them with its content and help them incorporate the content in daily life. 64% of the respondents (strongly) agree the self-recording function of *Touchstone 1A* helps them have a better understanding of English pronunciation and intonation. The findings also show that 49%, 50% the supplementary CDs in Touchstone 1A increase their chance to practice its content, English listening, speaking English and vocabulary after class. Moreover, a majority of respondents (70%) (strongly) agree the workbook in *Touchstone 1A* familiarizes them with its content. However, quite a few students (32%) (strongly) disagree that this textbook can help them to prepare for English proficiency tests. (i.e. *Item 27*). As a matter of fact, at the research context, teachers use *Touchstone 1A* mainly to develop students' productive skills and receptive skills. There is another material, namely, *My ET*, used for students to reading and listening texts through exercising certain testing strategies and skills.

Item 28 asked participants whether they encounter any learning difficulties when they use *Touchstone 1A*. Twenty-one (21) participants did not respond to this question. The remaining 383 responses were classified into 10 groups as follows (see Table 5):

Table 5: *Perceived learning difficulties*

Items	Entry	Number of responses
	Learning English strategies	12
28	Vocabulary	29
	Listening	39
	Speaking	34
	Reading	14
	Writing	49
	Integrated English skills	23
	Pronunciation	34
	Learning motivation	32
	Grammar	34

The questionnaire respondents can tick more than one box if they encounter various learning difficulties when using *Touchstone 1A*. Based on the results, some of the participants perceive that they have more difficulties in writing in English, understanding grammar, and speaking English. When it comes to productive skills, there are 34 and 49 responses to the difficulties of improving oral performance and English writing through using *Touchstone 1A*. As for the difficulty of learning grammar stated earlier, 40 participants suggest the publishing house increase grammar practice in *Touchstone 1A*.

Item 29 asked participants to select the recommended comments which they think can be added to *Touchstone 1A*. Twenty-two (22) participants chose not to comment. The number of responses to this question was 256. The comments made are classified into categories in Table 6.

Table 6: *Recommended contents*

Items	Entry	Number of responses
29	Learning strategies	29
	Vocabulary practice	39
	Amount of vocabulary	56
	Listening practice	49
	Speaking practice	36
	Reading practice	48
	Writing practice	53
	Integrated English practice	21
	Pronunciation practice	27
	Grammar practice	40

Based on the generated responses, the amount of vocabulary, listening practice, reading practice, and grammar practice are wished to be added to *Touchstone 1A*, respectively recommended by 56, 49, 48, 40 out of the 102 participants. This result may correspond to the participants' answer to *Item 5* regarding the insufficiency of the textbook contents. Learning strategies and writing practices are also recommended by 29 and 53 out of the 102 participants. Apparently, the low achievement students can reflect on what they want and need during their learning process while using *Touchstone 1A* at school.

Finally, participants were asked (*Item 30*) to add any other general comments they wished to make. Just over half chose not to comment. The comments made are classified into categories in Table 7.

Table 7: *Comments made by respondents*

Items	Statements	Number of responses
Comments	I hope there is Chinese translation to help me to understand the content.	1
	We need more and short reading texts in each lesson.	5
	There is not adequate vocabulary.	8
	We need more listening practices.	7
	Grammar practices are insufficient.	7
	There are some basic grammar structures in the book so that I learn grammar easily.	6
	This is an interesting book, which motivates me to learn English.	4
	It is more useful to learn English integrated way.	1
	This is a good and well-organized material.	2
	I can learn practical every-day language.	7

According to the results, some students hope to learn more new vocabulary words ($N=8$), more reading texts ($N=5$), and more listening practices ($N=7$) in *Touchstone 1A*. Other than that, there are nine open-ended comments on the amount of vocabulary ($N=2$) and the textbook ($N=7$). Seven students comment on their need of learning more grammar structures. These findings might help us expand the understanding of English grammar in use from the perspective of these low achievement students. In respect of the textbook content, 20 comments tend to be quite positive, such as ‘There are some basic grammar structures in the book so that I learn grammar easily,’ ‘This is an interesting book, which motivated me to learn English,’ ‘I can learn practical every-day language,’ and ‘this is a well-organized book.’ One participant thinks the Chinese translation is needed in the *Touchstone 1A* to enhance comprehension ability.

Conclusion

To conclude, more than half of the participants had positive perspectives about using *Touchstone 1A* to promote their proficiency level of English in the language classroom. In this project, the questionnaire findings and results have unveiled what the low achievement students actually think about using *Touchstone 1A*. They are relatively aware of their wants and needs. Without finishing this project, teachers might never make this two-way communication flow smooth between students and them. It is worth noting that students' perceptions of learning materials enhances self-esteem and motivation and encourages further learning. In order to enhance the effectiveness of using *Touchstone 1A* to promote students' English proficiency, here are some suggestions made based on the survey results for the publisher, English teachers, and the policy makers.

The amount of new vocabulary words in each lesson, grammatical structures, listening practices and vocabulary practices are expected most as far as these students are concerned. In addition to supposedly frequent dialogues practice, students perceive that they need to expand their current vocabulary bank through short reading texts by using *Touchstone 1A*. As well as this, they need to improve their understanding of English grammar in use through having more four skills based lessons and practices. Teachers mainly aim to help students be more capable of speaking and writing in English freely while they can comprehend input by listening and/or reading a passage/conversation. Both can help them turn new words into their active vocabulary use, and be more likely to express themselves clearly and variously in four skills.

These research results have pointed out the necessity and direction of choosing extra supplementary materials to match students' expectations of four skills learning strategies in the classroom. Teachers can find something which fits into the program, corresponds to the teaching and learning objectives, and the aims of lessons, such as extended vocabulary, varied text-types reading related to topics, and extra grammar worksheets. As low English proficiency students might be unable to find themselves useful and helpful approaches to learning English outside the classroom, teachers may give them a hand and make these extra supplementary materials available at this learning stage.

Students at this low English proficiency level of English need more opportunities to strengthen their willingness to communicate in English and to attend to their writing

difficulties than high-level students. The publisher may add more of the writing activities encourage process writing practice and promote realistic discourse by using *Touchstone 1A*. Hence, every individual student is more likely to write English frequently with their peers and groups, and the teacher would be more available to assist students in solving their writing problems or improve students' learning strategies. These suggestions are hopefully to enhance the quality and quantity of learning English for low English proficiency students at College.



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Appendix

※ Touchstone 1A=T

Items	1	2	3	4	5
	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree
1. T clearly presents its learning objectives.					
2. The content of T matches its learning objectives.					
3. The content of T meets my learning needs.					
4. The difficulty level of T's content fits my proficiency level.					
5. There is sufficient content in T.					
6. The content of T increases my English learning motivation.					
7. The content of T increases my confidence in learning English.					
8. The content of T improves my English learning strategies.					
9. The content of T helps develop my integrated English skills.					
10. The unit topics in T are interesting.					
11. The content of T helps me have a better understanding of multi-cultures.					
12. The content of T increases my daily English communication skills.					
13. The content of T expands my theme-based vocabulary.					
14. T improves my English listening proficiency.					
15. T improves my English speaking proficiency.					
16. T improves my English reading proficiency.					
17. T improves my English writing proficiency.					

18. T improves my English grammar usage.					
19. The videos in T increase my interest in learning English.					
20. The videos in T familiarize me with its content.					
21. The videos in T help me incorporate the content in daily life.					
22. The self-recording function of T helps me have a better understanding of English pronunciation and intonation					
23. The supplementary CDs in T increase my chance to practice its content.					
24. The supplementary CDs in T help me practice my English listening and speaking after class.					
25. The supplementary CDs in T help me practice my English vocabulary after class.					
26. The workbook in T familiarizes me with its content.					
27. The workbook in T helps prepare me for English proficiency tests. (Example: CESPT)					
28. <i>The Difficulties while using the T materials.</i> (Multiple selections are accepted)					
Learning English strategies	Vocabulary	Listening			
Speaking	Reading	Writing			
Integrated English skills	Pronunciation	Learning motivation			
Grammar	others: _____				
Please provide some examples you have encountered: _____					
29. <i>The suggestions that could be included to the T materials</i> (Multiple selections are accepted)					
Learning strategies	Vocabulary practice	Amount of vocabulary			
Listening practice	Speaking practice	Reading practice			
Writing practice	Integrated English practice	Pronunciation practice			
Grammar practice	others: _____				
Please give some suggestions you hope to add in the T materials : _____					
30. Any other comments on using the T materials? _____					



A Study of the Line Official Account in University Public Relations

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Abstract

A 2014 survey indicated that 77.8% of Taiwanese individuals over 12 years of age were mobile Internet users, and that the most commonly used App was LINE. Given the increasing popularity of mobile Internet devices, as evidenced by the widespread use of smartphones, the dissemination of information mainly through traditional media is no longer adequate. Nevertheless, the marketing and public relations strategies of Taiwanese universities and colleges still largely rely on traditional media, venturing online only to establish official websites, and investing very little in mobile social media. This study has adopted a case study approach by focusing on Hungkuang University, which has set up a LINE Official Account that has attracted more “LINE friends” than any other university or college account in Taiwan. By analyzing and discussing this case study, we hope to present information on both the benefits that universities and colleges can derive—and the operational strategies they can employ—by using LINE Official Accounts as part of their marketing and public relations strategies. These findings will provide reliable strategic guidance on marketing and public relations practices in universities and colleges.

This study introduces the LINE Official Account as a new option that works differently from traditional media. It not only retains the advantages of traditional media in relation to mass communications, but also functions as a unique channel for two-way, independent communications. It is therefore a new and effective mobile marketing tool for school and university marketing and public relations strategies. The seven key strengths of a LINE Official Account for educational marketing and public relations are as follows: 1) it uses the latest mobile Internet apps to establish an organizational image of high-quality service; 2) it employs a large number of media editors to provide efficient and comprehensive information services; 3) it reinforces marketing communications through both one-to-many and one-to-one approaches; 4) it uses mobile Internet social events to increase a sense of participation among friends; 5) it reinforces the horizontal connections between different units and disseminates information to maintain internal and external relationships; 6) it constantly recruits new friends through physical enrolment activities and advertising; and 7) it provides crisis management by taking advantage of widespread mobile Internet use.

Keywords: LINE Official Account, university marketing, public relations strategies

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Introduction

Social media help to fulfill the human need for interaction. By transforming traditional “one-to-many” into “many-to-many” communications via social media, members of the general public are transformed from content consumers into content producers. For this reason, social media content can be characterized as “user-generated” content (UGC) (OMD, 2009). Given the increasing popularity of mobile network devices, as evidenced by the wide use of smartphones, information dissemination models that rely mainly on traditional media are becoming increasingly inadequate.

According to a 2015 “Survey on Broadband Internet Usage in Taiwan” conducted by the Taiwan Network Information Center (TWNIC), the percentage of Internet users in the Taiwanese population increased from 75.6% in 2014 to 80.3% in 2015, with the number of Internet users in Taiwan now estimated at about 18.83 million. Within this group, 100% of people between the ages of 18 and 30 years are Internet users, making this the dominant group of Internet users in Taiwan. A total of 16,372,581 Taiwanese individuals over 12 years old (78.2%) have Internet experience. Among those with Internet experience, 77.8% are mobile Internet users. The majority of people interviewed were using 3G or 3.5G, while 94% use smartphones to access the Internet. The top three most common reasons for using mobile Internet services are as follows: to access Internet communities (53.5%), to use instant messaging software (50.1%), and to browse websites (47%). The top three most commonly used types of apps are social networking services (68.4%), games (38.9%), and transportation/navigation apps (14.1%).

The smartphone application program, LINE, developed by NHN Japan Corporation, was launched in June 2011. LINE users can make voice calls to other users or send texts through the Internet. LINE’s greatest advantage is that it uses the ubiquitous Internet to replace fee-based texts and phone calls. In 2013, the NHN Japan Corporation announced that the number of global registered users of LINE officially exceeded 300 million and was likely to continue to increase; in Taiwan, the number of registered users has reached 17 million. Reflecting the rapid increase in LINE users and their frequency of use, there are currently about 3 million new users every week, and the proportion of active users remains around 80.3%. Among smartphone apps, the ten most commonly used apps include four that involve instant messaging software: LINE (1st), WhatsApp (4th), Facebook Messenger (8th), and WeChat (10th) (TWNIC, 2013). The pioneering Taiwanese app review website APP01 conducted a survey of 100,000 smartphone users, which indicated that 67% of users were using LINE. LINE is the most popular instant messaging software in Taiwan, especially among young people. The penetration rate of LINE on smartphones is 92%, far higher than any other messaging software (INSIGHTXPLOER, 2014).

The marketing and public relations strategies of universities and colleges in Taiwan rely mainly on traditional media, using Internet-based operations only to establish official websites. Very little money has been invested in mobile social media. Currently, fewer than 10% of Taiwan’s universities and colleges have LINE Official Accounts, and the number of active users is even smaller. The marketing and public relations strategies of universities and colleges aim to enhance their prestige and influence; practical measures are designed to maintain good interactions with

interested parties. Mobile social media are currently the best tools for such interactions, and LINE has been rated the most popular tool in Taiwan. We selected Hungkuang University, located in the central region of Taiwan, as our case study because it has the most active LINE Official Account and the largest number of friends of any university or college in Taiwan. Since the launch of the Hungkuang University LINE Official Account, the university has accumulated more than 7000 fans within half a year and has been ranked the most effective university or college in Taiwan.

We hope that by analyzing and discussing this case study, we can offer new information on the benefits of an operational strategy that uses a LINE Official Account to underpin college or university marketing and public relations, thus providing reliable strategic suggestions about marketing and public relations in universities and colleges. This study has focused on two questions:

1. What are the differences between a LINE Official Account and traditional tools for marketing and public relations?
2. What marketing and public relations strategies are employed by universities and colleges?

Research Method

This study has adopted a case study approach. The research data includes previous literature, survey and interview data, and analyses of case and second-hand data on LINE Official Accounts, including press releases, announcements, and questions from members. In June 2015, LINE announcements were used to invite members to participate in an online questionnaire survey; 1470 individuals participated. In addition, the researchers designed an open-ended questionnaire and (between May and June 2015) interviewed six individuals, including the Hungkuang University Public Relations Director and administrative officials responsible for the university's strategy.

Literature Review

Armstrong & Kolter (2000) have defined relationship marketing as the process of creating, maintaining, and enhancing the relationship with customers and other stakeholders, in order to obtain customer satisfaction and loyalty in the long term.

According to Cheng (2014), relationship marketing is gradually attracting more attention for the following reasons. Firstly, the cost of maintaining regular customers is far less than the cost of acquiring new customers. Secondly, mass media is expensive to use, and its impact is difficult to measure. Thirdly, customers and service-providers interact more closely than ever before. Fourthly, advances in information technology have contributed to the implementation of new approaches to relationship marketing. Successful relationship marketing involves providing specialized and targeted services and maintaining good interactions with customers, thus continuing to improve customers' impressions of the organization, enhancing their brand loyalty, and maintaining and sustaining bilateral relations. In an article entitled, "A Study on Relationship Marketing and Loyalty—An Example of Eastern Home Shopping (EHS)," Jao (2005) conducted qualitative interviews and collected

case data to investigate the extent to which relationship marketing strategies executed at different levels by a company could enhance customer loyalty and willingness to repeat purchase. This study showed that the following four factors were needed to achieve optimal relationship marketing: 1) services that offered constant innovation; 2) comprehensive and diverse channels for services; 3) comprehensive management of customer relations; and 4) continuous relationship marketing. Since the emergence of the Internet, social communities have gradually become the functional core of the Internet; not only does the Internet allow individuals with a shared interest to come together across time and space, it also facilitates the establishment of relationships between the members and administrators of social communities. When the number of members, transactions, and the amount of information in a virtual community exceed “critical mass,” transaction activities, content attractiveness, and friend profile information or loyalties are likely to drive and reinforce a positive feedback loop, following the principle of “increasing returns” in network economics. Hagel & Armstrong (1997) have defined the following four types of participation among virtual community members based on degree and participation value.

- 1) Browser: New community members, who often browse communities casually. Some may stay, but the majority are likely to leave the community; thus, they are the least valued community members.
- 2) Lurker: Members who spend more time in the community than Browsers, but do not actively make content contributions as Contributors do. Due to their length of stay, useful information can be gathered from them (e.g., browsing paths, personal information) to attract advertisers to purchase advertising space. They are therefore more highly valued than Browsers.
- 3) Contributor: After a period of time, Browsers who chose to stay are likely to become Contributors who contribute content to the community actively and passionately. They also stay in communities for a relatively long time. They are the second most highly valued members in a community.
- 4) Shopper: Active members who actively participate in communities, and also purchase products and services. They have the highest value of all members. “Purchases” are not limited to transactions within communities, but also include exchanges and discussions of product information through mutual communications between members, which promote product transactions.

“Public relations (PR)” are planned communications designed to achieve mutual understanding between an organization and the general public. This definition, which is commonly accepted by scholars and professionals in the field, demonstrates that public relations involves the management of communication between organizations and the general public, and the achievement of mutually acceptable negotiation results through two-way communications. In the two-way communication model, surveys of opinions and attitudes can be used in public relations to assist administrative and managerial personnel to understand the needs of individuals related to the organization, and the possible outcomes of particular organizational behaviors. In addition, through implementing a public relations program, the thoughts and concrete organizational decisions of managers can be communicated to the public to build support. For this reason, the ideal public relations model is characterized by two-way, dialogic communications that create a communication environment of truth, tolerance, mutual trust, equality, and support (Grunig, 2001).

Most previous studies have been based on the principle of dialogic communications proposed by Kent and Taylor (1998), which has been widely applied to public relations strategies on the Internet and recognized as a basis for establishing more effective communication strategies. Zhang (2010) has argued that companies ought to use entertaining content to make their brands appealing and to attract the attention of their target audience. This study has analyzed 89 company fan pages, most of which have used marketing events such as downloads and competitions, and some of which have even provided reward mechanisms. Though a series of experiments on “relational maintenance strategies in different situations,” Kelleher & Miller (2006) discovered that social media was the best way to build a relationship between an organization and the public. Lovejoy & Saxton (2012) analyzed the Twitter usage of 100 large-scale NGOs across the United States, and discovered that tweets could be grouped into three categories: information, community, and action. In contrast to traditional websites, Twitter established relationships with stakeholders through dialogic and community-building approaches. Furthermore, Wright & Hinson (2009) have pointed out that most public relations professionals believe that developing the relationship between organizations and their target audiences through social media is cost effective. These views not only highlight the value and significance of social media in public relations, but also their contribution toward establishing interactive relationships, which create opportunities for public relations professionals to influence and build relationships with their target audience. PR professionals have already started to use social media to interact with the public. However, finding optimal ways to integrate social media functions into organizational communication strategies is an area that needs further research (Alikilic & Atabek, 2012).

Research Results

1. The LINE Official Account is a new and effective mobile marketing tool for school and university marketing and public relations strategies.

The advantages for users of a LINE Official Account include directly receiving a company’s marketing information, easily browsing received messages, and having access to various kinds of information once they have joined the Official Account as friends. As is the case in managing Facebook fan pages, posting good quality articles daily on the News Feed, creating events, and actively sending private group messages are methods that comply with LINE’s official regulations for managing fans. Group messages are only sent to fans who have joined the Official Account as friends. For marketing professionals, therefore, finding ways to market an Official Account, invite new visitors to become active fans, and achieve acceptance for messages and marketed products have become key focal points. The Hungkuang University Director of Public Relations commented that, “LINE is an instant communication medium; when fans receive messages, they can immediately click on them and begin interactions. It also has breadth and messages can be sent to all our friends, which has helped us connect to new friends who were not familiar with the university as well to as old friends with lower cohesion.”

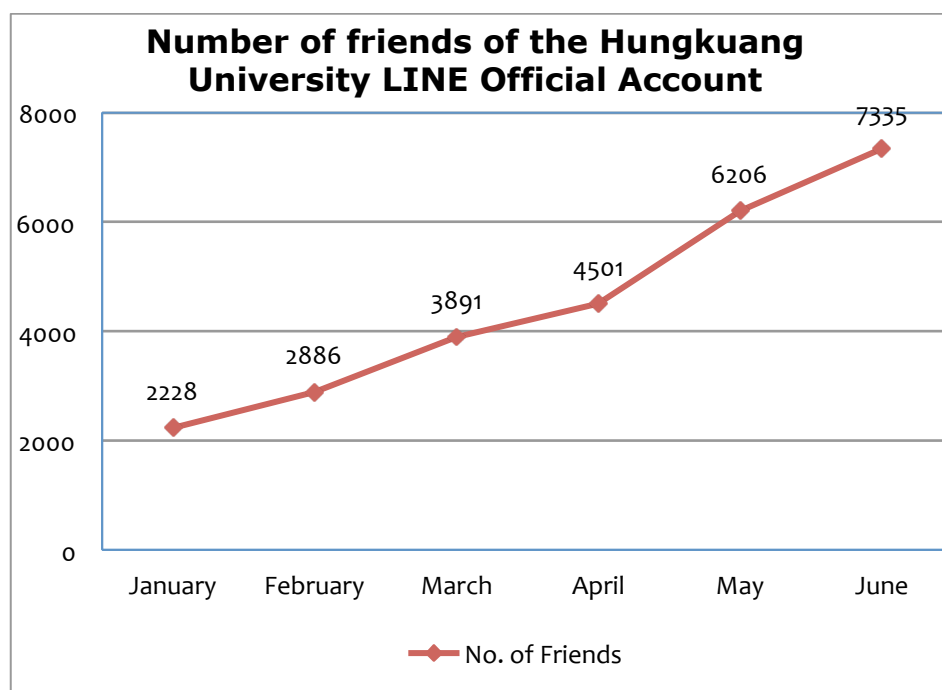


Figure 1. The growing number of friends of the Hungkuang University LINE Official Account

2. A LINE Official Account is a new option that differs from traditional marketing and public relations tools.

Traditional tools for marketing and public relations include traditional media and communication methods. The former include television, newspapers, and broadcasting, while the latter include information sessions and news conferences. Based on the direction and goals of PR communication models, further information can be obtained on the applicability of the Internet in public relations programs. When it comes to direction, one-way organizational Internet communications indicate that an organization is interested only in distributing information to the public or persuading them to accept organizational behaviors; feedback from the public is not a key consideration. As for goals, when organizations use news agents and broadcasting PR models, they tend to post information that benefits themselves. Organizations using the public information model, on the other hand, generally provide Internet users with more objective and useful information. A preference for two-way Internet communications shows that an organization wants to understand the views of the public through Internet technology, both to pursue its own interests, and to establish an equal, mutually-dependent relationship with the public, thus achieving win-win results.

LINE Official Accounts begin by adopting a “passive approach” to advertising (i.e., waiting for consumers to voluntarily add them as friends). After consumers have become friends, these accounts employ an “interactive approach” (i.e., companies disseminate information and consumers can connect to their websites) to establish relationships with consumers. As long as the consumers do not reject the information, marketing and public relations can achieve significant results. In addition, LINE does not connect consumers to other websites without their consent, thus ensuring consumer flexibility, making Official Accounts more acceptable to the public, and

enabling participants to be proactive and interactive. In this way, LINE has rapidly developed into a new option for marketing and public relations strategies.

3. A LINE Official Account enables schools and universities to use the following seven marketing and public relations strategies:

- 1) Using the latest mobile Internet apps to give themselves a reputation for (and image related to) high-quality service.

Corporate image is an intangible asset. Communicating a good image to the public has become a crucial issue: the key to organizational success. Public relations is the magician who creates this image, exploiting the competitive nature of organizations and building bridges for external communications. As mentioned previously, LINE is the most popular mobile app among young people in Taiwan. According to a survey conducted by the Public Relations Office of Hungkuang University before launching its LINE Official Account, almost 100% of students who use smartphones are LINE users. Given that its most important stakeholders were already using this tool, it was clearly to the university’s advantage to create a friendly image through an Official Account. In addition, employing the latest mobile Internet tool made the university seem modern and fashionable, thereby effectively enhancing its image among students.

- 2) Employing a large number of media editors to provide efficient, comprehensive information services.

Online information is known as a “digital asset,” which belongs to the category of intangible and non-material organizational assets. It is usually stored and transmitted through computers, and includes information on the organization’s framework, products, and services. This information is a type of public property, characterized by non-exclusivity. The Hungkuang University Director of Public Relations, Mr. Lin, explained that, “in order to achieve the integration of virtual and physical customer services, it is necessary for behind-the-scene editors to be assigned to each administrative office in the university. When there is any problem involving university affairs, these editors must try to respond within 24 hours; in case of emergency, the university will immediately send someone to resolve it.” Given such seamless communications, it is not surprising that Hungkuang University is ranked top among all universities and colleges in Taiwan for its number of users; it is also the only university that offers a wide range of different services. Although the university has extremely high labor costs, Mr. Lin commented, “We think it is very worthwhile.”

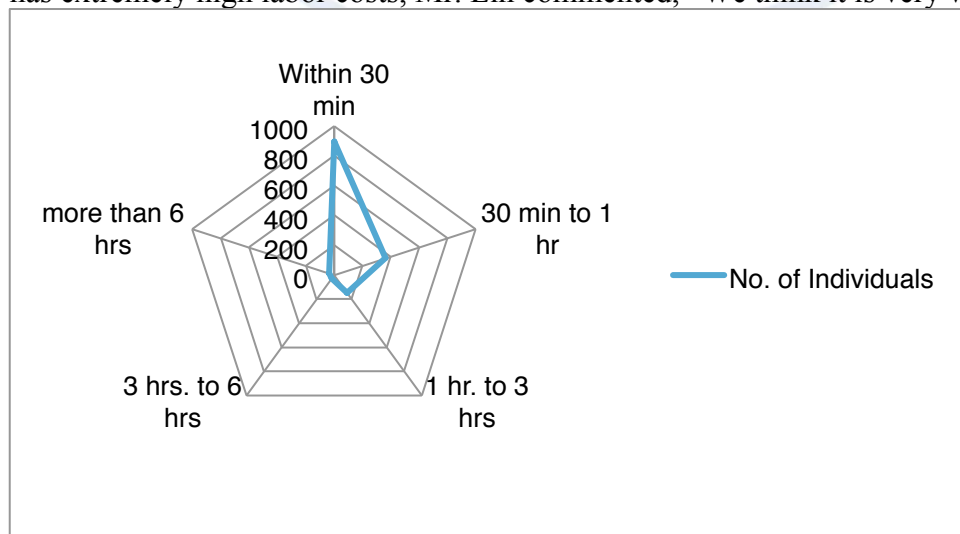


Figure 2. Response time of editors to problems

3) Applying one-to-many or one-to-one approaches to reinforce marketing communications.

The greatest difference between traditional and Internet public relations lies in the fact that public relations in the real world depends on professional management and operations to maintain a good relationships with journalists. In the virtual world, public relations enables key personnel to communicate more directly with customers through organizational websites, emails, and community discussions, without any need to curry favor with journalists or invest heavily in advertising strategies. Open one-to-one dialogues are akin to having exclusive mobile secretaries responsible for students. According to the online survey, 72% of respondents gave the editors the highest possible rating of “5 stars.”

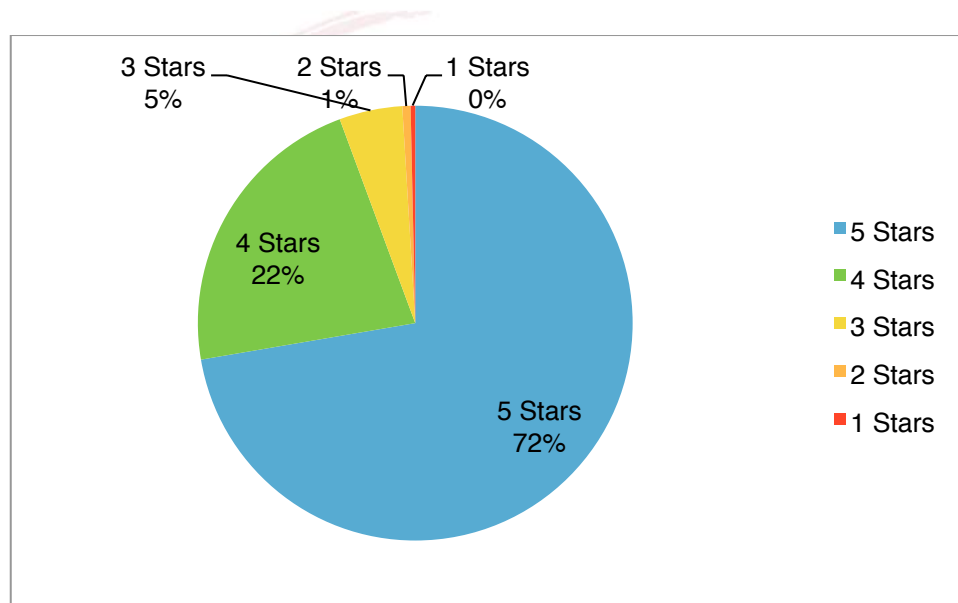


Figure 3. Ratings for Editor Services

4) Using social events on the mobile Internet to increase a sense of participation among friends.

Planning online events can attract attention and generate discussions about certain topics; this is the key to success in public relations. A powerful ability to disseminate information and a high degree of investment among netizens have made possible the low-cost support of public relations events through the Internet. This online survey shows that the most helpful information involves announcements about sporadic lottery draw activities posted on the Official Account.

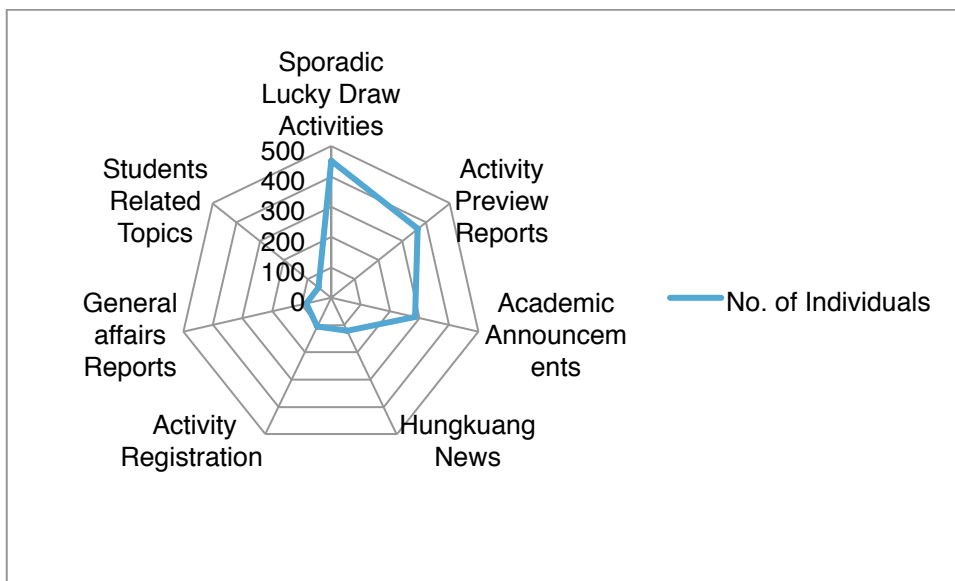


Figure 4. Friends' Favorite Types of Information

5) Reinforcing the horizontal connections between different units and publicizing information to maintain internal and external relations.

The main purpose of public relations is to conduct two-way communications between organizations and the public, with the goal of establishing reciprocal relationships. The interactive nature of the Internet enables both organizations and the public to receive instant responses to avert misunderstanding. For this reason, public relations on the Internet does not simply involve the publication of press releases online; it is a communication model that promotes and permits interaction with the public. The LINE Official Account has been able to achieve timely, two-way, and diverse interactions.

6) Constantly recruiting friends through physical enrolment activities and advertising. Obtaining the loyalty of the target audience to consolidate the brand's status in the market is another important goal for public relations personnel to incorporate into their information strategies. Organizations can adopt approaches such as actively sending messages, regularly distributing e-newsletters and media reports, and inviting people to attend education exhibitions to encourage the target audience to obtain information about the school or university, and to join as friends.

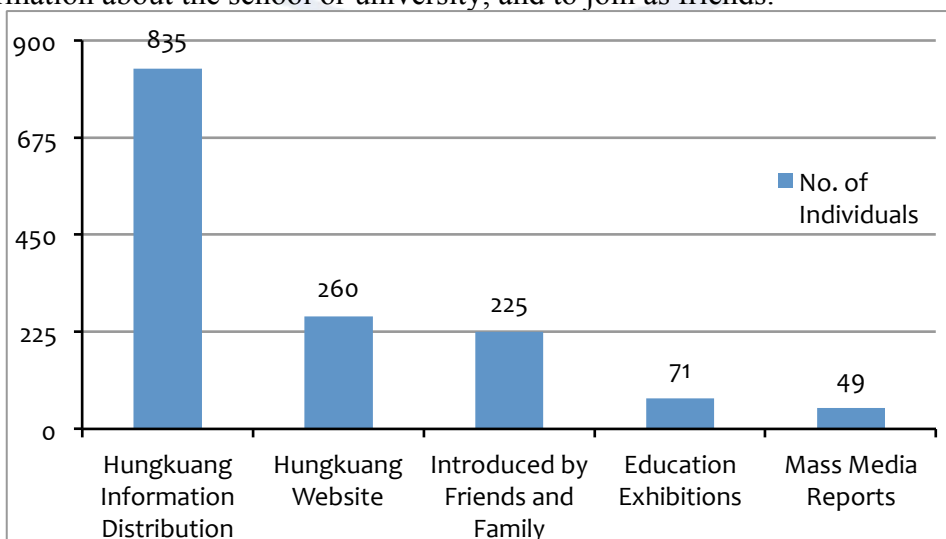


Figure 5. Information Channels for Those Added as Friends

7) Conducting crisis management by taking advantage of the ubiquity of the mobile Internet.

When it comes to crisis management, the field of online public relations has an incomparable advantage over conventional public relations. The key to crisis management is making public relations the default response and adopting the right public relations strategy. The ability to determine whether a response or strategy is correct depends on quick feedback and accurate information. Many crises are managed unsuccessfully as a result of wrong decisions made at the wrong time; feedback speed and information accuracy are therefore particularly significant. Lin Haoqun illustrated this point with an example. Recently, the university encountered significant resistance in implementing a carbon emissions reduction policy. In particular, many students complained that having no electricity at noon was unreasonable. Given that “there were students complaining during almost every class,” the university immediately held a discussion and proposed a compromise: as soon as the temperature in a classroom exceeded 28°, the university would turn on the air conditioners in those classrooms; these would be identified by room numbers sent in by students using LINE messages. In another case, the power supply was interrupted by the Taiwan Power Company without notice, and many campus buildings had no power at 7 AM. The university used LINE to notify students that they should immediately change classroom; this was done to avoid confusion when the students arrived at school. Many students joked about it, saying, “We can’t find an excuse for not attending school.”

4. The key to success lay in the proactive approach of the LINE Official Account operation team and the effectiveness of the feedback mechanism.

In response to the increasing use of smartphones and online social media apps, Hungkuang University launched its LINE Official Account in November 2011. Within six months, the number of friends exceeded 5000; during the past three months, there has been an increase of 1000 friends per month. The university’s LINE Official Account is coordinated by the Director of the Public Relations Office, along with personnel recommended by each administrative unit, for 22 members in the management team for the response window. The individuals in charge of the response window are all known anonymously as “editors.” The organizational framework is illustrated by the figure below:



Figure 6. Organizational Framework of Hungkuang University’s

LINE Official Account Management

All editors can simultaneously view a question from any friend via the back-end management platform. Editors then decide whether or not to respond to questions based on their categories. If a message has not been replied to by the editors after 24 hours, the coordinating director will remind relevant units of the need to respond or reply to the message directly. Editors have demonstrated high initiative and judgment in this process. All editors are expected to actively check messages and to decide whether to reply to them. As Editor A mentioned, “this is a job that requires passion.” As can be seen from the figure below, within the month of June alone, there were 612 questions from friends. Of these questions, 54.25% were about enrolment, 18.95% were teaching-related, 6.86% involved advice about daily activities, 5.07% were about school maintenance, 3.43% involved on-campus residence, and the remaining 3% involved library use or information use, continuing studies, and administrative procedures. Thus, although there are 22 editors in total, around 7 of them are proactive, answering questions every day.

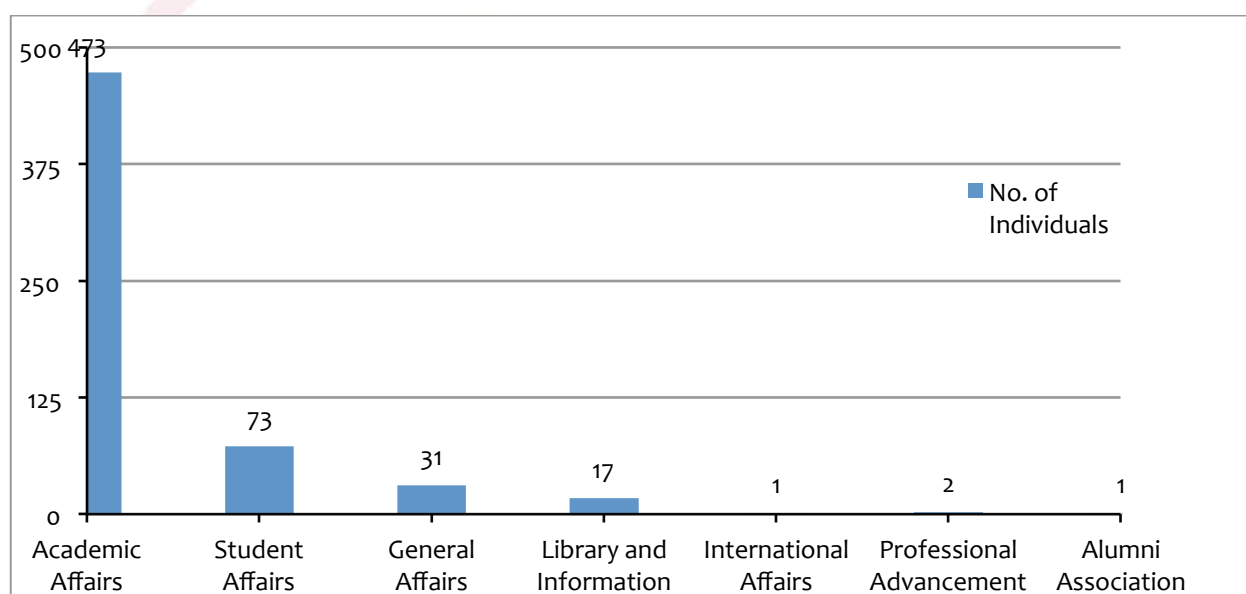


Table 7. Categories of Questions Asked by Friends of the Hungkuang University LINE Official Account in June

Discussion and Conclusion

This study shows that LINE Official Accounts are indeed effective tools for school and university marketing and public relations. The operation strategies developed by one institution can also be transferred to others. However, the following questions merit discussion. The first concerns costs and benefits. In terms of cost analysis, the tools used in the past for public relations communications, such as traditional media, the telephone, and marketing activities require more manpower and expensive resources to achieve timely and interactive communications. The strengths of most traditional marketing and public relations models involve one-way communications, while models based on LINE Official Accounts can be either one-way or two-way, a far more effective approach to communications than any of the traditional models. No registration fees are charged at present, and the only fees required are for information

distribution; however, operation costs could be higher in the future if the Line Corporation adjusts its fee policy.

Second, in order to keep a LINE Official Account functioning efficiently, a substantial amount of professional labor is required. Institutions to select and train personnel must be set up to ensure its long-term development. In order to successfully build on the existing foundations, managers must move towards “institutionalization.” Professional advisors or advisory teams should be in charge of operations, while spokespeople decide matters that relate to overall directions and supervision. Facebook fan pages should be promoted; more involvement is also required to build advertising strategies to promote important issues. In addition, the operation of fan pages must be institutionalized. To give one example, if one person replaces another in managing a page, will the organization risk discontinuity in its policies? It is proposed that advisory teams be responsible for operations, providing guidance on supervisory roles, in order to ensure the sustainable development of this platform.

The third issue relates to the education, training, recognition, and discipline of personnel. Behind-the-scenes LINE Official Accounts personnel should have expertise in professional fields and proficiency in using apps; they should also be able to use terms and expressions that young people use to communicate with friends. Taking this case study as an example, there is no unified standard for selecting the editors. The majority are experienced professionals with an average of 8 years working experience. Since these editors are passionate about their work, they can easily manage without institutionalized rewards, and do not need to be reprimanded for not responding to messages seriously. It thus remains to be seen whether this system can be sustained for long without a well-established mechanism for reward and punishment.

Lastly, LINE Official Accounts can function only as a supplementary mechanism, and will never replace formal communication channels. Outside the group of friends with interactions, LINE does not make it possible to obtain much information about friends who have joined, but do not ask or respond to questions. Although this study has investigated cases of successful crisis management using instant communications (for example, in responding to power cuts on campus), it should be noted that not all stakeholders have joined. Thus, the LINE Official Account is still an informal channel for communication, and formal events are still managed in accordance with traditional models.

Despite the problems and difficulties mentioned above, this study demonstrates the enormous future potential of LINE Official Accounts; universities and colleges are advised to invest in and establish such accounts. Its advantages of mobility and convenience enable a LINE Official Account to function as a tool for marketing and public relations in this new era, introducing additional benefits to communications between universities and their stakeholders. Furthermore, this new tool has untapped potential for development; by incorporating the commercial circles that surround a particular university or school, a LINE Official Account can extend its circle of influence, uncover revenue resources, develop downloaded images, and generate non-business income. For this reason, universities that have invested in managing LINE Official Accounts are encouraged to continue developing this resource, while those that have not are recommended to rapidly evaluate the potential benefits and follow suit.

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The logo for the International Association for Business and Economics (IABE) is centered on the page. It features the word "iafor" in a light blue, lowercase, sans-serif font. The text is surrounded by several overlapping, curved lines in shades of blue and red, creating a circular, abstract design.

Cultural Differences on an Educational Intervention Program of Prosocial Behavior and Metacognitive Strategies

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The Asian Conference on Education & International Development 2016
Official Conference Proceedings

Abstract

We investigated cultural differences on children's quality of life (QoL), perspective of prosocial behavior, writing skills, and teacher's attitude in a child-centered intervention program. The intervention program contains prosocial experience and metacognitive strategies which include self-planning, acting and reflection. The intervention program was administrated in 11 to 12 year old elementary school children in Japan and Denmark for 3 months. The two countries represent different educational cultures and children's psychological mental state; where Japanese children's low self-esteem and Danish children's high satisfaction. At the start and end of the intervention program, a self-reported questionnaire measuring the children's QoL was applied to evaluate the effect of the intervention. Additionally, children's prosocial behaviors were categorized and written essays were evaluated grammatically. Overall results showed that after the intervention the QOL well-being was improved among both Japanese and Danish children. Regarding type of prosocial behavior, Japanese children's prosocial behaviors were treating others gently or working on their classroom environment, whereas Danish children's were helping and teaching each other with their knowledge directly. We also found differences between children's perspective regarding motivation for prosocial behavior. Danish children preferred helping others instead of receiving help from others, Japanese children were the opposite. According to the interviews and observations with the teachers, Japanese teachers did and thought more than was required. The effect of the intervention is discussed with respect to the difference in children's perspective and teacher's attitudes in Japan and Denmark, respectively.

Keywords: children's quality of life, educational intervention program, prosocial behavior, metacognitive strategies, teacher's attitude, educational cultural differences

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Introduction

Prosocial intervention program and QoL

This study reported the effect of an intervention program for school children in different countries; 1) effect on children's QoL, 2) effect on children's writing skills, and also an investigation of potential cultural differences on this program; 3) children's perspectives of prosocial behavior, 4) children's type of prosocial behavior, and 5) teacher's attitudes and perspectives. The intervention program contained prosocial behavior and metacognitive strategies. Prosocial behaviors are defined as a spontaneous act which consists of helping, sharing, comforting and cooperating, and each element can be interpreted in various ways (Brownell, Svetlova, & Nichols, 2009; Svetlova, Nichols, & Brownell, 2010; Warneken & Tomasello, 2007; Zahn-Waxler, Radke-Yarrow, Wagner, & Chapman, 1992). These abilities are developed rapidly throughout school years and this social behavior plays an important role in the older children's development during social interactions and peer acceptance competence (Dekovic & Janssens, 1992; Eisenberg et al., 1996). It is at this age when children are sensitive to understand other's needs, and find solutions to overcome problems (Dunfield, Kuhlmeier, O'Connell, & Kelley, 2011). To develop prosocial behavior it is necessary that children are able to distinguish their own emotional states from others, and they also understand other's needs. Then they share valuable resources to overcome problems or fulfill others' needs and become more supportive and responsive. Their prosocial behavior and empathy have important implications by cognitive changes and socioemotional development (Eisenberg, Spinrad & Morris, 2013). As a consequence, children become more motivated to act pro-socially (Brownell, Svetlova, & Nichols, 2009; Hoffman, 2007; Zahn-Waxler, Radke-Yarrow, Wagner, & Chapman, 1992). Prosocial behavior allows them to explore their physical and social environment more independently and the outcomes of their performance effect their satisfaction. It has been shown in experimental studies, that prosocial behavior in children is associated with QoL, self-esteem, and self-satisfaction (Gebauer, Riketta, Broemer, & Maio, 2007; Martin & Huebner, 2007). Succeeding in their use of prosocial behaviors makes them recognize that 'I know I have abilities or I am a valuable person who can help one another'. This association also occurs more frequently in a school setting (Solomon, Battistich, Watson, Schape, & Lewis, 2000). As Anderson and Costello (2009) described, children's abilities to consider other's internal states, needs and prosocial behavior is a source to ensure other's and own well-being. But there are few intervention studies which promote children's prosocial behavior. Additionally as a methodological issue, these experimental studies demonstrated in test situations in which the instructor conducts a whole program, they aimed at specific prosocial behaviors, or with teachers evaluating children's performance (Brownell, Ranmani, & Zrewas, 2006; Brownell, Svetlova, & Nichols, 2009; Eisenberg-Berg & Lennon, 1980; Hawley, Little, & Pasupathi, 2002; Rheingold, Hay, & West, 1976; Yarrow et al., 1976). However prosocial behavior can be a more independent act in natural school settings and demonstrated by student themselves. Prosocial behavior can be acted in a variety of ways and ideas depending on each child. We can expand the possibilities of children's performance by using a more natural situation.

Another area that is recently gaining knowledge is metacognition which comprises planning, monitoring and evaluation (Flavell, 1979, 1987; Schraw & Dennison, 1994; Schraw & Gregory, 1998). It is individual ability to use prior knowledge to plan a

strategy for approaching a learning task, take necessary steps to problem solve, reflect on and evaluate results and modify one's approach as needed. Previous researches have shown that the abilities are rapidly growing in school aged children and they also improve academic performance through training of metacognitive skills (Brown & Smiley, 1977). Individuals with well-developed metacognitive skills can be more independent. Researchers have studied how children use metacognitive skills, for instance, in language learning (Anderson, 2008) and mathematics (Garofalo & Lester, 1985). These studies, among others, have focused on children's objective learning outcomes. In the metacognitive strategies he/she is able to connect plan, act and evaluate oneself (Dirkes, 1985). The feeling of self-planning, decision and accomplishment might affect their self-satisfaction. Researchers have discussed the relationship between metacognitive skills and their QoL (Zimmerman, 2002). But few studies have been addressed and it has been pointed out that goal setting and self-reflection can raise children's QoL.

Prosocial behavior and metacognitive strategies can be combined as an intervention program carried out in an everyday school context and in a way that is child-centered without any structured setting, expecting specific behavior, or instructions. Umino and Dammeyer (submitted) tested an educational intervention program focusing on children's prosocial experiences and metacognition in a school setting. In the intervention program, children plan, do and reflect their own prosocial behavior themselves on a daily basis. The first evaluation of the program showed that the intervention had positively improved the Danish children's overall QoL (Umino & Dammeyer, submitted). The study's intervention program, children comprehend their own goals and assess not only how well they have done but also how much they are satisfied with their performance.

Cultural differences

This study investigated how children in different countries respond or give feedback to this intervention program. We compared Japanese and Danish children. The two countries mark distinctly different types with regard to children's QoL. According to a report on children's self-reported health by UNICEF (2007), 30% of Japanese adolescence up to the age of 15 agreed with the statement "I feel lonely", which is almost three times higher than the next highest-scoring country. Additionally, the percentage of Japanese young people saying "yes" to the statement "I feel awkward and out of place" was above 15%, which was the highest score out of 24 OECD countries. But in contrast, almost one-fifth of Danish children agree with the statement "liking school a lot", 90% agree that they are highly satisfied with their school life, and only 5% agreed with the statements "I feel like an outsider or left out of things" and "I feel lonely". The proportion answering "yes" to "I feel awkward and out of place" exceeded 15%. Furusho (2009) proposed reasons for Japanese children's low self-esteem, (1) large average class size drives teachers underground to support students who need it, (2) strong hierarchical relationships between students and teachers make students more likely to be afraid to behave naturally, hiding their worries and feel throttled, (3) bullying and truancy are defined as severe problems (Ministry of Education, 2015), (4) teachers are more focused on student's basic academic skills and encouraging children's home work (Benesse Education Research and Development Center, 2006; 2014). Danish teaching methods focus on cooperative learning activities which include experimental, play and creative activities in the learning process as a means to improve learning. Teaching is based on discussion

rather than instruction and peer-cooperation instead of competing for grades (Dolin, 2007; Mistry of Higher Education and Science, 2015). However the educational methods are not reflected in student's academic achievement level (OECD, 2014); compared to Japanese children's high academic achievement, Danish school children score lower. Summing up, the different children's self-esteem and educational cultures might indicate differences in children's perspective, behavior and their teacher's attitudes toward this study's intervention program. Nevertheless, we hypothesize that even if they have different perspectives and behaviors, QoL will be improved in both countries.

Methods

Participants

The data collection and intervention was administrated at different primary schools in Japan and Denmark. Thirty-five 6th grade native Japanese students (49% boys; $M = 11.5$ years of age, $SD = 0.46$) from one school. Forty-five 5th grade Danish students (50% boys; $M = 11.9$ years of age, $SD = 0.68$) from two different schools and were native Danish speakers. Parents of all children signed a written informed consent form of participation before the intervention.

Intervention program

The children were supposed to do prosocial behavior by using their strength during the school day at a time in the day that suits the child. During the intervention, they wrote a planning and reflection sheet to plan and reflect their prosocial performance. The sheet consisted of three pages, one for every Monday, Wednesday and Friday. On the Monday page, the children set up a goal of how they want to help or do something nice for their class mates. They had to write up goals. The pages for Wednesday and Friday were self-reflection where the child reflect his/her prosocial performance from three perspectives: (1) objectively: how well they have done their own performance, (2) subjective satisfaction: how much they feel satisfied with their performance, (3) other's perspective: how they think others perceive their performance. The response categories were 1 = poor, 2 = fair, 3=good, 4 = very good, 5 = excellent. The intervention lasted 10 weeks.

Questionnaire

Self-rating scales were filled out by the children at the start and end of the intervention in order to investigate the effects of the intervention with regard to QoL. The Health-Related Quality of Life in Children and Adolescents Revised Version (Kid-KINDL^R; Bullinger et al., 1994; Ravens-Sieberer & Bullinger, 1998): (1) physical well-being, (2) emotional well-being, (3) self-esteem, (4) family (5) friends and (6) everyday functioning. High scores indicate good QoL.

Children's perspective regarding prosocial behavior

To assess the children's perspectives of prosocial behavior, they were asked two general questions at the start and end of the intervention program: "Do you want to help others?" and "Do you want others to help you?". The children were asked to respond to the statement using a five-point Likert scale with the categories: 1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = always.

Coding of children's prosocial behavior

Prosocial behavior and what each child wrote on the sheets were coded into the categories defined by Barrett and Yarrow (1977), Brownell, Svetlova, and Nichols (2009), Dunfield, Kuhlmeier, O'Connell and Kelly (2011), and Serow and Solomon (1979): (1) happy: praise, reassurance, comfort or encouraging others physically and verbally, express sympathy or affection, (2) protect: protect or defends others, (3) jokes: making others laugh with a joke, (4) inquire: pay attention to other's motives, feelings or perspectives, (5) greet: salute others with a nice way or respond warmly to others, (6) materials: sharing materials, (7) turn: give others a turn, (8) join: invite others to join in or work together, (9) knowledge: shares one's knowledge, skills, or ideas with others, (10) chores: do classroom chores or roles, (11) cleaning: keeping classroom or materials clean or tidy, (12) teaching: teach academic information, solve the problem or substantive help, (13) help: help others or ask others for help, (14) quiet: ask others to be quiet during lesson.

Written essays

Children's essays that they wrote at start and end of the intervention program were evaluated. Two university students for each country's essays, blind to the study purposes, rated the quality of writing by means of a 5 point Likert scale. Danish written essays were evaluated according to the general aim of Danish language learning at school of Denmark (Fælles Mål 2009) and criteria in the national guidelines (Fælles Mål 2009). The Japanese written essays were evaluated according to general aim of Japanese language learning at school (curriculum guideline, 2008).

Interrater reliability

The reliability of the agreement rate of coding of children's prosocial behavior and grammatical accuracies for essays was evaluated by comparing ratings of the two raters independently for each of the parameters. Kappa statistics with quadratic weights were used to evaluate the degree of agreement (Fleiss & Cohen, 1973). According to Fleiss and Cohen (1973) a Kappa coefficients of <.40 is fair, .41 to .60 is moderate, .61 to .80 is substantial, and >.81 almost perfect. Interrater reliability for the parameters in coding children's prosocial behavior was more than .60 and written essays evaluations were all between .55 - .82.

Teacher's role and interview

The author interviewed with all teachers at the beginning, middle and end of the intervention with a focus on their experiences and perspective of the intervention program and the children.

Results

One hundred percent of the QoL self-reported questionnaire was answered by the children of both countries. One hundred percent of the two questions concerning prosocial behavior were answered as well. Eighty eight percent of all written essays were returned from the Japanese children and ninety three percent of all written essays were returned from the Danish children.

Effect of the QoL questionnaire at end of the intervention program

The emotional well-being subscale of the Kid-KINDL^R was significantly higher ($t(32) = -2.13, p < .05$) at end of the intervention compared to the start among Japanese children. Danish children also showed a significantly higher total score on the Kid-KINDL^R ($t(41) = -2.03, p < .05$) and the self-esteem subscale of the Kid-KINDL^R ($t(41) = -3.41, p < .01$).

Children's prosocial behavior in two countries

Inquire, greet, join, chore, and clean category of Japanese children's goal setting were significant higher than Danish. Whereas teach, help and quiet category of Danish children's goal were significant higher than Japanese. Overviews of the results with respect to country are shown in Table 1.

Table 1: Comparison of scores on goal setting by Japanese and Danish children, respectively, at start and end of the intervention program

	Group				df	t	Sig.
	Japanese		Danish				
	Mean	SD	Mean	SD			
Inquire	.20	.484	.00	.000	29.0	2.26	<.05
Greeting	2.73	2.60	.00	.000	29.0	5.76	<.000
Join	1.38	2.12	.33	.577	37.7	2.63	<.05
Chores	1.22	2.15	.10	.436	34.8	2.87	<.01
Clean	.69	1.66	.05	.218	32.63	2.16	<.05
Teaching	.31	.738	1.14	1.35	27.89	2.57	<.05
Help	.63	.907	2.14	1.82	26.56	3.54	<.01
Quiet	.03	.177	.71	1.27	20.51	2.45	<.05

Children's perspective regarding prosocial behavior

Scores on the question "Do you want to help others?" was rated significantly higher among Danish children compared to Japanese children at the start ($r_t = .72, p < .001$) and at the end ($r_t = .10, p < .01$) of the intervention program. In contrast, the questions "Do you want others to help you?" was rated significantly higher by Japanese children compared to Danish children at the start ($r_t = .92, p < .001$) as well as at the end ($r_t = .10, p < .01$) of the intervention.

Written essays

There were not significant differences between start and end of the intervention of both countries' children.

Teacher's attitude

Due to school or class events, the intervention program was suspended in both countries a few times. Japanese teachers constantly expressed that they were terribly sorry in regard to not following the intervention, meanwhile Danish teachers just reported that they temporarily had to halt the intervention. The teachers were only asked to hand out the planning and reflection sheets to the children and remind them to complete it, but nothing else. Nevertheless, Japanese teachers collected the papers from the students every week. The teachers explained that they wanted to make sure that all students completed the sheets and carried out the prosocial performance. In contrast, the Danish teachers simply handed out the paper to the students as they were instructed to do. Further, they only occasionally reminded the students to write in the sheets, and often forgot to do so or simply did not find the time for it. Further, a Japanese teacher left comments on all children's sheets such as "you have to do it (helping others) harder!", "keep going!", and "keep it up!" despite that the teachers were not asked to do so.

Discussion

The intervention program which contains prosocial experiences and metacognitive strategies of self-planning, acting and reflection had a positive impact on both children's overall well-being of QoL despite that their writing skills were not improved in the ten weeks. The association between prosocial behavior and positive well-being is in line with previous research (Gebauer, Riketta, Broemer, & Maio, 2007; Martin & Huebner, 2007; Solomon, Battistich, Watson, Schape, & Lewis, 2000). We found not only an improvement in QoL but also differences in the children's goal setting in relation to the intervention program. Japanese children's goal setting was more likely to improve the learning environment or comfort others while Danish children's goal setting involved helping or teaching others directly. A likely explanation may be that of Furusho (2009) and Ishikawa, Sato, & Sasagawa (2009); 1) Japanese children prefer their own inner contentment by other's treatment instead of doing for other's concrete benefit, 2) their relative lack of experience in helping others with their own idea (independently) in school setting, or 3) they were afraid to do the acting autonomously due to educational culture. Danish children's goal setting can also be considered in connection to their experiences in school with teacher's teaching methods. Children's different perspectives regarding prosocial behavior (if they want to help others or if they want to be helped by others) were also found. In contrast to Danish children, Japanese children preferred others help instead of helping others. Ishikawa, Sato, & Sasagawa, (2009) pointed out that Japanese children are expected to be well-behaved, disciplined and strictly follow the school's rules. Their study also suggested that adults of western culture expect children to develop autonomy from heteronomy in a child's growth and development. Presumably, Danish children might be encouraged to behave the way they think with their own motive, judgement and desire in every single situation and teachers and parents maintain a permissive attitude towards them. It follows that Japanese educational culture may be related to children's passive and non-directed behavior toward others, whereas Danish children's more directed behavior. The different teacher's attitude

might effect on children's attitude or mental state. Whereas Japanese teachers tried to maintain children's motivation to carry out the intervention program or moving the program forward successfully by collecting, checking and commenting on their working sheets. But that behavior might have influenced children's attitude or motivation toward this intervention program. Research has shown that teachers' behavior has an impact on student's motivation (Christophel, 1990; Urdan & Schoenfelder, 2006; Reeve, 2009). We carefully explained to teachers what was expected of them and the purpose of intervention program to set a similar condition in different country for future study. However both children's QoI was improved even if they have different educational cultures such as children's goal setting, perspective of prosocial behavior, and teachers' attitude. Additionally, this child-centered intervention program can be considered an easily applicable approach which takes virtually no time at all, never interrupts daily school lessons nor requires teacher's to invest extra time and labor, and it was not needed to train teacher to conduct the intervention program. More research is needed to clarify the each country's children's psychological traits and associations with their educational culture and teaching methods.

The main limitations of this study were the small sample sizes. More subjects in both countries are needed using a similar intervention program to investigate if and which parts of the intervention are effective and how educational culture plays a part. We also need to make sure children understand prosocial behavior and the reflectin system. To examine precisely the effect or the intervention program a control group could be essential, a group which belongs to the same school and same grade but different class.

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***Culture and Leadership: How Indonesian Culture Influences Leadership Practice:
A Case Study in Uin Malang***

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Abstract

The study was intended to know the leadership style that was practiced by the rector of UIN Malang, Indonesia and how Indonesian culture influences his leadership practice to lead the university. The study was a qualitative study and designed as a case study. The subject of the study included some lecturers of UIN Malang, Indonesia. The data were gained from interview. The findings show that leadership practice by the rector of UIN Malang reflected transformational leadership style according to the perception of the lecturers. In light of this, the data show that transformational leadership practice by the rector of UIN Malang covers some dimensions as follows: intellectual stimulation, promoting professionalism, individualized support, and highly expectation of the university goal. And, the data show that some aspects of Indonesian culture such as collectiveness, communication strategy, and valuing the lecturer's different potential and positive contribution to the university enable the rector apply transformational leadership style to lead UIN Malang better.

Keywords: transformational leadership style, Indonesian culture

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Introduction

The Indonesian National Constitution defines the national goals as follows: to preserve the interest of all Indonesian citizens, promote human's well being of Indonesian society, develop human resources of Indonesia through education, and highly support the world's peace. In light of this, the constitution strongly orders the Indonesian government to build national education system that allows all Indonesian achieve their full potential to support themselves and contribute positively to the process of national development in order to realize the national goals. Indonesian government never stops developing national education system to catch up with the advance of science and technology and the modern level of other countries to equip Indonesian young generation with knowledge and skill for their future role to lead the country and support the world's peace.

However, Indonesia still faces some serious educational problems like educational quality improvement and equality of educational quality throughout the country. Indonesian education achieves lower rank among other countries in Asia, even in ASEAN countries (Tilaar, 2000). This problem also happens to higher education of Indonesia. Most of Indonesian universities have some crucial problems such as accountability, relevance, quality, autonomy, and international networking (Tilaar, 2000). Most of Indonesian universities are difficult to determine the best strategy to define the vision and manage academic activity that is able to answer the problem of Indonesian society. There is a significant number of jobless from university graduates. The graduates of Indonesian university are still difficult to compete with other competitors to get a job. Thus, it arouses more complicated social problem to Indonesian society. Indonesian university is actually expected to manage academic programs that are relevant with job market and the progress of the national development. In fact, most of them are difficult to realize it. Then, productivity of Indonesian universities is still low. There is few number of research products that are published internationally by Indonesian universities, and none of them is included as the top 10 university in ASEAN anymore. Lower productivity of Indonesian university is also the result of being less active of Indonesian universities to manage international cooperation with overseas universities. This situation makes the lectures are difficult to conduct joined research with their counterparts from overseas universities, and it results in low productivity in research activity.

Indeed, the crucial problems above need good university leader who is able to apply the best leadership strategy to lead the university to improve educational quality of the university. The leader is the key to promote the change in an educational organization. The leader is vital for educational institution to achieve better in both academic and non academic activities (Leithwood, Chapman, Corson, Hallinger, & Hart, 1996).

Morrison (2002), and Kohler and Pankowski (1997) state that leadership strategy is now moving from traditional to the most popularly called transformational leadership. Parry (1996) stated that leadership itself is a transformation. In this case, leader transforms the organization from one of stability to one of enthusiasm for challenge, change, and progress. Sagnak (2010) says that transformational leadership style emphasizes innovation and concern for people. In this case, the leader has to inspire the members to make innovation for educational quality improvement of educational

organization and build trust relationship to motivate them to do beyond the expectation to realize the organizational goals.

But, the leader, in particular the university leader, cannot ignore the values of the cultural context of the society in which the university operates. This strategy is intended to lead the university in line with the progress of the society and define the best university policy to answer the society's problems. The next, the university leader can determine the learning program that is relevant to the need of the society and equip the students with knowledge and skill for their future role in the society. Fiedler (1967) argues that leader's effectiveness in a given situation depends on the fit between the style and task, authority level and the nature of the group (Cunningham&Cordeiro, 2009). Cultural values affect the life and management of educational organization (Hallinger&Leithwood, 1998). Getzels et al. (1968) stated that cultural values influence the educational organization to define the policy (Hallinger&Leithwood, 1988). Then, Gerstner and O'Day (1994) said that leadership is a cultural phenomenon so that it is linked to the values and customs of a group of people (Hallinger&Leithwood, 1998). Further, Hallinger and Leithwood (1998) described that the studies on educational leadership and cultural values have been done by some experts like Getzels et al. (1968), Hofstede (1976), Bossert et al. (1982), Hallinger and Heck (1996), Cheng (1995), and Cheng and Wong (1996).

In this global era, there is a strong argument to conduct the study on leadership that is grounded to non western cultural values. Bajunid (1996), Cheng (1995), and Wong (1996) said that few modern discussion of leadership or administration grounded in non western cultural contexts can be found (Hallinger&Leithwood, 1998). Further, Bajunid (1996) argued that western educational philosophy is not relevant to the educational system of Southeast Asian countries anymore (Hallinger&Leithwood, 1998). Accordingly, to conduct the study on leadership practice and Indonesian cultural value is needed to advance the science of educational leadership in Indonesian context. Thus, this study aims to investigate leadership style that was practiced by the rector of UIN Malang and how Indonesian culture influenced the leadership practice by the rector to lead the university.

Research Methodology

The study is a case study to investigate leadership style that was practiced by the rector of UIN Malang and how Indonesian culture influenced the leadership practice by the rector to lead the university. The respondents of the research are the lecturers of UIN Malang, and the data are gained from interview. The interview data are analyzed according to the theme.

Transformational Leadership

Burns (1978) initially develops the concept of transformational leadership (Bass&Riggio, 2006). Transformational leadership encourages the individuals of the organization to do more than expected, empower themselves to achieve full potential, build mutual cooperation, place the organizational goal before the individual's interest. The individuals have to increase the awareness of the organizational vision and eagerly strive for realizing the organizational vision and goal. Transformational leadership emphasizes moral values and motivation (Day, Harris, Hadfield, Tolley&Beresford, 2003). Burns (1978) connected transformational leadership to transactional leadership (Marturano&Gosling, 2008). Transactional leadership suggests the leader gives the reward to the followers allowing for the job accomplishment by the followers to achieve the organizational goal. In the light of this, Hicks and price (1999) quote the idea of Burns that transactional leadership is merely directed by human desire and neglects interpersonal relationship as well as mutual cooperation among human beings (Marturano&Gosling, 2008).

Further, Bass and Riggio (2006) identify four components to constitute transformational leadership: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Bass & Riggio, 2006). Idealized influence means the leader behaves in the proper manner and is highly committed to moral values so that he becomes the role model for the followers. Inspirational motivation means the leader always motivates and inspires the individuals by providing stimulus, ideas, and challenges to them. Intellectual stimulation means the leader encourages the followers to be creative and innovative to find the way to solve the problem. Individualized consideration means the leader has to give attention to each individual's need and develop each individual's potential by acting as mentor and coach. The leader not only trains the follower to be skillful to accomplish the job but also develops the mature of the members' emotion.

Then, Coleman (1999) quotes the idea of Leithwood, Jantzi, and Steinbach (1998) that transformational leadership in education institution is intended to facilitate the institution achieve the goal in accordance with the challenge the institution faces (Bundret, Burton&Smith, 2003). Leithwood (1994) develop transformational leadership in education into some components as follows:

1. Setting directions (includes vision building, goal consensus, and development of high-performance expectations).
2. Developing people (includes the provision of individualized support, intellectual stimulation and the modeling of values and practices important to the mission of the school).
3. Organizing (culture building in which colleagues are motivated by moral imperatives and structuring, fostering shared decision-making process and problem-solving capacities)
4. Building relationship with the school community.

(Day et al., 2003:15)

According to Hallinger (2003), transformational leadership is the most suitable leadership style in education institution. Leithwood, Tomlinson, and Genge (1996) explain that transformational leadership in education is a process to influence all individuals of the educational institution to do more than the expectation (Abdullah

Sani, Abdul Rashid Mohammed & Abdul Ghani Abdullah, 2007). Leithwood (1994) suggests that transformational leaders in the educational institution context have to do the following activities: a) support teachers in developing and sustaining a professional school culture; b) promote the professional development of teachers; c) improve problem-solving process (Morrison, 2002). Leithwood and Jantzi (2000) suggest six dimensions of transformational leadership in educational organization as follows: building the vision and goals of the educational institution, providing intellectual stimulation, offering individualized support, symbolizing professional practices and values, having highly expectations, and developing structures to promote participation in the institution decisions (Morrison, 2002). Lambert (2002) states that transformational leadership in educational institution enables the leader to work together with teachers and other staffs, know what the teachers and staffs need and conform their need to the institution goal. The studies on educational leadership have been done by the experts to explore the positive contribution of leadership practice to the educational quality improvement. Hallinger and Heck (1996) have done 40 studies on the impact of educational leadership to students' learning activity. Leithwood and Jantzi (2005) have done 32 studies to investigate the positive contribution of educational leadership to the students' learning achievement.

Indonesian Culture

Education is considered as vital means to transmit cross cultural values among nations in the world (Hallinger&Leithwood, 1998). The students understand the values of other societies, and other persons behave according to their own social norms from the learning materials they have to study in the educational institution. Durkheim (1947) defined culture as the values that guide, inspire, and motivate a certain group of people to make a better progress in any aspect of life. Lewis (2000) described that culture is a programming of mind that distinguishes a certain group of people from other communities. Then, Lewis (2000) said that social behavior of people in a certain group reflects culture. Kluckhorn and Kroeberg (1952) explained that culture is a patterned behavior of a certain group of people that is transferred from old generation to young generation (Hallinger&Leithwood, 1998). Whereas, Koentjaraningrat (2002) identified culture as values, a patterned behavior, and cultural products like folklore, novel, film, and others.

Indonesian society already developed its own culture long time ago. Abdur Rahman Wahid (2001) said that the essence of Indonesian culture is promoting collaboration, tolerance, and democracy in religious society. It means that Indonesian people are free to express their ideas, follow their different beliefs, and naturally different in race and language, but live in harmony as Indonesian family. Bowen (1986) stated that the main value of Indonesian culture is collectiveness and collaboration among people within Indonesian society. In light of this, Indonesian people cannot live alone and have to work together to achieve better life. Indonesian people are dependable at each other and have to keep harmonious life to promote Indonesian society's well being. Then, Geertz (1960) explained that Indonesian culture promotes harmony among people within Indonesian society. Indonesian people highly promote indirectness to communicate with others. Indirectness is intended to respect others. To criticize someone else directly means to denigrate him, and it is able to break the harmony of Indonesian social life. Accordingly, Indonesian leader especially university leader has

to do heart to heart communication and build trustful relationship with the members in order to motivate them to do beyond the expectation to realize the university goal.

In Indonesian cultural context, the first Indonesian Minister of National Education, Ki Hajar Dewantara, proposed the concept to lead the Indonesian educational institution (Soeratman, 1985; Surjomihardjo, 1986). The leadership concept by the first Indonesian Minister of National Education covers some points as follows:

a. Modelling Dimension of Leadership

Leaders should give the example, determine and communicate vision to the members, and behave properly in accordance with the legitimate social norms. The leader has the authority to direct, properly give positive or negative reinforcements to the members. The sense of love by the leader underlies the implementation of reinforcements. Positive or negative reinforcement (reward and punishment) is not merely transactional; it is not an exchange to what the members have done to the organization. Instead, they are intended to nurture and improve the potential of the members. This concept is in line with idealized influence and leading by example in the concept of transformational leadership.

b. Participative Dimension of Leadership

Leaders should be involved in the work of the members within the organization and be aware of individual problems among the members. Every individual has his own potential and preference, and the leaders should treat every individual differently. This concept is in line to individualized consideration of transformational leadership.

c. Motivational Dimension of Leadership

Leaders should encourage and motivate the members to continuously learn, to be creative to solve problems, and to collaborate with other members within the organization. This concept is related to intellectual stimulation and inspirational motivation of transformational leadership.

Geertz and Frans Magnis Suseno stated that Indonesian cultural context strongly emphasizes harmonious life among the community members (Firdaus Syam, 2003). In light of this, every individual not only relies on logical thinking but also takes emotion and human's feeling into consideration in the social interaction. A managerial procedure is not the single factor to lead and direct the organization but the leadership success needs love, sympathy, empathy, and feeling secure among the members within the organization.

Research Findings and Discussion

The researcher conducted the study in UIN Maulana Malik Ibrahim Malang, Indonesia from December 2012 until March 2013. The study was intended to investigate how the rector applied leadership strategy and how Indonesian culture influenced the leadership practice by the rector to lead the university. UIN Malang is under the supervision of the Indonesian Ministry of Religious Affairs. It is recognized as the early Islamic university in East Java Province, Indonesia. Now, UIN Malang has 350 permanent lecturers and around 40% of them hold Ph.D degree. UIN Malang publisher was established in 2009, but it successfully published more than 500 book titles. The Indonesian Ministry of Religious Affairs recognized UIN Malang as the top university among Islamic universities in Indonesia in 2011, and the Indonesian Ministry of National Education recognized UIN Malang as the top 20 university in Indonesia in 2012. This achievement was the result of the highly struggle and serious efforts of the rector along with all university members.

The researcher interviewed some lecturers to collect the data. The researcher classified and analyzed the data according to the theme as follows:

a. How the rector defined the university policy

The rector considered lecturers as his partner to run the university program in order to realize the goals better. He often delegated some responsibilities to lecturers to develop their professionalism to manage the university program. And, he often handled informal discussion with lecturers to talk about the problem of university and invited their ideas to find the best strategy to tackle the problem. He always welcome any idea and criticism from lecturers to improve the performance of university. He often brought the ideas from lecturers to the official forum of university senate as the positive input to decide the policy. Even, the rector often sent the lecturers to visit other universities to know the progress of the world outside and the advance of science and technology. The awareness of lecturers on the progress of the global era and the very tight competition era made them more motivated to work hard together to improve their professionalism and educational quality of the university in order to win the competition with other universities. Lecturer A stated that *“the rector often sits together with lecturers to discuss any problems inside the university. This relaxed situation makes teachers happy and free to express the idea to find the solution for the good of the university and all staffs”*. Then, Lecturer B said that *“I was sent by the rector to make a comparative study to a Catholic university in west Java, it makes me aware of our current position and the progress of others in both academic and non academic aspects”*.

b. How the rector deal with academic affairs

The rector often shared educational information with lecturers at any time. The rector highly supported lecturers to update their knowledge and skill to manage academic activity. He emphasized the university as the learning organization. In light of this, he promoted long life learning among lecturers to make them more motivated and competent to manage teaching and research activity in order to reach better achievement for themselves and the university. He motivated lecturers to collaborate at each other to improve the professionalism in teaching activity and conducting research project. The rector also decided the policy to support the study of lecturers for higher degree with the university budget. Lecturer C said that *“the rector strongly suggested the lecturers to hold focus group discussion for lecturers in the same field to share information for professional improvement in academic activity”*. Then,

Lecturer D explained that *“when I was on study, the government less supported lecturers with the budget to continue the study. The rector decided the policy to tackle this problem”*.

c. How the rector supervised lecturers

The rector promoted fairness and honesty to supervise lecturers. He followed the rule of university to evaluate the achievement by the lecturers. He rewarded lecturers according to their achievement regardless of sex and race. But, he never criticized lecturers directly, he talked together with lecturer in a relaxed situation to discuss the problem and offered some alternatives to lecturers to solve the problem. He said something in a proper language to correct the mistake by lecturers, it made them feel valued, respected, and more motivated to do better for the best of the university. Lectures E stated that *“the rector always talked something to lecturers in a relaxed situation and used proper language to criticize lecturers, it made us happy and more motivated to do the job. Supervision was not intended to kill lecturers’ career but to improve their professionalism”*. Then, Lecturer F said that *“the way he communicated with lecturers made us happy and respected so that we never felt reluctant to consult any problem to him”*.

d. How the rector managed social life with lecturers

He led the university in democratic way. He was close and open to all lecturers. He spent the time to discuss the university program, daily life, family, and others with lecturers and defined together the best strategy to tackle those problems. He was hardworking, discipline, and outgoing leader. He led the members by example. He came first to the university to check the readiness of the university to conduct learning process for students and he left the university late at night. He strongly suggested all the university members to build solidarity among them and live as one unified family of UIN Malang through social activity like family gathering, touring, religious activities and others. Lecturer G said that *“he was the example for all university members to work hard for the success of the university, he never led the members by words only”*. Then, Lecturer H said that *“he strongly suggested all lecturers care and collaborate at each other to build the strong solidarity as one unified family of UIN Malang”*.

The interview data show that the rector already implemented transformational leadership strategy to lead the university. He emphasizes innovation and concern for people to improve professionalism among lecturers and educational quality of the university. He always stimulates and inspires lecturers to update their knowledge and skill, and find various alternatives to solve the problem. He does this by involving lecturers in any programs, sending them to visit other universities, delegating the job according to their competence, and welcoming their ideas to develop the university.

Further, the rector always motivates lecturers to improve their professionalism to conduct the job. He holds seminar, workshop, focus group discussion for lecturers to make them more competent to manage learning process and academic research, and provide financial support for the lecturers to continue their study. Professionalism among lectures is the key to achieve the qualified university.

The interview data also indicate that the rector highly supports the lecturers in any aspects of life. He was open to lecturers to consult any problems. He promotes solidarity among lecturers and builds trustful relationship with them to create conducive atmosphere inside the university to run the programs better. He cares to the

lecturers and knows their need. He respects different potential of each lecturer and asks the lecturers to collaborate at each other for the good of themselves and the university. Then, the interview data show that the rector motivates lecturers to work hard and collaborate at each other to reach better achievement of the university goal. He is the example for the lecturers to work hard for the success of the university. He leads the members by example, not by words to realize the university goal.

It can be inferred from the data that transformational leadership practice by the rector of UIN Malang covers four dimensions as follows: intellectual stimulation, promoting professionalism, individualized support, and highly expectation of the university goal. The rector highly respects Indonesian cultural values to apply transformational leadership strategy to lead the university to achieve the goal better. He promotes indirectness and uses proper language to supervise lecturers and correct the mistake by the lecturers. He doesn't want to offend others' feeling when he criticizes lecturers. He builds harmonious life and trustful relationship with all university members to run the university program in order to achieve better productivity of the university. In other words, he applies culturally relevant strategy to communicate with all university members. He emphasizes collectiveness and collaboration among the university members to realize the university goal. He doesn't want to be the superman, but he wants to have the super team for the success of the university.

Conclusion

Indonesian education especially Indonesian higher education faces some crucial problems like educational quality, accountability, relevance, networking, and equality of educational quality throughout the country. Indonesian university has to work hard and do serious effort to win the competition with overseas universities in the global era. Indonesia now belongs to ASEAN economic community, it means that anyone from ASEAN countries is free to run business activity in Indonesia. It is the challenge for all Indonesians especially Indonesian universities to develop themselves to be more professional to win the competition in the very tight competition era. This situation needs a good university leader to lead the university better for the success of the university. The data show that the rector of UIN Malang already implemented transformational leadership strategy to lead the university. Transformational leadership practice by the rector of UIN Malang covers four dimensions such as intellectual stimulation, promoting professionalism, individualized support, and highly expectation of the university goal. The rector highly respects Indonesian cultural values to apply transformational leadership strategy such as using proper language, promoting indirectness, collectiveness, and collaboration to lead the university.

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A Development of Scientific Method by Using Problem-Based Learning Cooperated with Mind Mapping for Matthayomsueksa 4 Students

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Abstract

The purpose of this research was to study the students' ability of using scientific method by using the problem-based learning cooperate with mind mapping method .The samples were 33 Matthayomsueksa 4 students of academic year 2015 from Kalasinpittayasan School, Kalasin province, Thailand. The sample was selected by purposive sampling. The research tools were 10 lesson plans and scientific method testes (subjective of essay test) which measured in five parts including asking a question, formulating a hypothesis, collecting data, analysis data, and making a conclusion. The data was analyzed by using mean, percentage, and standard deviation. The t-test for dependent was employed for testing hypothesis. The research findings found that the students' ability in all parts of using scientific method tend to improving gradually.

Keywords: problem-based learning, mind mapping, scientific method

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Introduction

Science makes human life more convenient and simpler. We are woken up by alarm clocks. We drive or ride vehicle to work. These things all are made from science knowledge combined with creative thinking. Science knowledge not only brings us good life but also help us developing countries. Especially, prepare people to be good conductor and good consumer base on science societies (Department of Curriculum and Instruction Development, 2001). It can be clearly seen that education is important to develop human. So, studying activities have to emphasize scientific method (Paitoon Suksri-ngam, 2002).

Thailand is now facing a crisis in education. Many Thai students are not taught to think or learn by using their own knowledge and abilities with full potential. Especially in the science subject, they cannot investigate base on the reasoning. In daily life, they cannot apply their experiences to solve the problem that they face themselves. Moreover, from the Programe for International Student Assessment: PISA 2012, which assesses the students' abilities and skills to apply their knowledge and experience outside the class indicate that the score of Thai students in scientific literacy was 444 from the average 501. It was literacy which consists of 3 parts including reading literacy, mathematical literacy and scientific literacy. The results show that Thailand education system is still not efficiency -Thailand ranking 50 from 63 countries. Thai students do not familiar with the examination. They should be practiced by expository writing, reasoning and using evidence (The institute for the Promotion of Teaching Science and Technology and Ministry of Education, 2014). Ministry of Information and Communication Technology (Thailand) indicated that the one important cause is learning activity which cannot improve student's higher order thinking skills. Moreover, learning activities do not encourage the students to investigate by using scientific method which is a good way to test hypothesis and answer the problem. These problems can be found all size of schools in Thailand.

Scientific inquiry refers to the various ways in which scientists study the natural world and propose explanations based on the evidence derived from their work. In the learning activity by using Problem-based Learning (PBL), it can stimulate the students' curiosity. This method uses the problem situations which associate the student's life to lead the student interested in their lesson. It should be a rather complex in order to lead the students use various way to solve the problem (Montree Wongsaphan, 2013). This method help the learners improve thinking skill and reasoning skill. The learning activity steps consist of 1) problem identification, 2) understanding the problem, 3) data collection, 4) synthesize data, 5) conclusions and evaluations, and 6) present and assessment which compared with scientific method (Office of the Education council, 2008) The learners have more opportunity to investigate from resources that they are interested while the teacher acts as their coach (Tisana Khammani, 2009).

Mind Mapping is the graphical way to represent ideas and concepts by using lines, words, spots and geometric form. It is used drawing information in diagrams, instead of writing in sentences (Tisana Khammani, 2009). It is a visual thinking tool that helps structuring information, helping student to better analyze, comprehend, synthesize, recall and make new ideas. It is also able to raise the students' connection abilities. The students used it to be an important material during learning activities.

Thus the learning activities by using mind mapping will be benefit for student for understanding the problem situations, making a hypothesis, analysis data and making a conclusion. It is easy to show how each concept is connected and related (Suvit & Orathai Moonkhum, 2001).

As aforementioned, that the student's scientific method skill can be developed by using problem-based learning cooperated with mind mapping. The purpose of this research was to develop the students' ability of using scientific method - asking a question, formulating a hypothesis, collecting data, analysis data, and making a conclusion – to pass the criterion 75 percent by using the problem-based learning cooperate with mind mapping method.

Methods

In this study, the independent variable was teaching by using problem-based learning cooperated with mind mapping. The dependent variable was the students' scientific method. The 10 lesson plans were implemented for 5 week with 2 cycles of action research. Each cycle consisted of Plan, Act, Observe, and Reflect phases.

The first cycle starts with “planning phase”. The researcher studied the problem of sample from reading the document and making conversation with students and teachers. Then the researcher made research instruments and designed learning activities which were suitable for solving the problem of students' studying. Secondly “acting phase”, the students were taught by PBL activities - problem identification, understanding the problem, data collection, synthesize data, conclusions and evaluations, and presentation and assessment. They were required to create a group of four. Each groups got a problem situation, laboratory's direction and experiment materials. Every group had to read a situation then created a problem and formulate a hypothesis from previous knowledge or their prediction. After that, each group planned to study in order to answer the question. During the students were studying, the teacher acted as a facilitator who always observed behavior and gave suggestion. Thirdly, “observing phase”, the researcher observed and made note during students' learning time. The teacher checked students' work and access the students individually in order to adjust and improve learning activities for the second cycle. Finally “reflection phase”, when the students have studied 5 lesson plans already, the researcher discussed the result and problem with the students in class to develop learning activities in the second cycle.

The second cycle, the researcher had improved and adjusted the lesson plans. The mind mapping was added to use in learning activities. While the students were studying, the mind mapping was used to help students' brainstorming by following the phases of action research in the first cycle.

Participants

The sample was 33 Matthayomsueksa 4 students of academic year 2015 from Kalasinpittayasan School, Kalasin province, Thailand. The sample was selected by purposive sampling.

Instruments

This research was divided into two cycles. In the first cycle, the instruments were 1) 5 PBL lesson plans, 2) scientific method test (subjective of essay test) which measured five parts. In the second cycle, the instruments were 1) 5 PBL cooperated with Mind mapping lesson plans, which were improved from the lesson plans in the first cycle 2) scientific method test (subjective of essay test).

Results

The t-test statistical method (One Sample t-test) was used to analyze the score of scientific method by comparison with criterion 75 percent. In the first cycle the results are presented in the table 1.

Table 1: the result of each part of the scientific method in the first cycle

parts	full score	criterion 75 percent	score		<i>t</i>	p
			\bar{x}	percent		
total	30	22.5	18.06	60.20	5.56*	.00
asking question	6	4.5	4.06	67.68	1.88*	.07
formulating a hypothesis	6	4.5	4.24	70.71	1.29*	.03
collecting data	6	4.5	3.46	57.58	3.66*	.00
analysis data	6	4.5	3.12	52.02	4.68*	.00
conclusion	6	4.5	3.18	53.03	6.25*	.00

* $p < .05$

From the table 1, in the first cycle, the total mean score of scientific method was 18.06 or 60.20 percent of full score. The mean score of asking question, formulating a hypothesis, collecting data, analysis data, and conclusion were 4.06, 4.24, 3.46, 3.12 and 3.18 respectively. They were lower than the criterion with statistical significance ($p < .05$).

In addition, the researcher found that most students made a mistake on asking question. For the example, they cannot define the independent variable which effected to the dependent variable in asking question, their questions did not relate the matter or problem situation. Most students were able to create the good hypothesis but some student made mistake on the matter or problem situation. For instance, some hypothesis did not relate with the question, some hypothesis related with question but also it was not the main purpose of the studying. Moreover, it can be found during learning activities, the students did not familiar with learning activities. Especially at the initial of the first cycle, as a result they take time too long on forming group, doing activity, discussion in a group, and presentation.

In the second cycle, the researcher had added the mind mapping to the student's lesson plans in order to help the student linked each step of learning easier. Furthermore, it could be used to consider and sort the importance of content by the students. The result of each scientific method part shows in the table 2.

Table 2: the result of each part of the scientific method in the second cycle

parts	full score	criterion 75 percent	score		<i>t</i>	p
			\bar{x}	percent		
total	30	22.5	24.09	80.30	3.51*	.00
asking question	6	4.5	5.39	89.90	6.52*	.00
formulating a hypothesis	6	4.5	4.94	82.32	2.61*	.01
collecting data	6	4.5	3.91	65.15	2.97*	.01
analysis data	6	4.5	4.91	81.82	2.48*	.02
conclusion	6	4.5	4.94	82.32	2.81*	.01

* $p < .05$

From the table 2, it showed that the students' mean score in every part were higher than the first cycle. The total mean score of asking question part, formulating a hypothesis part, analysis data part, and conclusion part were higher than the criterion. The score were 24.09, 5.39, 4.94, 4.91 and 4.94 respectively. Only the mean score of collecting data was lower than the criterion with score 3.91. There were significant differences in all part ($p < .05$).

Discussion and conclusion

In the first cycle, the total mean score was lower than the criterion. The highest mean score was asking question. The second, third, fourth, and fifth were the formulating a hypothesis, conclusion, collecting data, and analysis data respectively. This probably, in the PBL, the students must start studying from the problem situation. After that, they have to investigate in order to find the cause and answer the problem. The process aforementioned helps the students to study systematically (Office of the Education council, 2007). Correspond with studying by using scientific method which study base on deductive and inductive method. Therefore, the basic requirement is competence in logical reasoning and analysis. When the students need to study or solve problem, they have to identify the problem. Then, they have to formulate the hypothesis before collecting data in order to test the hypothesis (Pimpan Dachakupt, 2001). In this study, the PBL supported the students to investigate by using scientific method. They had a chance to learn together within their groups. They exchanged and discussed the data that each student found. It helped students to see several information. During the learning activities, they always had interaction with their friends and a researcher. Although the PBL was an effective way to motivate students to study but in this cycle the students still were not familiar with PBL. It was rather different with traditional learning – the teachers teach front the class and the students write on the notebook. Moreover, the students had not enough background knowledge about the scientific method especially reasoning. They cannot answer the problem correctly. This probably, the students were not able to connect the main topic to detail. The students could not see a relationship between ideas and information. As a result, they spent long time in each step of PBL for exploring the situation and related information to achieve the goal of each step. For instance, they searched the information of the concept in order to define problem and formulate hypothesis of situations. In addition, they took long time to collect data for testing hypothesis.

Consequently, the students had no enough time to practice the scientific method. As a result, the score of scientific method was lower than the criterion.

In the second cycle, the researcher added the mind mapping to the learning activities. The results indicated that the mind mapping was successful to support the PBL to develop the student's scientific method. The total mean score was higher than the criterion with statistical significantly. The score of asking question part, formulating hypothesis part, analysis data part, and conclusion part were also higher than the criterion with statistical significantly ($p < .05$). Only the score of collecting data part was lower than the criterion. As the meaning of collecting data which refer to put the design for collecting information into the operation, the students have to design the process for collecting data by direct observation, experiment, searching or others (Suwat Niyomka, 1988 cite from Maccraken et al, 1976). In addition, the good collecting data process has to set a variable including independent, dependent, and control variable in order to decrease an error from the process. The one of method to enhance the ability of collecting data was always practicing. In this study, the students did not practice experiment sufficiency because the researcher allowed the learners designed their own method to collect data during PBL activities which most of all student preferred collecting data with the relevant documents. Consequently, they did not design the experiment methods and set the dependent, independent, and control variables. Therefore, the students who selected other methods except do the experiment to be their learning process in PBL activity had a chance to practice the collecting data less than others. As a result, when they did a test, they cannot give the corrected answer. Therefore, they got a low score in the part of collecting data.

As a result, the mind mapping helped the students organizing learning activities. They were able to study with PBL approach more systematically than the first cycle. This includes gathering thoughts, coming up with new ideas, learning planning, and synthesizing knowledge. The students did not take too long time on each step so they had time enough to practice their scientific method with full potential. As process aforementioned, the learners had chances to practice observation and asking question, data collection, synthesis data, and conclusion by using scientific method. It was investigation systematically (Sujin Visawateeranon, 2005). Other that, mind mapping was able to help student to relate each topic. It enhanced students to associate ideas, think creatively, and make connections that might not otherwise make (Tony Buzan, 2010). It can be seen that mean scores of each part have been improved in the second cycle. The problem-based learning can be defined best as the learning that results from the process of working toward the understanding or resolution of a problem (Barrows and Tamblyn, 1980). As students learn to think through the designs and developments of their own inquiry, they also develop a sense of self-responsibility. According to Ornpreeya Promwong (2014) who studied about The Development of Science Learning Achievements and the Ability in Using Scientific Method through the Use of Problem-Based Learning Approach of Matthayomsuksa 3 Students, the result was found that mean post-test of scientific method score of students, who were taught by PBL, was higher than pre-test. Correspond with Jiraporn Tupsai's study (2004) who studied about The Students' Achievement and Retention in Physics on Linear Motion using Concept Mapping, the finding was found that teaching by using concept map supported the students had ability to link and organize the importance of the content learning. The students understood the lesson properly.

In conclusion, the results of the study indicated that scientific method can be developed by using problem-based learning cooperated with mind mapping. Although some part was lower than the criterion, but the total mean score of scientific method was higher than the criterion with statistical significantly (.05). Therefore, the PBL cooperated with mind mapping process was successful in increasing the students' scientific method.

Acknowledgements

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A Survey of Critical Thinking Skill of Matthayomsueksa 5 Students in Thailand

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Abstract

The purpose of this research was to survey the critical thinking skill of Matthayom Sueksa 5 Students. The participants were 120 students of academic year 2015 from Roi-et Wittayalai School, Muang, Roi-et which selected by using the purposive sampling technique. The research instrument was the 30 items of critical thinking test which measured in 5 aspects including 1) Inference, 2) Recognition of assumption, 3) Deduction, 4) Interpretation and 5) Evaluation of arguments. The data was analyzed by using frequency, mean, percentage, standard deviation, and ANOVA. The results indicated that the students' mean score in all aspects of critical thinking was 3.88. Regarding to each aspect of critical thinking, inference, recognition of assumption, deduction, interpretation and evaluation of arguments were 4.07, 5.03, 4.68, 3.23 and 2.42 respectively.

Keywords: Critical Thinking Skill

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Introduction

The currently results of the study in Thailand show that the quality of education is not as good as international. The results of the Trends in International Mathematics and Science Study (TIMSS) of Matthayom Sueksa 2 students of Thailand in 1999, 2007 and 2011 had an average score on Science of 482 471 and 451 respectively (TIMSS IPST, 2011: 20). It could see that the average score of science in each year would had reduced evidently. It indicated that Thai students did not developed reach their full potential. Therefore, their academic abilities were not up to standard and a lack cultivate of desirable characteristics, such as the logical thinking, creative thinking, critical thinking and problem solving thinking. The same as Roi-et Wittayalai School, Muang, Roi-et Province which was the extra-large school. The researcher collected the data from the Physics teacher in the science department which found that there were the problems in the organized learning activities. The students had not an opportunity to inquiring and creating knowledge by themselves. As well the activities which promoted the development of higher-order thinking skills should be used. It should be improve the teaching. The learning activities should focus on teaching the children to solve their own problems. It can help the children having the process of thinking from the children's determination, assumptions and selected solution by focusing on working together as a group. It influence on the student experience and the success in learning.

Aforementioned, higher-order thinking skills consisted of many aspects such as logical thinking, creative thinking and critical thinking which were very important for living in the present society. Critical thinking skill was a reasonable thinking process which refers to the criteria and evidences. The review of evidences and facts carefully about the information which were problems or vague information by knowledge, ideas and their own experiences in rethinking to lead to sensibly conclusion, before decided whether to believe or not and whether to act or not (Prapansiri Susoarat, 2008: 92). It enables students to solve problems effectively and let them to have the analyzing ability and finding the answers to the summary event. The decision whether or not do something when they faced with a different problem in the daily life reasonably accurate and appropriate. Critical thinking skill consists of five aspects including of, 1) Inferences aspect which measure the ability of classification of the probability of the conclusion to determine which conclusion was true or false, 2) Recognition of assumptions aspect which measure the ability of identify which messages was a preliminary agreement or not, 3) Deduction aspect which measure the ability of find a reasonable conclusion by using the logic, 4) Interpretation aspect which measure the ability of providing the weight of evidence to determine the possibility of a conclusion, 5) Evaluation of arguments aspect which measure the ability of identify the using reasons for what is the reasonable (Watson and Glaser, 1964) . All aspects of critical thinking skill was important in human daily life. Because of its important, critical thinking skill was used to decide before doing or not doing something when they had faced with the situations in daily life.

As mentioned, the researcher attempts to survey the critical thinking skill of Matthayom Sueksa 5 students in Roi-et Wittayalai School, Muang, Roi-et. In this study, this information will be useful and can be applied in the learning activities of this school in various subjects actually.

Research Purposes

The purpose of this research was to survey the levels of the critical thinking skill of Matthayom Sueksa 5 students.

Participants

The participants of this study consisted of 120 students from 3 classrooms of Matthayom Sueksa 5 students which have the different levels of the achievement. There were 44 students from the low level classroom, 34 students from the medium level classroom, and 42 students from the high level classroom.

Research Instruments

The research instrument of this study was the 30 items of critical thinking test. It measured in 5 aspects including 1) Inference, 2) Recognition of assumption, 3) Deduction, 4) Interpretation, and 5) Evaluation of arguments. The test showed an Item Objective Congruence (IOC) between 0.60 – 1.00.

Procedures

In this research, the data of the critical thinking skill of Matthayom Sueksa 5 Students was collected from the critical thinking test. The process of collecting data as following:

1. The researcher had studied the basic data and developed research instrument.
2. The basic data was collected not only from the literature review but also from interview the science teacher who taught in science subject. The interviewees were interviewed in the point of the general conditions of teaching science and problems topic.
3. The critical thinking test was developed and asked a students to do the test.
4. The data was analyzed by using mean and standard deviation. The ANOVA was using to test the data among each levels of student's prior knowledge.

The data was interpreted by using the interpretation of mean which was categorized to 5 levels including very good, good, medium, poor, and very poor respectively (Boonchom Srisa-ard. 1990). The criteria of interpretation of mean showed in Table 1.

Table 1. The criteria of interpretation of mean

Mean	Levels
4.81 – 6.00	Very Good
3.61 – 4.80	Good
2.41 – 3.60	Medium
1.21 – 2.40	Poor
0.00 – 1.20	Very Poor

Results

According to the students' achievement, which were divided to three groups by their prior knowledge levels. The students were divided to high group, medium group and low group, which were Matthayom Sueksa 5/11 (42 students), 5/14 (34 students), and 5/5 (44 students) respectively. The data were presented in Table 2 and Table 3.

Table 2

The ANOVA of students' achievement who have different prior knowledge level.

	Sum of Squares	df	Mean Square	F	sig.
Between Groups	16.111	2	8.056	239.301	.000
Within Groups	3.939	117	.034		
Total	20.050	119			

* $p < .05$

Table 3

The comparison of the student's achievement of each prior knowledge levels groups (which maximum was 4).

	N	\bar{x}	Mean Difference		
			High	Medium	Low
High	42	3.64	-	.17581*	.82518*
Medium	34	3.47	-.17581*	-	.64937*
Low	44	2.82	-.82518*	-.64937*	-

* $p < .05$

The mean scores of the results indicated that the students mean scores in high group, medium group, and low group were 3.64, 3.47, and 2.82 respectively. Regarding the results, It indicated that there pairs of mean difference were significantly difference at the .05 level

The all aspects of Critical thinking.

Critical thinking skill played an essential role in education and occupations that require cautious analytical thinking to performed essential job performance. It consists of five aspects including of, 1) Inferences aspect, 2) Recognition of assumptions aspect, 3) Deduction aspect, 4) Interpretation aspect and, 5) Evaluation of arguments aspect.

Table 4

The ANOVA of students' critical thinking skill scores who have different prior knowledge level.

	Sum of Squares	df	Mean Square	F	sig.
Between Groups	11.253	2	5.672	12.740	.000
Within Groups	51.674	117	.442		
Total	62.927	119			

* $p < .05$

Table 5

The comparison of the student's critical thinking skill scores of each prior knowledge levels groups (which maximum was 6).

	N	\bar{x}	levels	Mean Difference		
				High	Medium	Low
High	42	3.83	good	-	-.51261*	.24675
Medium	34	4.34	good	.51261*	-	.75936*
Low	44	3.58	medium	-.24675	-.75936*	-

* $p < .05$

The results indicated that the student's critical thinking skill mean scores in high group, medium group, and low group were 3.83, 4.34, and 3.58 respectively. Regarding the results, it indicated that there were significant difference in 2 group consist of high – medium and medium – low. However there show no difference between high and low.

The mean scores of each aspect of critical thinking skill which were 1) Inference, 2) Recognition of assumption, 3) Deduction, 4) Interpretation, and 5) Evaluation of arguments were used to test the significance of the difference of scores and the results of which are shown following here.

Aspect of inference.

This aspect was discriminated among the degrees of truth or falsity of inferences drawn from the given data. The analyzed data were presented in Table 7 and Table 8.

Table 6

The ANOVA of students' score in inference aspect of critical thinking who have different prior knowledge level.

	Sum of Squares	df	Mean Square	F	sig.
Between Groups	9.808	2	4.904	3.994	.021
Within Groups	143.659	117	1.228		
Total	153.467	119			

* $p < .05$

Table 7

The comparison of the student's score in inference aspect of critical thinking of each prior knowledge levels groups (which maximum was 6).

	N	\bar{x}	levels	Mean Difference		
				High	Medium	Low
High	42	4.00	good	-	-.50000	.20455
Medium	34	4.50	good	.50000	-	.70455*
Low	44	3.80	good	-.20455	-.70455*	-

* $p < .05$

The results indicated that the student's inference mean scores in high group, medium group, and low group were 4.00, 4.50, and 3.80 respectively. Regarding the results, it

indicated that there was significant difference between medium – low. However there show no difference in 2 groups consist of high – low and high – medium.

Aspect of recognition of assumption

This aspect was about the recognizing unstated assumptions or presuppositions in the given statements. The analyzed data were presented in Table 9 and Table 10.

Table 8

The ANOVA of students' score in recognition of assumption aspect of critical thinking who have different prior knowledge level.

	Sum of Squares	df	Mean Square	F	sig.
Between Groups	14.420	2	7.210	6.418	.002
Within Groups	131.446	117	1.123		
Total	145.867	119			

* $p < .05$

Table 9

The comparison of the student's score in recognition of assumption aspect of critical thinking of each prior knowledge levels groups (which maximum was 6).

	N	\bar{x}	levels	Mean Difference		
				High	Medium	Low
High	42	4.95	very good	-	-.60644*	.24784
Medium	34	5.56	very good	.60644*	-	.85428*
Low	44	4.71	good	-.24784	-.85428*	-

* $p < .05$

The results indicated that the student's recognition of assumption mean scores in high group, medium group, and low group were 4.95, 5.56, and 4.71 respectively. Regarding the results, it indicated that there were significant difference in 2 group consist of high – medium and medium – low. However there show no difference between high and low.

Aspect of deduction

This aspect was about the determining whether certain conclusions necessarily follow from the information in the given statements. The analyzed data were presented in Table 11 and Table 12.

Table 10

The ANOVA of students' score in deduction aspect of critical thinking who have different prior knowledge level.

	Sum of Squares	df	Mean Square	F	sig.
Between Groups	13.925	2	6.963	5.721	.004
Within Groups	142.400	117	1.217		
Total	156.325	119			

* $p < .05$

Table 11

The comparison of the student's score in deduction aspect of critical thinking of each prior knowledge levels groups (which maximum was 6).

	N	\bar{x}	levels	Mean Difference		
				High	Medium	Low
High	42	4.69	good	-	-.45658	.39502
Medium	34	5.15	very good	.45658	-	.85160*
Low	44	4.30	good	-.39502	-.85160*	-

* $p < .05$

The results indicated that the student's deduction mean scores in high group, medium group, and low group were 4.69, 5.15, and 4.30 respectively. Regarding the results, it indicated that there was significant difference between medium – low. However there show no difference in 2 groups consist of high – low and high – medium.

Aspect of interpretation

This aspect was about weighing the evidence and the deciding if generalizations or conclusions based on the given data were warranted. The analyzed data were presented in Table 13 and Table 14.

Table 12

The ANOVA of students' score in interpretation aspect of critical thinking who have different prior knowledge level.

	Sum of Squares	df	Mean Square	F	sig.
Between Groups	13.017	2	6.508	3.495	.034
Within Groups	217.908	117	1.862		
Total	230.925	119			

* $p < .05$

Table 13

The comparison of the student's score in interpretation aspect of critical thinking of each prior knowledge levels groups (which maximum was 6).

	N	\bar{x}	levels	Mean Difference		
				High	Medium	Low
High	42	3.33	medium	-	-.28431	.51515
Medium	34	3.62	good	.28431	-	.79947*
Low	44	2.82	medium	-.51515	-.79947*	-

* $p < .05$

The results indicated that the student's recognition of assumption mean scores in high group, medium group, and low group were 3.33, 3.62, and 2.82 respectively. Regarding the results, it indicated that there was significant difference between medium – low. However there show no difference in 2 groups consist of high – low and high – medium.

Aspect of evaluation of arguments

This aspect was about distinguishing between arguments that were strong and relevant and those that were weak or irrelevant to the particular issue. The analyzed data were presented in Table 15 and Table 16.

Table 14

The ANOVA of students' score in evaluation of arguments aspect of critical thinking who have different prior knowledge level.

	Sum of Squares	df	Mean Square	F	sig.
Between Groups	10.645	2	5.392	5.738	.004
Within Groups	108.522	117	.928		
Total	119.167	119			

* $p < .05$

Table 15

The comparison of the student's score in evaluation of arguments aspect of critical thinking of each prior knowledge levels groups (which maximum was 6).

	N	\bar{x}	levels	Mean Difference		
				High	Medium	Low
High	42	2.17	medium	-	-.71596*	-.12879
Medium	34	2.88	medium	.71596*	-	.58690*
Low	44	2.30	poor	.12879	-.58690*	-

* $p < .05$

The results indicated that the student's recognition of assumption mean scores in high group, medium group, and low group were 2.17, 2.88, and 2.30 respectively. Regarding the results, it indicated that there were significant difference in 2 group consist of high – medium and medium – low. However there show no difference between high and low.

Conclusions and Discussions

Considering the critical thinking skill (from Table 5) showed the overall mean scores of critical thinking skill of the students in high, medium, and low group were in a good, good, and medium level respectively. The result indicated that the critical thinking skill scores of students who were in the medium group were difference from other groups. In view of the inference aspect, the levels of mean score in this aspect of all groups were in good level. In recognition of assumption aspect, the levels of mean score of high, medium, and low group were in very good, very good, and good level respectively. In deduction aspect, the levels of mean score of high, medium, and low group were in good, very good, and good level respectively. In interpretation aspect, the levels of mean score of high, medium, and low group were in medium, good, and medium level respectively. In evaluation of arguments aspect, the levels of mean score of high, medium, and low group were in medium, medium, and poor level respectively. Moreover, medium group had the highest scores than other groups. Furthermore, the mean score in recognition of assumption aspect was the highest and the mean score in evaluation of arguments aspect was the lowest. In consideration of

the methods and opportunities of learning found that the learning activity of the students in each group were difference. The students in the high group who learned in science-math program classroom had learned with a lecture method and a 5E instructional model. Firstly, the teacher came to the classroom with a lecture and then students were asked to doing the activity. Sometimes they were learned by doing experiment. The students in the medium group who learned in the gifted program classroom had learned with the innovation such as a learning with the animations, doing the experiments, and learning by doing project. The students in the medium group had an opportunity to learning by doing the experiments and learning by project-based more than the other groups. As well, all of them had doing the individual study. The students in the low group who learned in science-computer program had learned with the lecture method. The teacher usually taught the classroom by a lecture. Sometimes students were asked to doing some activity and they were hardly learning by doing experiment. Additionally, the learning process of medium group which learning with doing the experiment and project helped them developed their thinking process. This showed that the teaching styles more influenced on the critical thinking skill than the prior knowledge level of the students. Corresponding with the information form interviewed the teachers in Roi-et Wittayalai School described that, the way to made children can learn better was let them try to made an experiments, let them to face the problems with themselves and not just only learning from the imagination but also learning by doing. This statement was supported by Wongdoen Jaiaoon (2009), she claimed that learning by doing projects provide the students to think. In order that, thinking process was practiced when they have an opportunity to talking, thinking, and working with their friends. Additionally, the process in doing project let the students to think logically. McCrink (1999) had studied the results of teacher's teaching and the learning activities which affect student's critical thinking skill. The result from his study showed that the methods of the teaching which affect student's critical thinking skill were teaching with the educational innovation such as internet, instructional module, and multimedia. In this process the student can discover knowledge on their own which affect them sustainable and applicable to solve the problem in everyday life.

Recommendations

1. This research describes about the levels of the critical thinking skill of only Matthayom Sueksa 5 students in Roi-et Wittayalai School.
2. This research was reported about the levels of the critical thinking skill of Matthayom Sueksa 5 students in Roi-et Wittayalai School which was in the early stage, so the information should be included in the learning activity of this school in the future.

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Exploring the Framework and Implementation Efficacy of the FLIPPED-ACTION Model in a College Bilingual-Education Class

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Abstract

Inspired by the FLIPPED model proposed by Chen et al. (2014), which added three more “P” “E” “D” components to the original FLIP model, this research project adds “ACTION” as one more component to make the previous schemata better-rounded. To figure out which component(s) make a significant influence on students’ learning motivation and learning strategies, the researcher tracked the student performance records, evaluated surveys, conducted interviews, and utilized the statistical software SPSS to analyze the influences among Flexible environment, Learning culture, Intentional content, Professional educators, Progressive networking learning activities, Engaging and effective learning experiences, Diversified and seamless learning platform; and analyze the relationships between the modified model and the completion of the ACTION modules based on ratings done by the students for their internship.

With 40 participants taking the Bilingual Education and Teaching course in the Department of Teaching Chinese as a Second Language, this study introduces a 20-week empirical study. Surveys are administered to elicit the information and the results show that the FLIPPED-ACTION model promote students’ motivation and strategies in every aspect. Moreover the statistical result revealed there is a significant difference between the internship group and non-internship group in the class ($p < .05$), indicating the ACTION part boosts students in adjusting the FLIPPED part better. Meanwhile resistive voices such as “too much workload” and “not used to constant discussions” also exist. This study provides viewpoints in exploring the implementation of the FLIPPED-ACTION model in a college class.

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Introduction

Up to this stage many instructors practice a variety of flipped-learning models mostly in elementary and secondary education, and their models are still under scrutiny for discussions (Ash, 2012; Bretzmann, 2013). Chen, Wang, Kinshuk & Chen (2014) and Hu (2013; 2014) questioned whether the flipped-learning instruction can be applied in the context of higher education. They conducted research and concluded that a flipped-learning model can work efficiently when some components were implemented with modifications. At the undergraduate level, Hu (2014a) suggested that a “staged flipped-classroom course design” can be well-applied to college students who are used to conventional lecture-based instruction. At the graduate-program level, Chen, Wang, Kinshuk & Chen (2014) developed a FLIPPED framework to strength the original widely-promoted FLIP model proposed by Flipped Learning Network and Person’s Achievement Services. These studies echoed the gap issues identified by many scholars (Herreid & Schiller, 2013; Kong, 2014; Gardner, 2015). They showed that a better way to “flip” a class has to focus on clear guidelines for course activities, well-connected digital learning platforms, and sufficient numbers of discussions regarding the learners’ experiences.¹

This paper examines if a flipped-learning approach can promote the knowledge-application integration. The FLIPPED model proposed by Chen et al (2014) provides a better common ground when talking about how to “flip” a class for university students, because it takes current higher-education learning patterns into account. The model gives consideration to three important components that the original FLIP schema didn’t cover well: the efficiency of activity delivery, the engagement differences among learners, and whether or not the learning platforms were diversified enough.

The author takes the FLIPPED model into a new FLIPPED-ACTION experiment for two reasons, which also serve as the background of this study. First, since the top characteristic of the flipped leaning is a “flexible learning environment”, the author plans to “break the classroom boundary” by setting up an APP-enriched bilingual-education platform for the students who participate in this experiment.

Second, a new trend of education is to focus on how instructors guide learners to reflect on experience and apply what they have learned to the real world. The FLIPPED model proposed by Chen et al (2014) is well-interpreted by pointing out the importance of the “E” --- engaging and effective learning experience, but the model and the whole experiment did not emphasize the essence of experience, which is “*action*”! In the department where a semester-long practical training (internship) is the graduation requirements, the author thus proposes the FLIPPED-ACTION model to test if a flipped learning can articulate language education with students’ internship better.

This study examines how a trendy pedagogical model can enhance a college class. It covers a course model modified by the author, introduces the rationale behind it, and inspects how each of the components in the model affects the students’ learning

¹ What FLIPPED stands for and what FLIP stands for will be introduced in the literature-review section.

motivation, strategies, and the skills during the students' internships.

Literature Review

Trends of Flipped Learning

The ideological movement considers that a flipped classroom is a place where students are expected "to engage with primary material before class, and come prepared to delve more deeply into their meaning" (Ernest, 2014:283). Lage et al. (2000) defined it as "Inverting the classroom means that events that have traditionally taken place inside the classroom now take place outside the classroom and vice versa" (p.32). In the USA, the concept is epitomized with a significant step taken by MIT, which operated its OpenCourseWare program in 2001, and successors such as the Khan Academy founded in 2006, Udacity, Coursera, and edX in 2012, all play important roles in promoting the flipped-classroom concept (Bishop & Verleger, 2013). Taking high-school students in Hong Kong as an example, Kong (2014) found that practicing the flipped learning strategy, the students' information literacy and critical-thinking skill improved.

Although the flipped learning is getting attention widely, there are challenges in applying this approach (Stanley, 2013; Gardner, 2015; Cresap, 2015). Stanley (2013) suggested that integrating the teaching with technology is a challenge already, being able to announce the entire framework to students before starting the flipping process somehow is even more challenging; because it requires a lot of preparation. Herreid & Schiller (2013) pointed out that the flipped classroom is "similar to other methods that depend heavily on students preparing outside of class" (P. 63), thus unprepared students may be initially resistant. Moreover, due to the time-consuming fact, crafting great short video lessons is posing big instructional challenges, and all of those video productions are not a guarantee for attracting student viewers. Miller (2012) further explained that when students get more freedom and don't need to listen in the classroom, it doesn't mean students know how to organize their learning automatically.

The four pillars to engage in the flipped learning are: Flexible environment, Learning culture, Intentional content, and Professional educators (Hamdan, McKnight & McKnight, Arfstrom, 2013b). Chen et al (2014) and Hu (2013; 2014) questioned whether the flipped-learning instruction can be applied in the higher education context. Moreover, they echoed the previous studies done by many scholars that the FLIP model exists some inefficiency in terms of comprehensive research foundation, learning platform, and design guidelines (Marshall, 2013; Miller, 2012). By adding three more components, which are: Progressive networking learning activities, Engaging and effective learning experiences, and Diversified and seamless learning platform, Chen et al. (2014) thus developed a FLIPPED framework to strength the original widely-promoted FLIP model proposed by Flipped Learning Network and Person's Achievement Services. Their study shows that applying the three modified components in the teaching process did gain more positive feedback from the adult students. The flipped-learning approach is showing promise but also needs time to see whether it will really stay power (Roehl, Reddy & Shannon, 2013; Egbert, Herman & Chang, 2014; Howard & McLauchlan, 2014; Dix, 2015; Franqueira & Tunnicliff, 2015).

Educational Technology and its Application

Educational technology inspires us to rethink the teaching and learning identities, and it is a must-discuss topic for those who look forward to teaching in next generation learning spaces (Ling & Fraser, 2014). The key approach should be focused on the relationship of co-producers between the instructor and the student. Furthermore, environment-wise, e-learning provides technology, techniques and content, but learners' motivation plays the essential role in the entire learning process (Zhang & Song, 2012).

The effectiveness of e-learning and m-learning is still under inspection. Many gradations of conclusion can be found in cases like experiments done by Zhuang (2009), Hu (2013), and Luo (2014). Yang (2009) proposes the T.R.I.P.E mobile learning model to explain the positive effect brought by mobile devices. Yan (2012) however points out there are limitations regarding the application of the so-far mobile learning, such as issues related to the inconsistency of leaning experience, lack of meta-cognition, restriction of up-loading and down-loading data, high cost, and web security. Recent studies incorporating educational technology with flipped learning models are quite trendy (Granados-Bezi, 2015; Garner, 2015; Tsai, 2014).

The Essence of Practicum and Internship in Tertiary Education

The Ministry of Education in Taiwan has been promoting the policy of blending internship into curriculum and practicum (MOE Enterprise Academy of Information Website, 2015). Successful internship support educators to apply empirical findings on learning in their practice, and help students incorporate knowledge with application to link established concepts to new situations (Yan, Cai & Liu, 2012; Sweitzer & King, 2014).

Consequently more and more educators are doing related studies. Pei (2015) studied how off-campus internship brought positive influence on the interns in terms of course design, expression skill, classroom management, teaching manner, blackboard-handwriting, and teaching source development. Li, Zhang & Song (2014) examined how an English-only practical training was conducted to a group of maritime-affair interns on an assigned boat, and they found out the interns on the boat turned more professional because the boat created a strong learning environment. Liu et al (2014) investigated how vocational interns developed better career maturity when fulfilling internships. Ou & Huang (2012) discussed the influence of students' attitudes on participating in practical training with living-technology education. Chu, Chan & Tiwari (2012) explained how blogs can enhance the quality of internship when using appropriately.

Methodology

Research Method

This mixed-method study aims at confirming, cross-validating, or corroborating findings within a single study, and the results from both data sets were integrated during interpretation to “note the convergence of the findings as a way to strengthen

the knowledge claims of the study” (Creswell, 2003, p. 217). In this class experiment, the author, who is also the instructor of the class, conducted surveys to collect the quantitative and the qualitative data, and conducted action research to support or inspect the data.

The participants are 40 undergraduate students from the department Teaching Chinese as a Second Language, who take the course called Bilingual Education and Teaching. All the enrolled students in the course are divided into a “doing internships”² as experimental group and a “not doing internships” as control group. Pre- and post-tests, mid-term and final-exam scores, and surveys are administered to elicit the information about the relationships between the FLIPPED-ACTION implementation and the students’ reaction. The concurrent triangulation approach is shown in Figure 1.

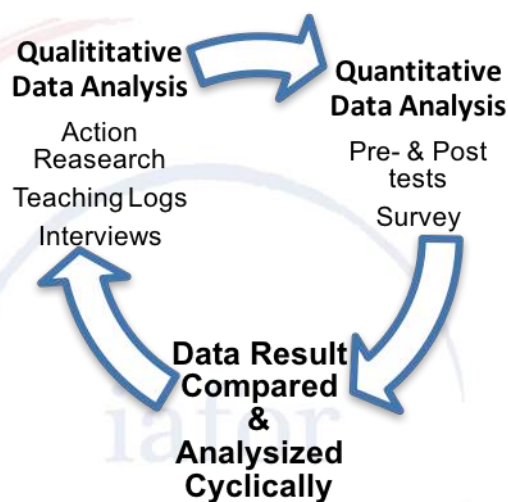


Figure 1. Concurrent triangulation approach (adapted from Creswell, 2003).

As to the action research, in this experiment it means all the FLIPPED-ACTION curriculum-design steps along with the entire semester, including the course framework, syllabus, weekly course instruction, utilization of apps on mobile devices, online assignments/activities supported by the school learning management platform, and email communication, etc. Based on each of the steps, the author observed how the students reacted and what they performed.

The content of the questionnaires all got approved by Research Ethic Committee of National Taiwan University.³ Regarding the quantitative part, 30 questions in total, the first five are about how the 10 assigned apps affect their learning, and the rest 25 closed-ended questions are about the students learning motivation and strategies, which are divided into sub categories to elicit information related to Flexible environment, Learning culture, Intentional content, Professional educators, Progressive networking learning activities, Engaging and effective learning experiences, Diversified and seamless learning platform, and ACTION (students’ internships). As to the qualitative part, there are 10 interview questions designed for volunteer respondents.

² The internship task was to help out 63 local elementary students whose Chinese, mathematics, or English were falling behind; and 18 immigrant adults who wanted to learn mandarin Chinese.

³ The Ethical Review Approval reference number: NTU-REC 201504ES008

All in a self-administered manner, in the 20-week experimental period, the survey with the same content were conducted twice, one after the midterm exam (week 10), the other after the final exam (week 19). The 10-question interview was conducted one time in the week 20. For the closed-ended questionnaires, all the respondents were asked to answer the questions on a five-point Likert scale. The statistical software SPSS Version 20 was used to analyze the relationships. Below is the concept map of the course design:

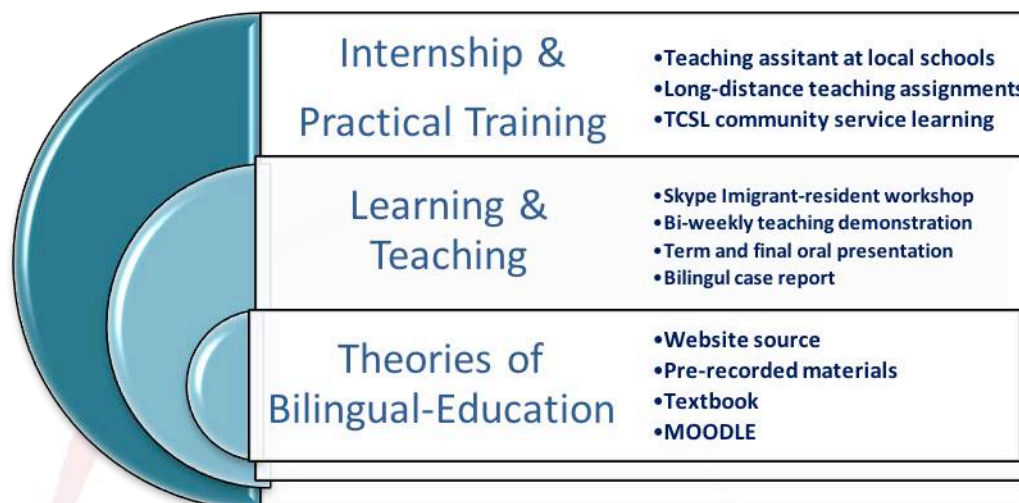


Figure 2. The concept map of the course design

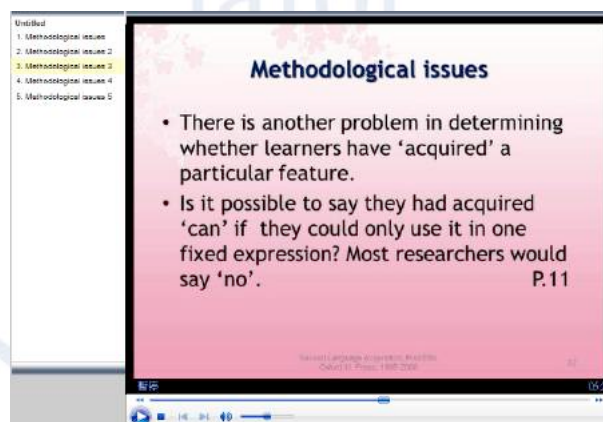


Figure 3. Sample screenshot of a pre-recorded unit

Research Questions

1. Is there any significant difference in students' learning motivation before and after the FLIPPED-ACTION model?
2. Is there any significant difference in students' learning strategies before and after the FLIPPED-ACTION model?
3. What are students' reflections on the FLIPPED-ACTION model?

Data Analysis

Comparison of Students' Learning Motivation and Strategy Before and After the FLIPPED-ACTION Model

The scores of the five-point Likert scale in students' pre- and post-test questionnaires concerning their learning motivation and strategy were analyzed by a paired sample *t*-test, SPSS. A significance level of .05 is used for all statistical tests. Students' learning motivation and strategies before and after the FLIPPED-ACTION model (abbreviated as "FA") are discussed in Table 4, 5, and 6. Among the 25 survey questions, significant differences were found in 14 of the questions ($p < .05$). It indicates that all the eight components of the course design promote the students' learning motivation and strategies.⁴

Table 1

Comparison of Students' Learning Motivation and Strategy Before and After the FLIPPED-ACTION Model (Questions 1.2.4.5.6)

Items	<i>N</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Q1. I expect I will perform well in this class.					
Before FA	40	4.23	0.69	-3.93	.00*
After FA	40	4.61	0.52		
Q2. I believe I understand the fundamental concepts and learning objectives of this class.					
Before FA	40	3.97	0.70	-2.86	.006*
After FA	40	4.26	0.63		
Q4. This is a learner-centered class.					
Before FA	40	4.24	0.52	-3.04	.003*
After FA	40	4.49	0.56		
Q5. Group activities make me want to learn more.					
Before FA	40	3.31	1.02	-4.54	.00*
After FA	40	3.93	0.97		
Q6. The preview and review assignments make me understand the course better.					
Before FA	40	3.41	0.81	-6.10	.00*
After FA	40	4.10	0.76		

Note. * $p < .05$.

Among these five items in Table 4, the top two highest mean differences between the pre- and the post-tests lied on Q5 and Q6. These two items signify that Learning culture, Intentional content, and Engaging learning experience promote learning motivation and strategy.⁵

⁴ See Table 2 for the 8 components of FLIPPED-ACTION and the corresponding survey questions.

⁵ Because the results of the 14 questions are too long to read in one table, the author presented a 5-5-4 pattern by using three tables.

Table 2
Comparison of Students' Learning Motivation and Strategy Before and After the FLIPPED-ACTION Model (Questions 8, 11, 14, 15, 16)

Items	<i>N</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Q8. I like the challenging parts of the course, so I can learn something new.					
Before FA	40	3.49	0.74	-4.23	.00*
After FA	40	4.00	0.66		
Q11. Maybe I can't get a good score, but I still chose what I think useful and complete them.					
Before FA	40	3.50	0.96	-3.79	.00*
After FA	40	3.99	0.77		
Q14. This is a course with great flexibility.					
Before FA	40	4.00	0.76	-2.52	.014*
After FA	40	4.29	0.76		
Q15. The educational technology/apps used in this course raise my learning motivation.					
Before FA	40	3.97	0.59	-3.50	.001*
After FA	40	4.36	0.64		
Q16. The educational technology/apps used in this course enhance my learning strategies.					
Before FA	40	3.17	0.68	-2.88	.005*
After FA	40	3.56	0.86		

Note. * $p < .05$.

Among these five items in Table 5, the top two highest mean differences between the pre- and the post-tests lied on Q8 and Q11. These two items signify that Progressive learning activities and networking, Diversified platform promote learning motivation and strategy. Moreover, although Q14, 15, 16 didn't reach the highest mean differences, they already met the statistical significance ($p < .05$). It implies that Flexible environment supports the students' learning.

Table 3

Comparison of Students' Learning Motivation and Strategy Before and After the FLIPPED-ACTION Model (Questions 17, 18, 19, 22)

	<i>N</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Q17. This course enhances my communication skills.					
Before FA	40	3.49	0.74		
After FA	40	4.00	0.66	-4.23	.00*
Q 18. This course enhances my teaching skills.					
Before FA	40	2.97	0.96		
After FA	40	3.30	0.81	-2.22	.029 *
Q19. This course enhances my practical-training/task-execution ability.					
Before FA	40	3.57	0.77		
After FA	40	3.87	0.61	-2.72	.008 *
Q22. I care about the learning activities in this course.					
Before FA	40	3.17	0.68		
After FA	40	3.56	0.86	-2.88	.005*

Note. * $p < .05$.

Among these four items in Table 6, the top one highest mean differences between the pre- and the post-tests lied on Q17. It indicates that Professional educator contributes a good course design which benefits their communication skills. Furthermore, Q17, 18, and 19, the three questions related to the ACTION component the most, also met the statistical significance ($p < .05$). It signifies that internship support educators to apply empirical findings on learning in their practice, and help students incorporate knowledge with application to link established concepts to new situations (Sweitzer & King, 2014).

Comparison of Students' Learning Motivation and Strategy Between the two Student Groups

One-way analysis of variance (ANOVA), with SPSS version 20.0 was calculated to investigate the differences of learning motivation between the two student groups. Among the total 40 students, 29 completed their internships, and 11 simply took the course and did not choose to do their internships during the course.⁶ The valid self-administered questionnaires from the internship group are 29, and 11 from the non-internship group. The category "learning motivation" covers 12 questions, which are out of the 25 survey questions shown in Table 1, including the questions 1, 2, 3, 5, 9-11, 20-22, 24, and 25. Table 7 shows that the statistical result revealed there is a significant difference between the two groups in the response of the variable of the category, which means the internship group has higher learning motivation than the non-internship group has. The hypothesis was rejected at $p < .05$ level.

⁶ It is an elective class welcoming all students who are interested in the subject. Therefore completing internship is an optional class activity. Even though the 11 students did not do their internship during the course, still they were assigned to complete tasks in order to fulfill the course requirement.

Table 4

Statistical Result of ANOVA for the Category of Learning Motivation

		Sum of Sq.	df	Mean Sq.	F	Sig.
Learning motivation (12 questions)	Between Groups	1.108	1	1.108	4.588	.035*
	Within Groups	19.566	81	.242		
	Total	20.675	82			

* $p < .05$

The statistical significance regarding the “intentional content” category and “engage experience” are further examined. Table 8 and 9 show that there is a significant difference between the two groups in the response of the variables “This course enhances my communication skills” and “This course enhances my practical-training/task-execution ability.” Respondents from the internship group show more positive attitude toward the course design at the p value of 0.027 ($p < .05$), and 0.048 ($p < .05$).

Table 5

Statistical Result of ANOVA for the Question 17

		Sum of Sq.	df	Mean Sq.	F	Sig.
This course enhances my communication skills	Between Groups	1.224	1	1.224	5.098	.027*
	Within Groups	19.450	81	.240		
	Total	20.675	82			

* $p < .05$

Table 6

Statistical Result of ANOVA for the Question 19

		Sum of Sq.	df	Mean Sq.	F	Sig.
This course enhances my practical-training/task-execution ability.	Between Groups	.976	1	.976	4.015	.048*
	Within Groups	19.698	81	.243		
	Total	20.675	82			

* $p < .05$

In sum the positive result echoes the previous studies done by Faulkner & Green (2015), Bergmann & Sams (2014), Ernest (2014), Bishop & Verleger (2013), and Chu, Chan & Tiwari (2012). Blending internship into class may be challenging for both teacher and student, but it stimulates students' motivation and somehow "forces" them to come up better strategies when they set up a goal to take the class and complete the internship at the same time.

Qualitative Survey

The result from the qualitative survey also shows some positive signs. Due to the page limit, below are some of the interviewees' opinions:

"First I found it was difficult because the teacher asked us to present what we studied during each week. Later I realized the spirit of the flipped learning is to 'flip' conventional in-class lectures with collaborative activities." (student A)

"I appreciate what the teacher did for us. The assigned preview assignment was tough because I was not used to it, but later I found it was good for me to manage my time." (student B)

"I didn't expect that I can complete my internship in this class, because we have a lot of assignments. Later I feel I want to learn more because I realized the internship requires better skills in order to complete." (student C)

"The teacher is very professional with a lot of patience." (student D)

"The teacher created an APP-enriched learning environment to boost the students' mobility. I surprised myself for learning many apps during one semester. It makes the whole implementation more effective." (student E)

From the platform forum, interviews, and class observations, other voices such as too much workload, lack of time to study due to students' part-time job, or poor English proficiency level, are all documented for reference. A few students reflected with problems such as "too complicated to handle", "feeling homework/assignments are around all the time", and "not used to constant discussions".

As to the internship-hosting-school principal and two directors, who served as supervisors, all gave high evaluation to the 29 interns. In the interviews their replies also show that they noticed the interns' improvement along the semester in terms of bilingual teaching know-how, lesson-plan design, group activity management, and teaching attitude.

Conclusion

This study enables academics and institutions to evaluate promising methods, master them, and adapt them to specific learning environments. Moreover, this empirical study is aimed at improving students' bilingual proficiency levels and internship quality, and promoting knowledge-application integration. The author plans to “break the classroom boundary” by setting up a bilingual-education platform for the students who participate in this experiment. The experiment shows that the plan is workable by the teacher and appreciated by the students.

By combining qualitative and quantitative studies with Action Research, the author applies the firsthand teaching to inspect and verify teaching and learning of the newly-modified model, and identifies the effectiveness of the education in a comprehensive university by presenting the positive relationships between up-to-date course design and college students' learning motivation and learning strategies.

“Flipped learning” has been gaining considerable traction around the world. It is “a vast ocean that is ripe for exploration and navigation”, and all of the practitioners devoting themselves to the curriculum design act like “seafarers” who “conduct their own exploration and return with an even better map” (Sams, 2013, p. 1). In this study, the developed FLIPPED-ACTION model is purposely designed to continue investigation about flipped learning. Nevertheless, due to the exploratory nature, limited sample size (40 students), and short evaluation period (one pre- and post- test in one semester), this study presents a start-off. More issues on flipped teaching and learning should be discussed along with the development of any newly-evolved model.

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Game-Based Motion Sensing Game Training Systems to Improve Visual-Motor Integration for Children with Developmental Delay in Special Education

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Abstract

Children with dysfunctional visual perception often exhibit limited participation in school activities, poor academic performance, and lack of independence in daily life activities. Negative experiences and poor school performance may then further delay social and emotional development. Thus, effective therapies for enhancing visual perceptual function are essential for facilitating integration in school life and for reducing the immediate and future social burden of this population. Nevertheless, treatments for children with developmental disabilities often focus on motor function rather than visual perception. Another problem is that conventional programs for improving visual perception are often limited in scope and flexibility. Therefore, this study developed and evaluated a game-based motion sensing system for improving visual-motor integration in special education children with developmental delay. The system incorporates Microsoft Kinect to provide a range of games with widely varying difficulty levels and to record the progress of the user. Special education teachers can use the system to evaluate the effectiveness of programs for improving visual-motor integration in special education children with developmental delay.

Keywords: Special education, visual-motor integration, game-based training, motion sensing game.

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Introduction

Dysfunctional visual perception and visual-motor integration are often undiagnosed in early stages and can lead to difficulty performing daily life activities. Visual perception dysfunction is associated with children because visual-motor skills develop throughout childhood. Visual-motor integration is the ability to coordinate visual perceptual skills with gross-motor skills and the ability to perform movements requiring high dexterity. Visual-motor integration can also be defined as the ability to integrate visual input with motor output. A visual-motor dysfunction results from the inability of the brain to record or process visual information correctly. As a result, muscles cannot respond properly during activities that require hand-eye coordination. Visual feedback is essential for development of motor skills, which are continuously refined from childhood until adulthood. Children can improve their visual perceptual skills by playing games to practice performing everyday tasks. To improve handwriting ability, for example, a therapist may use a game requiring the user to catch a ball. Compared to children with developmental delay, children with normal development of visual-motor skills not only perform better on tasks requiring hand-eye coordination such as painting and handwriting, they often have better academic performance (Goldstein and Britt, 1994; Case-Smith, 2000).

Recent studies indicate that virtual reality (VR) learning tools may be more effective than conventional learning methods because they are easily tailored to the needs of the learner. For example, a VR environment can be designed to be simpler than the actual environment to focus on a specific task or skill and to attract the attention of the learner. Virtual reality can also enhance the enthusiasm and willingness of children to undergo physiotherapy, especially young children who are easily distracted (Jelsma et al., 2013; Winkels et al., 2013). Although VR learning environments are clearly effective in terms of providing stimuli for learners, studies have reported widely varying effectiveness for learning and many notable limitations (Rahman, 2010; Luna-Oliva et al., 2012; Di Bitonto et al., 2014). For example, most studies have focused on the use of VR for evaluation or physical therapy of children with specific conditions such as autism, cerebral palsy (CP) or spinal cord injury (SCI). Recent studies show that devices such as the Microsoft Kinect Sensor can be used for upper-limb rehabilitation in CP. Specifically, the therapist can use the system to gauge angles of movement and accuracy of movement (Goncalves et al., 2014). Another study reported that VR-based therapy is more effective than conventional therapy for improving hand-eye coordination in SCI patients and stroke patients (Roy et al., 2013). One example of a therapeutic application of the Microsoft Kinect is in rehabilitating balance and coordination in injured athletes (Vernadakis et al., 2014).

The aim of this study was to develop a game-based system for improving visual-motor skills in special education children with delayed visual-motor development.

Conclusion

Whereas conventional physical therapy is designed to improve specific dysfunctions in movement or to improve capability to perform specific daily life tasks, the game-based system proposed in this study uses motion capture to provide individualized full-body therapy for widely varying disorders. By providing continuous feedback on

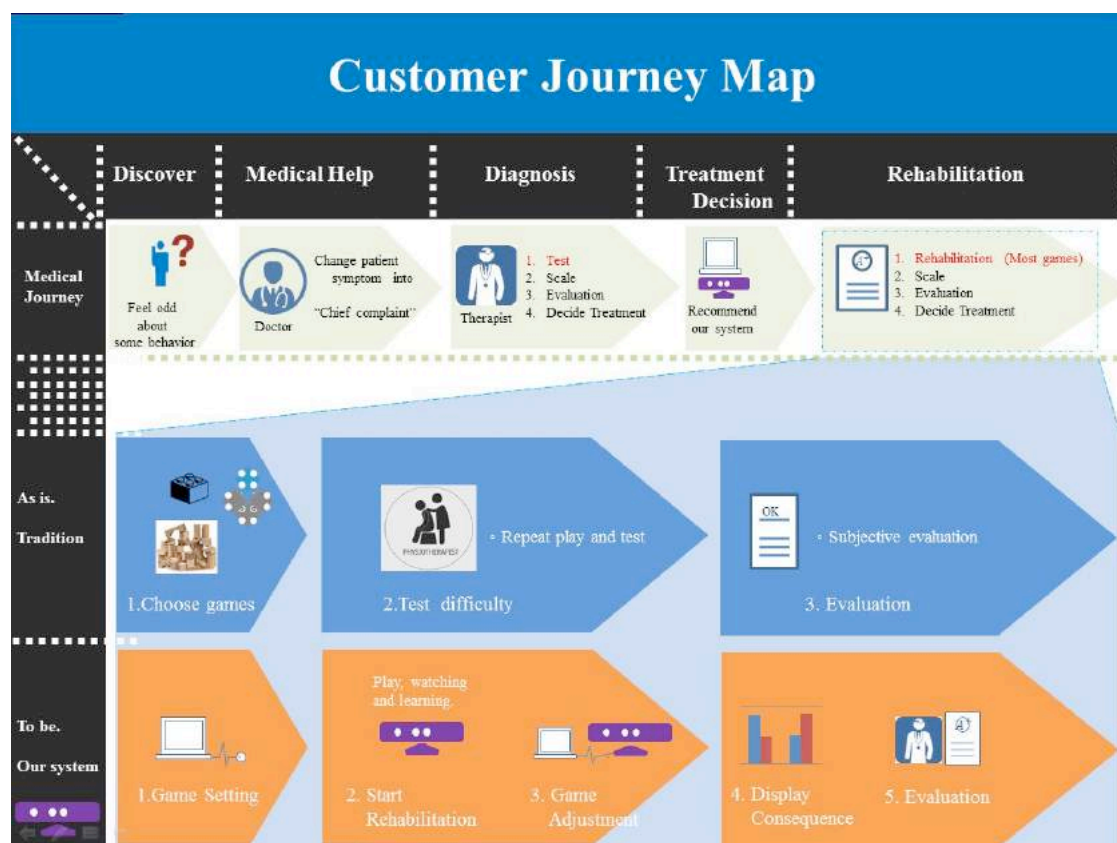


Figure 1. Flowchart of procedure for using game-based system for improving developmental delay in special education children.

improvements in capability to function in real-world environments, the system reduces the quality of life impact of visual perception dysfunction and improves the effectiveness of therapeutic treatment.

Figure 1 is a map of the procedure for using the proposed system. After children are evaluated and diagnosed in an appropriate facility (e.g., a hospital), medical personnel can design suitable physiotherapy program. Additionally, the system automatically updates and records details of the conditions and progress of therapy so that medical personnel can quickly and comprehensively review the current status of the patient. Finally, users can easily modify the data types tracked by the system.

Microsoft Kinect Sensor is an add-on peripheral for the Xbox 360 game console or for Windows OS PCs. The device includes an RGB camera and a depth sensor for full-body motion capture. The system provides interesting and realistic game-based physiotherapy by enabling users to control and interact with the content without an input device such as a controller. Figure 2 shows a screenshot of a game in which the user is required to hit an object approaching from different directions. The game was designed to evaluate coordination, reflexes, and recovery level. The efficacy of the proposed game-based non-immersive virtual reality physiotherapy system implemented in the Microsoft Kinect console system was evaluated in 60 children with developmental disorder and dysfunctional visual-motor integration. The subjects were randomly divided into a treatment group of 30 children and a control group of 30 children. The treatment group received training with the proposed system, and the control group received the standard physiotherapy regimen. After 8 weeks, data collection and statistical tests were performed to compare improvements in visual perception and visual-motor integration.

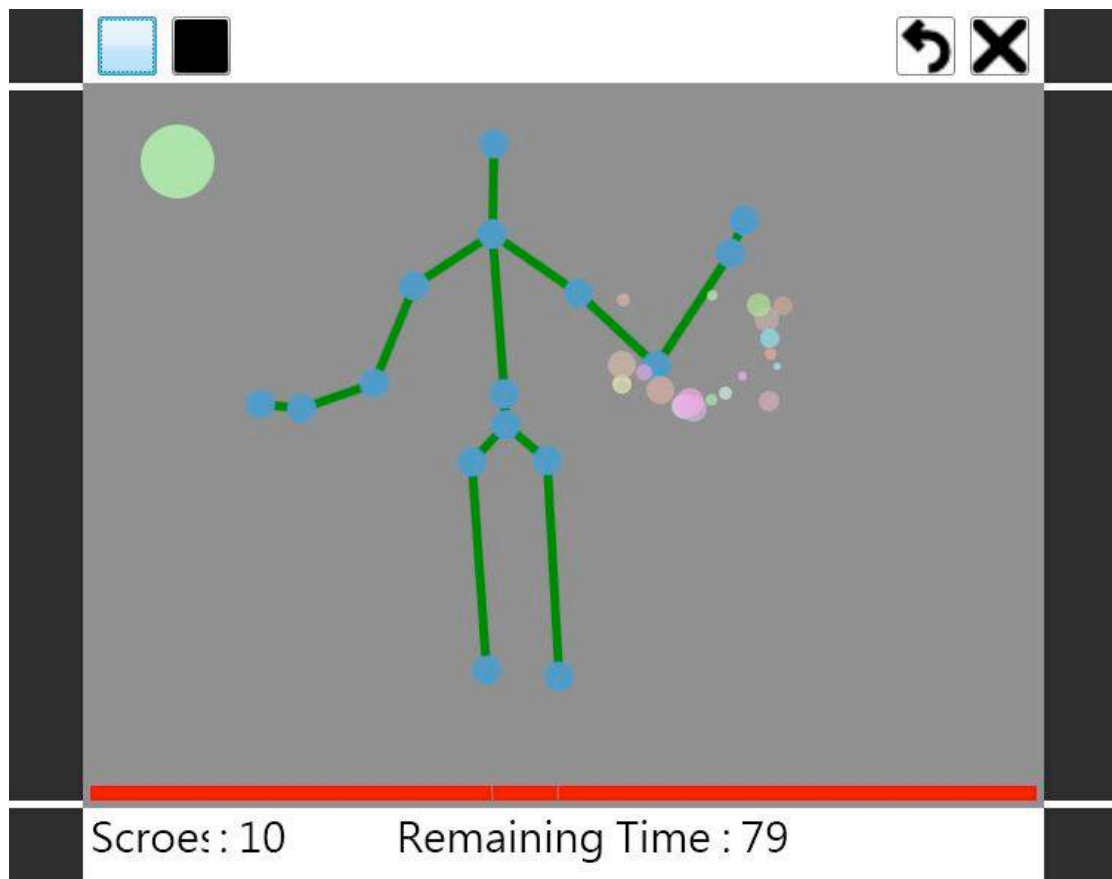


Figure 2. Screenshot of training in progress.

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Studies in Historical Memory: A Path to Contemporary Understanding

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Abstract

This presentation will examine case studies of historical memory taught in classes with Japanese university students. Students have grown up with sense of pride in Japan being a peaceful member of the international community. At the same time, students often express frustration that irrespective of what Japan does, it will always be criticized for a wartime past that cannot be changed. In this situation students feel powerless to make their country correctly understood. In addition, the education system fails to provide a narrative that brings together pride in Japan's achievements with an honest assessment of imperial history. Case studies of historical memories which highlight the way the same events are being remembered differently in different places, e.g Hideyoshi's Korean incursions and the assassination of Ito Hirobumi, can be a way to develop student understanding and empathy. The case studies provide students with an introduction to different perspectives presented in a non-confrontational way. By encasing the studies in the context of historical memory, students are able to take on board other perspectives without feeling that they or their country is being criticized. Students are encouraged to interrogate the way history is remembered and discuss their ideas about the way history should be taught at school.

Keywords: Historical memory, history education, peace studies, Japan, Korea, CLIL case study

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Introduction

“Those who cannot remember the past are condemned to repeat it.” or so Santayana believed. In reality though, history education is commonly used as a way to legitimize one’s own point of view, fostering parochialism and division rather than unity and understanding. Instead of freeing people from repeating mistakes, the study of history can ensure that prejudice and hostilities are reinforced.

Today I am looking at Japan’s relations with Korea and the way that this is dealt with within the education system, but the principles apply to any contested history. In many respects there is a lot of co-operation between Japan and Korea, however when it comes to history things are awkward. Japan and Korea see their shared history very differently. In the case of Japan, the current government sees historical interpretation and the content of history textbooks as a domestic issue. (McNeill, 2013). In contrast, the Korean Government believes that Japan has a 'grave responsibility' to be remorseful, and ensure that young people in Japan are brought up with knowledge of Japanese imperial aggression. (MOFA, Korea, 2016). Despite the political tensions, students often are attracted to Korean culture, but the polarized political context often leaves students with a degree of unease. This paper seeks to outline an approach to history that helps students understand and empathize with the perspectives of former colonies while not taking on the burden of assuming personal responsibility for events that occurred long before they were born.

The current situation

It is often said that Japanese students are not taught about Japanese imperialism. But this is only partly true. Although student knowledge isn't deep¹, from my experience at several different universities in Tokyo, it is fair to say students display a common narrative. The narrative includes the ideas that

- imperialism is bad,
- to varying extents, Japan, was responsible for atrocities, (there is little specific knowledge, but there is a vague awareness).
- Japan was not the only country that committed atrocities (e.g. the atomic bombs and firebombings)
- And the Japanese people were also victims. (of foreign countries, but more particularly of their own government and army who “deceived” them.)

In addition to the narrative of the past, students tend to view contemporary Japan as a model state. Japan is seen as generous with foreign aid and a peaceful country which has been at peace with its neighbours for more than seventy years.

Despite this, in The Genron NPO’s 2015 survey of Japan -Korea attitudes, 52% of Japanese had unfavourable feelings to Korea, and 73% percent of Koreans had unfavorable feelings to Japan. This is a problem. But, when Japan’s neighbours criticise Japan, students often feel frustrated and they can’t understand the reason or why it’s necessary for only Japan to continually apologize. History is seen as a

¹ The lack of depth of knowledge is not specific to war time or colonial history. In school history teaching, there is a much greater emphasis on “who” “what” and “when” than there is on “why” or “how”.

perplexing topic with no solutions. Some students become hostile, for most it's easier to ignore the bad feeling and stick to a veneer of *yakiniku* and K pop.

Student ambivalence reveals a deeper issue. The education system does not provide students with a narrative that allows them to be simultaneously proud of Japan's achievements and at the same time be conscious of the oppression and crimes that were committed under imperial rule.²

The failure to reconcile the two strands is evident in the Japanese government's policy on history teaching. The government has vast powers to enforce its views since all textbooks must be approved by the government before they can be used in state schools. The government strongly opposes teaching what they call "*self-deprecating*" history, which refers primarily to history that includes the crimes committed under Japanese imperialism. The former Education Minister, Hakubun Shimomura warned of the dangers of this style of teaching as it contributes to feelings of worthlessness and even suicide among young people. (McNeill, 2013) As an alternative, the government advocates teaching "*patriotic*" history - which picks up the good points of the country and minimizes the bad. The rationale Shimomura gave for this is that if students feel pride in their country, they will feel pride in themselves. (Kingston, 2015) But, narrow insistence on a single point of view doesn't protect students, it makes them prisoners of the past by denying them the chance to understand other points of view. As Bar-Tal & Rosen (2013) have outlined, the education system plays a formative role in creating norms in societies' attitudes towards historical events and conflicts. A society that teaches history from a single point of view, denying the legitimacy of other views, perpetuates distrust and fails to create a constructive mindset for engagement and resolving difference.

This paper recommends a shift away from history based on narrative to history based on questioning. One way to achieve this is through the study of historical memory. Deconstructing the way in which history is remembered by asking questions provides students with an opportunities to recognize, understand and approach differences constructively "What is remembered?", "What is not remembered?", "By whom?", "Why?", "How?" "Have the memories changed over time?" In addition, shifting from narrative's emphasis on "acquiring knowledge" so as to embrace "dialogical and dialectical thinking" enables students to become more comfortable with complexity and ambiguity. (Paul, 1992) These are precisely the kind of skills the Japanese government's Global Human Resource Strategy should be cultivating if it wants its citizens to be able to engage internationally.³

The study of historical memory

When teaching historical memory there are important points to note.

First, this is not a Japan issue *per se*. All countries have debates about history. Australia, my country, has some very ugly parts in its history. Government policy assumed that the Aboriginal race would die out. And policy was made to ensure they would. Australia still struggles with this history. It seems to be easier for

² Simplistic approaches to war history are not unique to Japan. See Phillip Seaton's (2001) analysis of the British Media's reporting of Yasukuni shrine and Japanese war memory.

³ For more information on the Japanese Government's Global Jinzai strategy see Yonezawa (2014)

students to reflect, when they know that the issue of historical memory is bigger than Japan.

In addition, studying historical memory is not about blame, and it's also not about trying to force students to adopt a counter narrative. It is interrogating the past and thinking about what is believed, by whom and why, particularly in areas where memories are contested. Asking questions rather than accepting a narrative helps students to gain insight into alternative points of view, develop empathy, curiosity and a belief that situations can be improve.⁴

Finally, being able to analyse Japanese history from different points of view does not diminish a Japanese person's Japaneseness. Rather, it enables them to be more sophisticated and flexible thinkers.

Historical Memory: the example of Hideyoshi

Let's take a look at an example of thinking about the way events are remembered using a case study of Hideyoshi, the leader of Japan in the late 1500s. Students are asked to recall their memories of Hideyoshi.

To begin with, who is Hideyoshi? Why is he famous? When you think of Hideyoshi do you think of a good guy or a bad or neither or both? The general memory students have of Hideyoshi is that he united Japan and in doing so brought peace. In addition he overcame class barriers to become the *taiko*.

His achievements were remarkable. But is that all there is to Hideyoshi? The aim of this question is not to denigrate or minimize Hideyoshi's achievements, but to add a different dimension.

“What did Hideyoshi do after he united Japan?” Usually most students know that he invaded Korea, but some do not. Few know much detail. “What do you know about the wars?” “Who won?” “Are there any memorials in Japan?” “Are there any memorials in Korea?” “Have you studied it?” “Have you studied it in depth?” “Have you discussed it?”

Students read about the wars in Korea. Hideyoshi's battle hardened troops, who had already united Japan, initially made exceptionally fast progress, going from Pusan to Seoul in about 3 weeks. There were two expeditions, and they were brutal with many casualties. More than 140,000 Japanese died in the invasions. Hideyoshi's soldiers were under order to kill. More than 200,000 Korean and Chinese soldiers and civilians were also killed. Similar to the practice at the time of decapitating the enemy, Hideyoshi ordered that the noses of the dead enemy be sent back to Japan.

⁴ He Yinan (2007) has discussed the issue of re-visiting national myths in the context of China-Japan relations. She outlines the difficulties created by national mythmaking and urges reflection and mutual self critique as a means to improve understanding between the two countries. The approach she advocates is similar to the philosophy that underpins this paper.

Thinking now about Korea's point of view

What's Korea's memory of the war? Students read about the Korean commander Yi Sun Sin, his turtle boats and the technology and immense naval skill that was used to defeat Japan. What reminders are there of the wars in Korea?

Let's take a look at a couple of memorials. This is a statue of Yi Sun Sin in Pusan. Do you know who he is? Few students had heard of him prior to learning about him in class. This is a little surprising since he was highly regarded by Admiral Togo and other Japanese naval commanders who fought the Russo Japanese war. (Hawley, 2005) Look at the statue. What can we guess about how Koreans think about him?



Figure 1: Yi Sun Sin, Pusan (Wikipedia)



Figure 2: Yi Sun Sin, Pusan. (Wikipedia)

It's big. It's prominent. It's overlooking the city. He seems strong, proud, brave, a protector and guardian. He is a source of inspiration, dignity. Yi is one of Korea's greatest heroes. (Citizen's Name Admiral Yi, 15 April, 2005)

The statue was built in 1951 on the site of a former Japanese shrine. Think about when it was built. Think about where it was built. Why do think it was built? (There is almost always more than one possible reason)

National pride. Reclaiming national identity. The need to have heroes and inspiration. Erasing Japanese presence. There are multiple possibilities.

Students sometimes respond that Korea built this statue with Yi Sun Sin looking out to Japan as reminder to Japan that it (Japan) had been defeated. And this is also a valid explanation. But is it likely to be the sole motivation for Koreans wanting to remember Yi Sun Sin? And, even if it were, would it be understandable for Koreans to want a symbol that said "we won't be invaded again"? Is the feeling attributed to Korea more understandable if it is juxtaposed against Japan's mythologizing the memory about Genghis Khan's failed invasion of the Japanese archipelago? Questioning is a way to create empathy and understanding.

Now let's compare Japan's memory of the wars.

How does Japan remember Hideyoshi's wars in Korea? What memorials remain? Outside Toyokuni jinja in Kyoto there is a memorial to Hideyoshi's Korean invasions, the *mimizuka* or the grave of the ears, though it contains noses rather than

ears. Interred in this mound are the noses of tens of thousands of Koreans and Chinese who were killed by Hideyoshi's troops. Although the *mimizuka* appears in at least one Japanese high school history textbook, for many students learning about it in class is the first time they have heard about it. The brutality of the wars doesn't fit comfortably with their "memory" of Hideyoshi, but at the same time from the pictures of the *mimizuka* students can that despite the brutality of the past, there is a quiet respectfulness in the way the site is maintained today. It may not be widely remembered in Japan, but from the photos, it appears that those who do remember do so with care and sincerity.



Figure 3. A explanation sign at the *Mimizuka*



Figure 4. The *Mimizuka*

There are those who would say that teaching about the *mimizuka* is self deprecating history, and if it's taught as a narrative fact, with no opportunity to think or analyse, perhaps it may be. Simply learning of existence of the *mimizuka*, may lead to feelings of shame or hopelessness that history can't be changed. However rather than this absorbing a narrative, the students approach the study actively, interrogating the way it has been remembered. "Did you know about it already?" "If you did, where did you learn about it?" "Have you been there?" "Why do you think it was built?" "Is it well looked after?" "Why do you think local people look after it?" "What does it show about the way the war has been remembered in Japan?" "Should the Korean invasions and the *mimizuka* be included when students learn about Hideyoshi?" "Do school trips to Kyoto visit the *mimizuka*?" "Should they?" "Should it be taught about at school?" "How should it be taught?"

These questions don't necessarily have single right answers, but they're a catalyst to think, and to research and compare and discuss and evaluate. They take "self-deprecating history" and make it active and constructive. Despite the government's concerns that students will be burdened with hopelessness if they are taught "self deprecating history", I have yet to have a student say that the knowledge of the *mimizuka* (or any other episode of Japanese history) *should* be excluded from study and discussion. Studies of historical memory enable students to take an event from the past that can be loaded with shame by critics, and approach it as problem solving. Students discuss returning the noses to Korea. "What if Korea insisted they be returned?" "Should they be?" "Why might it be a good thing to return the noses?" "Why might it *not* be a good thing to return the noses?" "Are there opportunities that could come with returning the noses?" "Are there potential problems?" "Are there conditions that should be applied or alternatives that would be preferable?" "If Korea had Japanese noses, should they be returned." Students are asked to consider more than one point of view in their answers and give reasons for their opinions. This is real life problem solving. Without historical understanding and being able to see different points of view, it is very difficult to have constructive negotiations to resolve points of tension and disagreement.

Historical Memory: Ahn Jung Geun and contested history.



Figure 5: 2014 Asian World Cup, Seoul.

I'd like to look very briefly now at the incident above. It's a complex issue and time won't allow to do more than raise a few questions.

In case anyone doesn't know, it is a picture taken at the Asia Games Japan Korea soccer match in Seoul in 2014. The incident caused an outcry in Japan. On the left is Yi Sun Sin, whom we've already discussed, and on the right Ahn Jung Guen, the Korean who, in 1909, assassinated Ito Hirobumi, Japan's first prime minister. At the time he was assassinated, Ito was the Japanese Special Envoy to Korea. Ahn's assassination of Ito is familiar to students.

The picture of the Korean crowd holding the pictures of their national heroes raises a couple of issues. The first issue is whether it's suitable for people from the host country of an international event to display pictures that appear designed to offend a participating country. There are international protocols on this, and it does not merit discussion in this paper. A second issue, which is the issue I will focus on, is the positive regard for Ahn in Korea and the difference in the way that Ahn is remembered in the two countries. Let's interrogate conflicting memories of Ahn. First the memory of Ahn that has been passed down to Japanese students.

"What words do think of when you think of Ahn?"

"Murderer, assassin, hates Japan, Korean, nationalist, violent"

"What words do you think Koreans might associate with Ahn?"

"Hero, champion, powerful, hates Japan, pride"

These are very different images, and students recognize the difference in perspective. The Japanese government calls Ahn a "terrorist". (Korean who assassinated Japan's first leader, 2014) The Korean government has called him a "patriot... who advocated peace". (Lee vows every effort, 2010)

It's easy for students to understand the Japanese government's position that Ahn is a terrorist – he assassinated a political leader. But a patriot who advocated peace? How can it possibly be true? I encourage students to keep an open mind, and resist the urge to reject the Korean government view without researching and evaluating it. Is Korea simply trying to provoke Japan, or is there more to the story about Ahn? Why does Korea remember Ahn, a murderer, as a hero?

Students research the writings of Ahn and are surprised with what they learn. For example they learn that Japanese troops killed the Korean empress while Ito was Prime Minister. They also learn Ahn, who lived at the height of imperialism, was a Pan Asianist, who believed the “yellow races should unite against the white races” (Saaler & Szpilman, 2011). It is possible that Ahn’s Pan Asianism may also come as a surprise to those in Korea who remember Ahn primarily as a nationalist. Reading about Ahn, students learn that he didn’t hate Japan *per se* but he did feel bitterly let down by Japan particularly after the Russo Japanese war. Ahn also criticized local injustices in particular the gap between rich and poor. In Ahn’s writings he called for peace and equality. When students go back to what Ahn wrote they see a lot more complexity and begin to understand that there may be reasons behind the difference in memory. Japanese memory of Ahn is defined solely by his assassination of Ito. (Ironically Ito was a political moderate.) In contrast Ahn’s ideals of dignity and justice underpin the Korean memory.⁵

As a way to highlight subjectivity in the way that events are treated and the memories that are chosen, the students are asked to compare the assassination of former Prime Minister Ito by the Korean Ahn, with the assassination of Prime Minister Inukai by a group of Japanese junior naval officers in the May 15 incident of 1932. To some extent different times account for the differing treatment of political assassins. However the question remains why are students very familiar with the assassination of former Prime Minister Ito, whose death became a pretext for the Japanese colonization of Korea, and yet quite unfamiliar with the assassination of Prime Minister Inukai, whose death marked a shift to military rule in pre-war Japan. Interrogating the memories does not always lead to definitive answers, but it does lead to a more nuanced understanding of history.

Conclusion

In conclusion, teaching history as a narrative to be remembered, whether it be “patriotic” or “self-deprecating”, runs the risk of reducing history to a mantra. Narrative without enquiry provides students with knowledge but fails to give them the ability to discern the accuracy of the information. Teaching students to question the way history is remembered and to look from alternative perspectives provides them with flexibility of thinking and gives them tools to analyse, understand and negotiate the world around them. These are foundational skills for engaging constructively and confidently and provide a starting point for resolving differences peacefully in globalizing world.

⁵ Students research information themselves. At a minimum they are required to seek out the fifteen reasons that Ahn gives for assassinating Ito, but they are encouraged to research widely and look for differences in English and Japanese sites as well as other languages that they may read. Franklin Rausch (2012, 2013) has written in depth about Ahn and the way he is remembered in Korea, Japan and China.

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The Role of ESL Education for the Social and Economic Development in Global Contexts

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Abstract

English is the “Global language” which is widely used in international business, academics, politics, and technology in the world; therefore, English has been taught as first or second language in different countries in different regions. Wealthy countries, such as US, believe the more money invested in promoting English-as-second-language (ESL) education, the better the social and economic development of the developing and under-developed countries will have. As the economy in Asian-Pacific region has been growing, English is needed for the development of these countries for international affairs. The positive effect of ESL education on upward mobility is found in most Asian countries, such as China. Similarly, English plays an important role in language education, international business, and tourism in Latin America like Argentina (Porto, 2014). Meanwhile, professionals have to use English for technology, and the salaries of English-speaking workers have 25%-35% more than their non-English-speaking counterparts in European Union (Johnson, 2009). However, English-only instruction in the underdeveloped African countries benefits neither the cognitive development nor the socioeconomic development of primary and secondary students (Cooke & Williams, 2002). It is difficult to find any jobs as they are illiterate (L1) in the local settings for workers, whereas ninety percent of poor people work in informal sector where English is unused. This paper investigates whether the additive or detrimental effects of ESL education on socioeconomic development are due to imperialism (Phillipson, 1992), diversity or cultural difference. May the acceptance of “World Englishes” be the solution to the problem of English monolingualism in education? (250 words)

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1.0. Introduction

English is the “Global language” which is widely used in international business, academics, politics, and technology in the world; therefore, English has been taught as first or second language in different countries in different regions. The post cold war global expansion of English has been controversial in the world. Some linguists treated it as neo-colonialism especially in the postcolonial countries, so its expansion should be stopped. Whereas others suggest that English as an international language not only facilitates global business and cross-cultural communication, but also stimulates social and economic development of the developing and under-developed countries.

In globalization, English as first or second language benefits those participants in the knowledge economy, though the proportion of employments required high English proficiency is comparatively small to the number of workers seeking world-wide jobs. Although it is hard to correlate which sector required which particular language, it is obvious that English as a “global language” with appropriate educational credentials is very advantageous for the competitors in the knowledge economy (Grin et al., 2010). The rise of English and the significance of English proficiency could be indicated by the following data in the world: 380 million English-first-language (L1) speakers and two-third as many as their second language (L2), as well as a billion English learners and a third of the world’s population with exposure to the language. As predicted, half the world will have more or less English proficiency by 2050. And also, English-speaking countries dominate 40 % of the world’s GDP (Williams, 2010). The data also demonstrate that the spread of English-as-second-language (ESL) will be quickening in the recent decades all over the world, and English-speaking countries are much richer and more advanced than those non-English-speaking ones.

In the 21 century, internet, computers, artificial intelligence and all sorts of new inventions in technology have been changing the personal, national, international and global communication in every aspect. Facing the rapid changing world of technology, English as “Lingua franca” (Van Parijs, 2000) facilitates interactions, live or online, directly and globally; and consequently, increases the productivity and gross domestic product (GDP) of the parties. Moreover, teaching and learning English reduces the number of highly trained English speaking citizens, such as professionals flee to the wealthy countries of knowledge economy. The statement “English is the language of the world; we must learn it to succeed” could be backed up by many people in different parts of the world, as English acts as a powerful tool for development, advancement, and success for many individuals and many countries. Besides an access to economic success, English has become a basic skill of modern life and a form of cultural capital.

On the contrary, Phillipson (1992) acknowledged that the dominance of English is due to imperialism in various sectors of globalization (Phillipson, 2001, p.187) including McDonaldisation, militarization on all continents, such as military links with NATO, UN peace-keeping operations and arms trade, as well as through culture, entertainment and news through Hollywood products, BBC World, CNN, and MTV. Moreover, as reported (Crystal, 1997), at least 85% of the world’s film market is in English. Under the global economic, political, and cultural influence of US, English is popular in world affairs, but he emphasized that the “natural” and “normal” use of English all over the world is hegemonism, which marginalizes

other languages (Phillipson, 2001). Regarding the adverse effects of western economic and political imperialism on underdeveloped countries after the Cold War, English suppresses other languages at all levels from local to global. Therefore, he advocated the “Ecology of languages”, which means “equality for speakers of all languages”. In other words, there should have “linguistic human rights” that preserve the native languages facing the global monolingualism of English.

This paper investigates whether the additive or detrimental effects of ESL education on socio-economic development to various countries in different regions in the world are due to imperialism (Phillipson, 1992), diversity or cultural difference. May the acceptance of “World Englishes” be the solution to the problem of English monolingualism in education?

2.1. ESL and the social and economic development in Asia

As the economy in Asian-Pacific region has been growing, English is needed for the development of these countries for international affairs. The additive effect of ESL education on social and economic advancement is found in most Asian countries, such as in China, where English is a constructive tool for development and English proficiency facilitates many peoples’ success. According to the education policy of China, English is compulsory since primary one up to year two at college level. Moreover, a pass in any English proficiency tests set by education bureau is required for a bachelor degree. As candidates of English proficiency test for certification treat passing the examinations as “passport to better-paid employment” and “entrance ticket to the working world,” (Johnson, 2009) the English proficiency test training industry has become a big business. Even those companies, where English has no practical usage, the employers require certification of English for the interviewees. In other words, English proficiency stands for educational and socio-economic success.

After 30 years of reform and opening policy, China has been playing an active role in participating in international affairs, such as hosting 2008 Olympics, or joining UN, WTO and WHO, etc., creating a craze of learning English in the country. As a large population of young and old, common people or well-educated ones, are enthusiastically learning and communicating in English, Chinglish, as one of the “World Englishes” with a variation of localized English, is commonly found. Nowadays, Chinese with high English proficiency enjoys rapid direct access to economic and academic achievement as well as upward mobility. The graduates of English major in China have the advantage to enter top 500 international companies which required English for their international business, or further study for higher degrees to become more advanced in western countries such as USA, UK, Canada and Australia. After a few years of work, they could be promoted to managerial or director level, owing the accreditation for professionals, or become successful businessmen, for example, Jack Ma (Ma Yun in Chinese), the executive chairman of Alibaba.

According to Forbes China Richest List 2016, Ma is the second richest man owing more than 21 billion dollars, and the first mainland Chinese entrepreneur to appear on the cover of Forbes. Being a youngster, he has very strong curiosity in learning English, so he communicated with a lot of foreigners in Hangzhou as a volunteer tourist guide. After graduated from Hangzhou Teacher's Institute major in English, he became an English lecturer. His high English proficiency with curiosity opens the door to the new technology world and inspires his big e-commerce

empire for making him one of the wealthiest tycoons in China. In 1999, he found Alibaba, which provides a perfect e-commerce platform for Chinese enterprises, especially small and medium-sized enterprises (SMEs) with RMB500,000. The global e-commerce platform serves more than 79 million members in 240 countries. In the New York Stock Exchange in 2014, after Alibaba raised over \$25 billion in an initial public offering (IPO), the largest IPO in US financial history, it became one of the most valuable technology companies in the world (Wikipedia, 2016). As second largest economy, China has become a more consumer- and service-led economy and entered the golden age of globalization. In the recent decades, Ma has tremendous social and economic upward mobility from the son of a story-teller, volunteer tourist guide to a lecture, and even a billionaire recorded in Forbes and famous tycoon, and Alibaba has great contribution and plays a prominent role to the economic development in China.

Besides China, there is the former British colony with a huge population as well in Asia, India, where English learning has also been reported positively linked with social and economic development. English was the language restricted to the privileged upper class elites under imperialism (Phillipson, 1992) in the past British colonial period, whereas the rapid growth of the ESL population indicates the need for economy, social prestige and development of the middle-class Indians in the age of globalization. According to the data, the number of English speakers in India has grown largely from 2% in 1951 census to 12.2 % in 2001, which is the second largest population of English speakers in the world. Within India, there is a large variety of linguistic communities; however, the population of English users in India was 125.2 million, second to those Hindi (the principal majority language) speakers of 551.4 million in 2001 census (Mishra, 2013). In linguistic and cultural diversity, Indians use English as a lingua franca in term of Indian-English emerging localized or indigenized varieties of English with Indian accents and habits, which can be classified as “World Englishes”, to deal with international business.

Regarding to good jobs with high salary and social status of mainstream, English is no longer preserved for Indian elites. For instance, employers in the industries expect engineers with good skills in English, otherwise, their salaries will be cut or they could not have good job opportunities (Blom and Saeki 2011). Based upon a large household survey, the hourly salary of the young educated workers with good English communicative skills has been found increased by 34 % (Azam, Chin, and Prakash, 2010). Due to the fact that Indian economy has become more global, higher proficiency and better communicative skills in English is necessary. The call centres (Sonntag, 2009), served by fluent educated English-speaking workers, in India is the most well-known successful example benefitting from the workforce of high English communicative skills in the developing countries. Another example is the international big companies setting up their computer and technology centres with English-speakers including engineers and technicians for back up support, such as the computer centre of Chartered Bank, the top three big bank in Hong Kong, where expansive rental fees and high labour cost are required.

The status of English has been shifted from banishment of English language teaching (ELT) by politicians since 1960's to advocate for extension of ESL education to the masses by political leaders and activists like Daltis (backward class) leader Prasad in a decade. Ilaiah (2013),

explained the slow economic growth of Daltis is due to lack of English education, and strongly disagreed with the conservative opinion that “English will destroy the culture of the soil” (Ilaiyah, 2012). Nowadays, ESL education is commonly implemented from first class in India, even those deprived states such as Bihar. The recent awareness of ESL education among the socially, economically and educationally disadvantaged people in India is directly associated with their aspiration of economic growth and development. Through English learning, which was inaccessible, the economically and culturally underprivileged class/caste people are able to participate in the mainstream of the country’s social and economic activity (Mishra, 2013). In other words, the widespread acceptance of ESL education in India is the aspiration for betterment of economic, social and cultural development, which is contrast to the “Imperialism” or “neo-colonialization” of English described by Phillipson.

In response to the idea of linguistic imperialism of Phillipson, a Singaporean student has the following speech expressing Singapore has successfully adopted English as a medium of global communication in the multilingual society consisting of Chinese, Malaysian and Indian languages and dialects. In fact, they have developed their own English as Singlish, as being classified as one of the “World Englishes” with a variation from British-American standard, that suits the local context.

“Although it was definitely unpleasant to be colonized by another country, I have to say that the British in one way or another paved the way for the development of Singapore and have educated us in English and have enabled us to benefit from all its advantages and its standing as a global language. However, we have not by any means lost our cultural heritage. Multilingualism is prevalent and we are rich in the use of different languages and dialects, which we speak and use whenever the situation calls for it.” (Quoted in Berns et al., 1998, p. 278)

Although the debates of who will be benefited and be harmed by the spread of English and ESL education continue, Singapore is a role model of accepting English as lingua franca as well as respecting linguistic diversity and cultural heritage in multilingualism, similar to the “Ecology of languages” advocated by Phillipson. It is no doubt that English as a global language benefits the development of Singapore in all aspects.

2.2. TESOL in Latin America: an example of Argentina

Linguistic and cultural diversity is commonly found in Latin American countries which comprise of multi-ethnic groups speaking more than 700 remaining native languages in the region. Portuguese and Spanish are the official languages, the first language in education policy, in most of these countries. While Spanish is the official language of Argentina, English as “Lingua franca” for the global business and international communication has been widely acknowledged. Comparing to the large number of studies focusing on ESL in other parts of the world (Bruthiaux, 2002; Clemente, 2007; Matsuda, 2003; McKay & Warshauer Freedman, 1990; McKay & Weinstein-Shr, 1993; Nunan, 2003; Tsui, 2007; Vavrus, 2002), there is very little research about the case of ESL education in Latin America. Based upon the overview of Porto (2014), we have a clear picture of the role and status of Teaching English to Speakers of Other Languages (TESOL) in Argentina as an example of Latin American countries.

In the 20th century, English was only taught in expansive private English-Spanish bilingual institutions, whereas it was first introduced in public secondary schools in 1960. Similar to the bilingual school model, English is compulsory from grade four (9-year-old) in private and public schools accompany to some new primary and secondary syllabi with nationwide impact in Argentina since 2007. From this perspective, other countries with similar situations in Latin America will follow Argentina.

As the most prestigious foreign language, English(Maersik Nielson, 2003) plays an important role in language education, international business, and tourism in Argentina (Porto, 2014). Maersk Nielsen (2003) stated that the use of English has several functions in Argentina. First is the interpersonal function -- English represents prestige, modernity and sophistication, so it is widely used in advertising, brand names of clothes, cars, perfumes, music, food, and many other areas, as well as business. Second is the instrumental function that English is used as the teaching medium in primary and secondary bilingual schools, teacher training colleges, at some courses in universities, ESL professional development courses, and international conferences of various disciplines. Third is the regulative function, all business contracts have to be written in Spanish according to the law, therefore, translators for English are necessary. The last is the innovative function which means a large amount of nativized, borrowing words, names and terms from English in sports (e.g. Newell's Old Boys, Boca Juniors, River Plate, Buenos Aires Lawn Tennis Club), computing, shopping, and advertising and many areas.

Through different means, English, which benefits the whole society from educators to learners, parents, teachers, researchers, authorities, policy makers, and curriculum designers, provides positive effect on their individual development and social lives. As a cultural capital, English links with the world by various channels, accesses to knowledge and information, education, and employment, and results in social and economic mobility of the ESL learners (Byram et. al, 2012). However, learners interpret the symbolic, social, and cultural meanings (Cots, 2006) in their own ways when contact the world. Therefore, English is definitely additive to social and economic development in Argentina (Porto, 2014).

Meanwhile, English enriches their lives in linguistic, cultural, academic, social, and economic aspects. Furthermore, English becomes a tool for empowering and instrumental to emancipation for the ESL learners to fight for the inequalities of poverty and discrimination in their lives as Third World citizens. The rationale behind ESL education bases on a human capital education model and Progressive Education (Spring, 2009), which means foreign language teaching not only aiming for language development, but also celebrating learners as responsible, active, and conscientious citizens. Whether English is treated as utilitarian or hegemonism, it is an undeniable process of Americanization observable through TV, films, and other phenomena (Phillipson, 2008a). Similar to the descriptions of Matsuda (2003) in Japan and Vavrus (2002) in Tanzania, Argentina actors highly appreciate English. By all means, English as an international language enhances the social-economic communication, education, entertainment, and tourism in Argentina, but nothing related to "Imperialism" (Phillipson, 1992), except concerning the political aspect that Argentina was beat by Britain in the "Falklands War".

2.3. The status of English in Europe

In Europe, English has a very high status spreading like fever with growing popularity. Through advertisements, media and pop culture, English represents modernity, global interconnection and daily communication with glamour, especially among the younger generations, who are using English for entertainments, internet, and even searching jobs and educational opportunities in the continent. As reported in 2004 Eurobarometer survey, English is believed to be the most useful language by 75% of Europeans, while 69% supported that all people of European Union (EU) should speak English. Among all European languages, English is top one as the most commonly studied foreign language and in the number of total speakers (Johnson, 2009).

Even in France, where they protect their national language with pride and rigid language regulations, English can be commonly found in the majority of the product names and program titles in advertisements, telecommunication and transportation. Moreover, English is adopted in the daily life of Europeans. For instance, “Euroshopper”, which provides generic grocery items in fifteen countries in Europe, uses both English and the local language for the ingredients and instructions. Another example is a popular Internet news source “Sign and Sight” through translating non-English articles into English to advocate “Let’s talk European”. The famous clothing brand “Esprit” just uses English for promotion, for instance, its slogan “The world is our Culture” in the advertisement is in English only, but not other languages. After the formation of Aventis by merging Rhone Poulenc of France and Hoechst of Germany in 1999, English, instead of French or German, has been chosen to be the corporate language. In fact, those non-English speakers will be in a risky position of being alien when their companies merging with others.

Without English proficiency, professionals such as computer engineers even having qualifications in European countries (e.g. Czech Republic) could not find good jobs. As computers and internet all set in English, they have to use English for technology, online communication, and daily work. English has become a basic skill of modern life for work or leisure. The salaries of English-speaking workers have 25%-35% more than their non-English-speaking counterparts in European Union (Johnson, 2009). In Europe, Germany, Sweden and Netherlands, which are English-rich countries, are much wealthier than those countries rarely use English in the Southern and Eastern Europe. According to the information (Crystal, 1997), there is about 85% of international organizations in the world choose English as the official language. Although UK is not a member of EMU, European Central Bank, headquartered in Frankfurt with only 10% of British staff, announced English as its official language. In dealing with international business, most corporations, professionals and individuals communicate in English, the lingua franca, for instance, Italians to Brazilians or Germans to Indonesians.

On the other hand, European Union (EU) views English proficiency correlating with socio-economic privilege, which has negative effects on civil society and democratic participation (Phillipson, 2008b). In European Union, English and the other 23 languages are accepted as official languages, but not English as the sole official language, mainly due to the concerns of the EU officials worrying English monolingual policy creating inequalities among the other Europeans’ political, social and economic life in diversity, and weakening the democracy in European countries, which is adverse to the prime aims of setting up EU.

The rise of English has not only been affecting business and politics, but also the academic. As recorded by Crystal (1997), 90% of academic articles of some areas, e.g. linguistics, in publication are written in English. Meanwhile, 95% of the articles were written in English in the Science Citation Index's Web of Science, and only half were written by authors in English-speaking countries. That means publications written in other languages received much lower frequency of citation and less rewarding with a smaller audience. Thus, some French scholars produced the quip and crank "publish in English or perish in French." (Johnson, 2009).

As English is commonly used in transnational communication among Germans, Italians, and French and other Europeans, but not a must to speak to British or Americans, Crystal (1999) pointed out the emergence of a Euro-English, a kind of "World Englishes", with its own lexical patterns and becoming more syllable-based intonation pattern. However, the European youngsters believe that they could communicate internationally and globally by English as lingua franca across all linguistic, political and social territories, while speaking English symbolizes the fulfillment of international life, association with "modern" things, upward mobility, and glamorous elite culture in Europe, just similar to the cases anywhere.

2.4. Imperialism and neo-colonization of English in Africa

Wealthy countries, such as US, believe the more money invested in promoting English-as-second-language (ESL) education, the better the social and economic development of the developing and under-developed countries will have. Thus, a huge amount of foreign aided money has been spent on promoting English in Africa, where English becomes the sole official teaching medium at all levels of education. Only a minority benefits from English language teaching for personal economic and social development. English as a vehicle for social and economic ability, Brutt-Griffler (200, p.29) quoted two examples: Mrs. L and Pamela, who represent poor black South Africans with a lack of high English proficiency, cannot access to wealth in the world. She criticized those promoting teaching of mother tongues instead of English did not realize English as an aid to get rid of poverty. Her idea aligns with the philosophy of "English First" in American public education and "English Only" movement in US (Pogge, 2003). Both Pennycook (2004, p.148) and Bruthiaux (2002) criticized her case study only represents some individuals' economic mobility, but not providing evidence for large scale reducing poverty in South Africa. By using English (L2) as language of instruction, the African students could have no opportunity to establish their native languages (L1) literacy.

Although only a few studies focused on relations between language in education and development, the English-only instruction has been found detrimental at primary level. Bunyi (1999) reported that the primary students in Kenya after learning science through English medium could not apply the concepts at home, where a native tongue being used. Regardless the content, those students repeat drilling of English, but still fail to achieve the goal set by education bureaus. By citation of a number of studies in African countries (Williams, 1996; Kulpo, 1998; Machingaidze, 1998; Nassor & Mohammed, 1998; Nkamba & Kanyika, 1998; Voigts, 1998; as cited from Cooke & Williams, 2002), Cooke and Williams (2002) stated that by applying English as sole official language of instruction, most primary school pupils cannot read thoroughly in English. They also concluded that English-only instruction is ineffective for school

children in developing countries having little exposure to English outside the school; and consequently, low-quality education is inevitable. We suggest that economic development is to reduce poverty and improve the economic conditions of the severely impoverished, and as a result, they have upward mobility for societal development. However, English-only instruction in the underdeveloped African countries benefits neither the cognitive development nor the socioeconomic development of primary and secondary students (Cooke & Williams, 2002). It is difficult to find any jobs as they are illiterate (L1) in the local settings for workers, whereas ninety percent of poor people work in informal sector where English is unused.

On the other hand, some research (Greaney, 1996, cited in Cooke & Williams, 2002) found better cognitive development and school performance for the students who build basic literacy and oral skills in their first languages (L1) as initial instruction. Aligned with this finding, The Association for the Development of African Education (1996) reported similar phenomena in Kenya, Mali, Nigeria, and Tanzania (Cooke & Williams, 2002). In Nigeria, a study found that learners of mother tongue instruction had better scholastic attainment than those English-as-second-language (ESL) instruction counterparts. Establishing early literacy and facilitating their understanding of subject contents in first language (L1) teaching medium results in greater cognitive development for the young school learners. After reviewing a number of studies (e.g., Phillipson, 1992; UNESCO, 1999), Cleghorn and Rollnick (2002) proposed the best way for teaching L2 in most of the under-developed countries is to encourage and build a two-way transfer of literacy skills between L1 and L2 with reinforcement of personal identity. In other words, the most appropriate time to teach English-as-second-language (ESL) should only be after or during the establishment of L1 literacy.

Decision of English-only instruction is not only made by the African governments, which in favour of promoting English as an official language symbolizing national unity, but also strongly supported by the local communities, parents and teachers. The common impression of English proficiency is an access to economic success for larger markets and political unity of a large variety of vernacular; therefore, many Africans expect their children start learning English (L2) in preschool (Cleghorn & Rollnic, 2002), and resist native language (L1) instruction, such as in Peru (Hornberger, 1987; Davies, 1996 as cited in Cooke & Williams, 2002). In fact, very few people in these countries participate in white-collar positions in larger national or international markets which require English for communication, whereas most poor population works in local, informal sectors which dominate 40% of the gross domestic product (GDP) and 50% of the labour force in under-developed countries (Montiel, Agenor, & Haque, 1993 as cited in Bruthiaux, 2002). The monolingualism in education in African countries benefits only the small population who access to work in the larger formal, national and international firms, but not the majority of severely impoverished who only require local languages for work. Comparative speaking, the relatively wealthy urban citizens receive better education to get into larger markets and white-collar jobs through high English proficiency than those poor and disadvantaged people. Due to the low-quality education, the impoverished groups lack good English (L2) proficiency and native language (L1) literacy, and English becomes an upper-class language. Rather than maintaining socio-economic development and unity, English (L2) as teaching medium in education creates economic and political instability. Cooke and Williams (2002) pointed out that

the use of English-only in education in many poor countries has led to national disunity rather than political unity. Meanwhile, Djite also agreed that English monolingualism “has significantly contributed to the socioeconomic and political instability of most African countries” (cited in Cooke and Williams, 2002).

To a large extent, implementation of English, of course, benefits overall economic and social development of Africa, but the English-only education policy has to be revised. Although the critical academics have provide evidence proving the negative effects of English monolingualism in education, there should be change of the mindset of the politicians, policy makers, educators, local communities, parents and teachers in the Third World through campaign focusing on the effects of language choice in education on social and economic development. By overturning the illusion that English is the medicine for all developmental problems, various stakeholders have different contribution. The wealthy nations could spend more money on aiding ESL programmes as well as literacy courses and high quality teaching materials conducted in native languages. Facing the reality, the governments and local communities should support native tongue (L1) instruction at primary schools to facilitate the children’s establishment of literacy, and then provide English (L2) education or enhancement programmes at upper primary or secondary school levels. Another alternative is shifting from English monolingual to bilingual, English plus a major local language as medium of instruction, education.

3.0. Conclusion

In the 21century, the rise of English is not only limited to the developing or underdeveloped countries, but also in wealthy countries in European Union, as English has become the lingua franca for international and global business, politics, entertainment, social contact and academic in the rapid changing world of technology. The ESL population has outperformed the number of native English speakers and keeps on growing swiftly in the world. “World Englishes”, emerging localized and or indigenized varieties of English, including Chinglish, Indian-English, Singlish and Euro-English, are functional and effective in global communication with different ESL communities in the world.

After reviewing ESL education relating to the social and economic development in Asia, Latin America, Europe and Africa, both the advantageous and harmful effects have been found. As certification of English proficiency test is “passport to better-paid employment” and “entrance ticket to the working world,” English is a constructive tool for development and English proficiency facilitates many peoples’ socio-economic and academic success in China. Unlike the old British colonial era, when English was limited to upper-class elites, urge for ESL education even comes from economically and culturally underprivileged classes and deprived states in India to tackle the severe economic problems. The widespread acceptance of ESL education has brought betterment of economic, social and cultural development to India in the knowledge economy. As a norm of adopting English successfully as lingua franca, Singapore has gained advantages for development in all aspects paved by English, and Singaporeans have localized Singlish based upon the linguistic and cultural diversity in multilingualism. In Latin America, students of Argentina learn English as second language since primary four in bilingual school model. English is not only utilitarian in social-economic development, education, tourism and

employment, but also a cultural capital of modernity in Argentina. Through advertisements, media and pop culture, English represents modernity, global interconnection and daily communication with glamour, and English has become a cultural capital as well as a basic skill of modern life in Europe. The positive effects of ESL education on social, education, economic, and cultural development has been reported in all the above countries in different regions except Africa. In Africa, ESL education benefits only a small minority of elites, but not the vast majority. The main reason is that those countries with successful experience of ESL education allow bilingual or even multilingual education, whereas English-only education policy is implemented at all levels in Africa without building native language (L1) literacy.

As concluded, accepting “World Englishes” accompanying to bilingualism or multilingualism with respect to diversity and cultural differences could be a solution to the problems of English monolingualism in education. Although I enjoy McDonald, it doesn’t mean that I have to give up Japanese sushi, Italian spaghetti, or Chinese fried rice. English is one of the most commonly acceptable language choices, but not the only one. Otherwise, the world will become monolingual or colonial ruled by “Imperialism” of English as noted by Phillipson.

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Promoting Parental Involvement to Prevent Elementary Student Dropout in Indonesia's Backward Regions

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Abstract

The highest dropout rate for elementary school level happens significantly in Indonesia's backward regions (UNICEF for Indonesia, 2012). This will not only affects personal success of students but also create other social disadvantages. Chirtes (2010) classified the factors of school dropout into school factor, social environment, personal factor, and family factor which is the greatest factor.

The main investigation in this paper is to explore the causes of school dropout which more focus on family-related factor and to examine how parental involvement can solve elementary student dropout in Indonesia and the challenges. By using secondary data both from Indonesia and the world, promoting effective parental involvement might be a possible way to overcome the problem with five ways: 1) educating parents (especially disadvantaged family), 2) involving parents in the early childhood years, 3) intensifying parent-children communication, 4) improving parent-teacher partnership, 5) creating school-family-community partnership.

The emerging challenge found in this study is the elementary school-aged children who drop out or potentially drop out mostly have parents with low educational ability or poor socioeconomic background. Hence, involving parents to prevent school dropout in backward areas will need much more efforts. Therefore, supports from interested stakeholders particularly from local and national government are highly important to succeed the solution.

Keywords: Parental Involvement, School Dropout, Backward Regions

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Introduction

School dropout in Indonesia is one of major problems that need to be solved. Underdeveloped provinces are the areas which have the highest dropout rate among others especially for elementary school level. According to UNICEF for Indonesia (2012) most students leave school in elementary education where the highest rate is in grade 1 (3,7 %) and become lower in the following classes, but continue to increase in grade 6. If government, educators, society and other stakeholders do not cooperate to solve this problem, the social failure could happen frequently which not only affects personal success of students, but also could create multiple social disadvantage. By understanding this, the essence of solving the problem is really encouraged. One of ways to overcome the problem is involving parents in children education.

The school dropout is caused by several aspects. Chirtes (2010) classified the factors into school factor, social environment, personal factor, and family factor which is the greatest factor. Family factor needs to point out since education is begun from house. Also, the golden time to teach children effectively is when children is in elementary school-aged, although secondary school level is also important to notice and should not be ignored. Therefore, in this essay, I want to focus on how to involve parents effectively to prevent children dropout particularly in backward areas of Indonesia. This essay will explore school dropout and the causes which more focus on family-related factor in backward regions, examine how parental involvement can solve elementary student dropout in Indonesia and the challenges.

Elementary School Dropout, Causes, and Impacts

Underdeveloped areas are the most left-behind areas in Indonesia that experience slow growth in socioeconomic development including education development. The underdeveloped provinces have relatively lower human resources, education, skill, and limited facilities (Ministry of Underdeveloped Region Development, 2015). In terms of education, backward regions in Indonesia is thought to get unequal education. This is due to the poor socio-economic condition and lack of human resources. According to UNICEF Indonesia (2012), rural areas and eastern Indonesia need to do acceleration to pursue the backwardness in school participation. Most children leave school in transition from elementary to junior secondary school (UNICEF, 2012). The idea about rural areas' acceleration ought to be supported by tangible action from government and stakeholders to help the acceleration.

Another data from Indonesia Central Bureau of Statistics (BPS) (2013) cited in Srie, (2013) showed average national rate of school dropout for elementary school in Indonesia was 0,67 percent and equal to 182.773 students in which commonly underdeveloped provinces place higher school rates. There are five provinces which have the highest school dropout rates for elementary school level: West Sulawesi (2,37%), Bangka Belitung (1,88 %) West Papua (1,56%), Papua (1,36%) and Southeast Sulawesi (1,32%) (BPS, 2013, cited in Srie, 2013). Those areas are underdeveloped hence it is significant to know the causes and impacts of school dropout within them then we can withdraw a possible solution.

In order to understand what school dropout is, the definition should be highlighted. Townsend et al. (2007) explained school dropout encompasses those who had not

attend school in more than 30 days, had not sought a transfer to another school, had not sought re-admission and those not enrolled in school. It is very clear from the definition that school dropout is the condition when students leave school with different occasion. Townsend et al. assumed that if students do not attend school in more than 30 days, do not seek a transfer to another school, do not do re-admission and even do not enroll at all, they can be categorized as a dropout. The limitation that they put up there needs further explanation. For example, if students are eventually back to school after 30 days, will the school accept it by looking for the reasons of leaving? As different regions might have different context for instance in rural Indonesia, some students leave school not because they do not want to go, but the geographic challenge make them prefer to stay at home. The limitation by days of leaving school should be rethinking since we know that school dropout could take children's future expectation.

School dropout could take children's bright future life and cause more disadvantages. Chirtes (2010) elucidated school dropout leads to failure in social integration, and as a result greatly diminishes person's chances to achieve personal success in legally accepted fields of activity. Failure in social integration will cause children's stupidity, workforce, poverty, even criminality. For example, they might get married earlier without having enough knowledge and money to form a household and raise children. They could also be a burden of society that are possible to become gangsters, robbers, and troublemakers bringing disharmony and insecurity in society. In addition, the hope of being both physically and mentally successful could be difficult to achieve due to the lack of skill and knowledge. The idea of school dropout causing failure in social integration and personal success brought forward by Chirtes is essential to think deeply of why and how this could be related. Moreover, we should look beyond factors influencing the school dropout hence we can do prevention and reduction of dropout problems and anticipate the impacts.

Factors which cause school dropout might be various according to the context of nation and region. In backward areas in Indonesia, school dropout mainly caused by poor economic social background which is normally from low income and low educational background of family (UNICEF Indonesia, 2012). According to Chirtes's research (2010) four categories of leading factors school dropout are family factors, school-related factors, social environment, and personal factors. She added (2010, p.32) that "the risk of school dropout is much higher in families with a low standard of living, which have to deal with poverty and marginalization." Chirtes' explanation seems do not focus on school dropout in backward and rural regions alone hence other factors such as low quality of education (both facilities and teachers), inequality of school resources distribution, and geographic impediment could not be neglected since these also contribute to school dropout in rural regions. Chung and Mason (2012) asserted that primarily resource differences between different socio-economic groups in society that are associated with differences in education quality, family poverty and school fees are considered key reasons for student dropout. However, family-related factor is the closest factor that more influence the life choice of a student whether she or he wants to continue to study or not. It depends on the encouragement of family no matter how big the external and social challenges are.

In backward and rural regions which have social disadvantages such as low human resources could conduce to inappropriate ways of family raising their children. As

discussed by Chirtes (2010) the main causes of school dropout are standards of living and low-educational abilities of parents. Furthermore, these factors could influence on how parent could build strong relationship with the children, apply parenting method, and encourage the children to be better. As a result, parents who have poor educational background will tend to abandon the children's progress at school. Also, they will not be interested in supporting their children. Parents might also use their children in rural areas for labor (Chirtes, 2010). When children begin to focus on working as a command from their parents, they probably leave school earlier and continue working to support their family. Owing to know these family-related factors, effective parental involvement are highly encouraged as a solution of children dropout.

Parental Involvement and the Prevention of Elementary Student Dropout

People acknowledged by children for the very first time since they were born are their parents. This also means children will get their first education directly from their parents. Thus, parents will be very influential in children's education. Their involvement on children's education will decide what the children will be in the future. Parental involvement was defined as "parental participation in the educational processes and experiences of their children" (Jeynes, 2011 p.42). The definition represented by Jeynes here focuses on educational experiences of students which might cover how parents approach the students when learning at home, how they control their children at school, or decide a good school to go. The students' experiences explained by Jeynes here is still general as children develop with different intelligence. It might be more distinct if the definition could be elaborated whether it is intellectual experiences or emotional experiences.

Parental involvement is necessary in children's educational development since children's time mostly spent at home. The development of children will be affected by how their parents treat and educate them. Even though there will be much more challenges of low educational parents to educate their children, there is always a silver lining. Many cases of poor family background yet could still contribute to their children's education since they realize that it is very crucial to have a good education. A good education can be achieved if parents also involve.

There is a strong relationship between parental involvement and children's academic performance. Research by McNeal Jr. (2014) proved that parental involvement could raise the educational expectation, reduce truancy and absenteeism, and improve achievement of the children. Educational expectation means here students have ambitions to pursue their education until finish high school and even enroll at a university. Monitoring has a stronger influence on student behavior and significantly reduces absenteeism and truancy and increases homework hours (McNeal Jr., 2014). Parents who always talk to their children about their school life and help them to study, inspire children to care about school activities and possibly have higher achievement. However, McNeal's research does not clearly touch the effect of parental involvement to children who are raised by parents with low educational achievement. Thus, it is important to know based on empirical research the effect of parental involvement to the family with low level of education.

In backward areas where many parents come from low educational background, the efforts to involve them are much bigger. The parents who are hoped to educate their children could not fulfill the responsibility better due to the socio-economic disadvantages. How the parents could teach their children if they themselves need to be educated. Even though not all parents in underdeveloped regencies have low quality education, the factors should be raised to synthesize appropriate solutions. Therefore, promoting effective parental involvement to prevent dropout of elementary school-aged children needs to involve others stakeholders such as school teachers, educational experts and practitioners, society, interest community, and government. In short, we should think of what can be done to involve parents especially those who are from low educational background or have socio-economic and cultural background in children's education and the challenge that might arise.

Educating Parents (Especially Disadvantaged Family)

Parents' education is correlated with the success of parental involvement. According to Jeynes (2011) higher parental socioeconomic background can sometimes be one of expression of higher level of parental involvement. Based on that argument, socioeconomic background will influence the parental engagement method. Even though family initially comes from the disadvantage, they will likely change if they believe that education is precious, moreover if they want to see their children pursue better education than they had. The involved parents try to address the educational needs of their children may also try to purchase educational aids for their children (Stevenson & Stigler, 1992 cited in Jeynes, 2011). Although Stevenson & Stigler's explanation here does not state clear notion whether disadvantaged family will do the same, we can still assume that parents with low educational ability want to witness their children's success both in academic or social life. Therefore, the government, educators, society and interest group can take part here. To help disadvantaged family to be more involved in their children's education, we could educate them about the significance of education and their roles in children's education. For example, government aided by educators could provide training and counseling with aims to raise parents' awareness. Society or neighborhood could be alerted if there is family who have potential dropout children. Nevertheless, we should anticipate the challenge that might emerge such as the stakeholders' readiness and the budget of implementing the programs.

Involving Parents in the Early Childhood Years

The parent participation in bringing up children is very essential in the early childhood years since this phase is the golden age where students will absorb as much as knowledge they can. Jeynes (2011) claimed that most psychologist and family scientist believe that learning takes place with the greatest rapidity in the first five years of a child's life. Jeyne's explanation voices the importance of parents to involve in child's knowledge acquisition. Even though research has shown the effect of parental involvement in early childhood education is beneficial to children's learning, many parents especially from low educational background do not realize it. Hence, promoting parental involvement in this stage is urged. Children grown in positive environment by the affection of the parents will likely be more positive. Thus, parents could easily direct the children in better educational choices and prevent them in school dropout. However, parents who come from low educational background might

not address a correct parenting method. Nonetheless, we cannot generalize such parents will be failed to educate their children. As long as the parents are literate, it is possible to direct and engage them in children's education. Thus, the help and guidance of government, educators, teachers, and large society are pivotal to educate parents in order to apply effective parental involvement.

Parent-Children Communication

Communication between parents and children determines the progress of children education. Martines-Gonzales (2008) affirmed that frequent communication between parents and children is expected to be an indicator of parental concern. Parents who always discuss with the children related to knowledge improvement might affect the academic performance of the children. Besides, always asking children about what they have learned at school is very significant to engage children in their educational progress. Study conducted by Martinez-Gonzalez (2008) in Spain and Cyprus proved that parents having low level of educational achievement appeared to get involved in different way with limited academic help they could offer, such as talking to their children about school life, providing study resource, showing affection, create supported environment. Therefore, maintaining parent-children communication and discussion will lead to the reduction of school dropout even though parents have low educational achievement. However, the challenge that might arise is parents having lack of interest in children academic progress due to the work bustle and having assumption that education is not vital.

Parent-Teacher Partnership

The cooperation and communication between parents and teacher to assist children development at school could prevent children dropout. Bridgeland (2010) analyzed the significant disconnects among the insights and perspectives of dropouts, parents, and teachers as the causes and solution to the dropout challenge. Bridgeland (2010) pointed out that the main cause of student dropout is the gap between what parents and teachers expect and what students demand. Reflecting to this study, parent-teacher partnership is prompted to appear as a solution. For instance, teachers could always inform parents about the children's school life and vice versa. In addition, teachers could tell parents about the strength and weakness of the children hence parents become more concerned with what children should maintain and work on. Furthermore, what has been suggested by Martinez-Gonzalez's study needs to be considered:

“As far as parent-teacher meetings are concerned, it seems that there is a need to focus more on the positive intellectual and attitudinal characteristics of the children as a way to facilitate communication between teachers and parents, to aid in mutual decision-making about how to proceed with teenagers at risk. In this way, promoting effective parenting programs in schools could help parents to bring up their children and to interact with teachers at school more effectively” (Martínez-González, 1998 cited in Martinez-Gonzalez et al., 2008 p.516).

By conducting parent-teacher meeting, both parents and teacher could work together to prevent children from risky dropout case. This will be very helpful particularly for

parents with low educational level because teachers can provide some solutions or ways that parents could apply at home. Nevertheless, another factor should be accounted for if teachers face the difficult parents.

School-Family-Community Partnership

Another way to prevent school dropout is building school-family-community partnerships. To maximize students' sense of connectedness in school requires cooperation and collaboration among school, family, and community (Goss & Andren, 2014). This collaboration can create positive learning environment hence could increase enthusiasm for children to love school. For instance, school allows parents even encourages them to participate in school activities both in class and extracurricular activities. However, Goss & Andren's claim seems perfect for school who have good resources since creating positive learning environment might demand much money. Schools in marginalized areas will be more difficult to afford that ideal. In addition, though school can provide equipped facilities, low income parents will unlikely to be involved because they are incapable to register their children in resourceful school. In terms of community partnership, Goss & Andren (2014) argued that the dropout problem is not school's responsibility alone, but it is the responsibility of the whole community. This such community partnership could give supported service to family and the potential dropout students. Yet, it is significant to know whether community partnership is commercial or non-commercial because it will limit the type of family who will work with them.

Conclusion

As school dropout in elementary school places the highest rate in Indonesia's backward regions, the need to reduce the rates is highly important. By tracing the causes and the impacts, promoting effective parental involvement might be a possible way to overcome the problem since parents are closely related in children's life. However, the emerging challenge in this investigation is most dropout cases happen in backward and rural regions hence it is more likely the elementary school-aged children who dropout or potentially dropout have parents with low educational ability or poor socioeconomic background. Therefore, involving parents to prevent school dropout in this context will need much more efforts. Supports from stakeholders particularly local and national government are very crucial. Nevertheless, parents with any background including those with low educational experience expect their children more successful than they had. So, it is still possible to engage them in their children educational process. As long as the parents want to see the betterment of their children, the family-related factors that cause school dropout can be resolved.

Since this essay aims to promote parental involvement to prevent elementary student dropout, the factors that have been discussed only explore the family-related factors in dropout problem. Other possible issues could be raised in another investigation are the low-quality of education (both facilities and teachers), inequality of school resources distribution, and geographic impediment that can cause student dropout in underdeveloped areas in Indonesia. By then, another possible solution might be withdrawn such as improving school resources and enhancing teachers' professionalism.

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An Exploratory Study on the Relationship between Learning Networks and Organizational Identity

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Abstract

Organizational learning leads to distinctiveness of organizations, and distinctiveness is one of the criteria by which organizational members categorize groups. Organizational learning is the mechanism by which organizational identity becomes salient. Although research has made great efforts on organizational identity, few focus on between-level dynamics. This study adopts a network perspective of organizational learning, which considers learning in the context of collective action managing to connect individual perspective with organizational level of learning. Both learning networks and organizational identity highlight social context as the basis to achieve organizational goals and performance. But the recursive process of the organizational self-definition may be related to the learning process of an organization's remaining adaptive and flexible for survival. This paper purposes a network perspective to explore the relationship between learning network and organizational identity. This study develops a framework of propositions regarding learning networks and their relationships with organizational identity-discriminated as institutionalized attributes and adaptive attributes. This study contributes to enriching the theory development of learning networks and extending the scope of learning in organizational identity.

Keywords: organizational identity, social network, organizational learning

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Introduction

Organizational learning leads to distinctiveness of organizations in terms of capabilities (Argote & Ophir, 2002). Distinctiveness is one of the criteria by which organizational members categorize groups (Ashforth & Mael, 1989). Consistent with this line of the research, this study examines the relationship between organizational learning and organizational identity. Literatures relating the two concepts confirm that learning leads to change in organizational identity (e.g. Child and Rodrigues, 2003;); organizational learning as the mechanism by which organizational identity becomes salient. Although research has made great efforts on organizational identity, few findings focus on between-level dynamics. Corley and Gioia (2003) suggest that intersubjective meaning embedded in action and social interaction within collectives such as structures, cultures, practices, and behaviors are the basic mechanisms that support a mutually recursive relationship between organizational identity and organizational learning. Ashforth et al. (2011) say that identification occurs as higher-level identities are enacted through goals, operating routines, information flows, and other institutionalized practices. Namely, enactment of identities at higher levels of analysis simultaneously constrain and enable the form and enactment of identities at lower levels, and therefore, the focus should be on between-level rather than within-level dynamics. Barraquier (2013) in a qualitative study reveals porosity of identity and mobility of attributes and suggests that group identity is more appropriate than an organizational identity perspective.

This study adopts a network perspective of organizational learning (Elkjaer, 2004; Skerlavaj et al., 2010). A network perspective considers learning in the context of collective action while managing to connect individual perspective with organizational level of learning, so much as socially constructed learning theory implies that learning occurs as a result of people actively engaging one another (Elkjaer, 2004; Gherardi, Nicolini, & Odella, 1998). Also, Wenger (1998) links the learning process with the identity: "Because learning transforms who we are and what we can do, it is an experience of identity" (p. 215). Gioia, Schultz, and Corley (2000) say the adaptive instability of organizational identity. Doiron (2013) suggest that organizational learning enables organizations to maintain, refocus, or transform identity in response to environmental changes and provides salient, sensegiving referents to members. The first purpose of this study tries *to understand how learning in collective sensemaking, that is, network learning, is related to instability of organizational identity?* Chughtai and Buckley (2010) verify the mediating role of learning goal orientation in the relationship between organizational identification and in-role job performance, error communication and feedback seeking. The argument centers on the theme that collective learning-related behaviors make impacts on the adaptive nature of organizational identity. The second research question is to learn *if the network (group, or collective) learning performs as an antecedent to change in organizational identity?* This study has the following advantages: **first**, it enriches the theory development of learning networks; **second**, the study extends the scope of organizational identity by analyzing its stability and instability nature; **third**, the interdependence and inter-impact analyses between organizational learning and organizational identity will be of great interest for readers

Literature Reviews

A third way to organizational learning: a network perspective

Elkjaer (2004) identified a dual development of the OL field and used “acquisition” and “participation” as metaphors of the differences. Acquisition perspective is more likely to be the technical school, and on the other hand, the participation perspective is about the social school in terms of the definition that learning is located in social activities. Argyris and Schon (1978) and March and Olsen (1975), as major representatives of the technical school of OL, follow the positivist epistemology and espouse prescriptive generalization of OL. The positivist epistemology sees the world as an objective, only one reality. Nevertheless, knowledge acquisition by individuals is an indispensable, but usually insufficient, component of organizational learning; Cooks and Yanow (1993) propose the perspective ignores the social and cultural aspect of the OL process. OL scholars, such as Weick and Roberts (1993) and Hedberg (1981), start from this set of assumptions: the reality is socially constructed and the constructions are not generalizable. The social school of OL has a core assumption that learning occurs, and knowledge is created, mainly through conversations and interactions between people (Brown and Duguid, 1991; Cook and Yanow, 1993; Gherardi and Nicolini, 2000; Nicolini and Mezner, 1995; Wenger, 1998). Basically, the social-cultural perspective is a reaction to the dominance of learning models drawn from cognitive psychology and management science, and it asserts that knowledge and learning don't exist in individual's head or in structures of organization but within human contact in a social setting, which is the driver and substance of OL.

Some scholars purpose that the two perspectives are not sufficient in understanding the learning process in the organization (Poell, et al. 2000; Elkjar, 2004). Elkjaer (2004) further suggests the “third way” in making a synthesis of the participation perspective and acquisition perspective. The third way is a departure from pragmatic theory with an assumption of mutual formation of individuals and organizations (Elkjaer, 2004). Skerlavaj and Dimovski (2007) upgrade the third way by expanding the understanding of organizational learning as both relational and individual-level phenomena to multiple levels of research (individual, group, intra-organizational, and relational). Skerlavaj and Dimovski (2007) name the “third” way as a network perspective of organizational learning and suggest it is an overarching perspective. Table 1 makes a comparison of the acquisition and participation perspectives with the network perspective.

Table 1: Three perspectives to organizational learning

	Acquisition perspective	Participation perspective	Network perspective
Learning content	To be skilled and knowledgeable about organizations.	To become a skillful practitioner in organizations.	To be skilled and knowledgeable about organizations and to become a skillful practitioner in organizations.
Learning method	Acquisition of skills and knowledge	Participation in communities of practice	Acquisition of skills and knowledge and participation in communities of practice. The learning process needs to be contextualized within the framework of other social processes.
Organization	System	Communities of practice	Social worlds
Level of research	Individual	Relational	Multiple levels (individual, group, intraorganizational) & relational level

Source: Adapted from Elkjaer (2004); S`kerlavaj et al. (2010)

The network perspective recognized an individual as primary source and destination for learning, while acknowledging that learning takes places primarily in social interaction (S`kerlavaj et al., 2010). Learning content in the network perspective includes elements of the learning as acquisition of knowledge as well as analytical and communication skills. In the understanding of organizations as system, the acquisition perspective has an assumption that individual members are able to think of the organization as an abstract entity, system (Huber, 1991). Learning organization is an example that depends on individuals' capacity for thinking of organizations as systems (Senge, 1990). Participation perspective places its focus more on collective learning process, and less on individual learning process. The network perspective includes individual, collective learning process and also interaction between individuals and organizations in social worlds. The foundation of the network perspective appears to be multiple-theoretical and multi-level framework of social network theories, and by applying a multi-level approach.

S`kerlavaj et al. (2010) suggest that the network perspective is sensitive to the role that the organization plays in fostering learning. The organization has a critical role to play in the development and fostering of relational ties among individuals to enable learning. In other words, the organizational context should be taken into consideration in understanding the learning process. This research is based on the network perspective to find source of learning in intra-organizational and relational level. This research argues that learning network perspective seems to best describe organizational learning and helps explain learning phenomenon in work places. Learning network theory (Poell et al., 2000; Van der Krogt, 1998) describes the way learning is organized within the context of work organizations. Learning networks operate in every organization. This research follows the line of theories in exploring a real-life case study of social networks within organizations.

Learning network theory

The learning network theory is a descriptive and interpretative model of how learning can be organized in organizations (Poell et al. 2000; Van der Krogt, 1998). The learning network theory provides issues such as effects of power structure and hierarchy, ideology and power, interests of actors in organization and treats conflict as normal factors to organizational learning. Learning network theory regards employees as the central actors of learning and employees have their own views and interests as to how and why they should learn. The learning network perspective draws from the discipline of sociology and cultural anthropology, with its emphasis on power and actor interests (Poell et al. 2000). This argument corresponds with Easterby-Smith's (1997) suggestions in conceptualizing organizational learning not "*as managerial level that can be pulled by senior executive at their behest.*" Learning network perspective moves away from management-driven perspectives and regards employees as (co-)organizers of their own learning process.

Learning network theory comprises three main components—the learning actors, the learning process that they organize, and the learning structure that they create. First of all, those who are engaged in organizing learning are actors and could be internal and external. Second, about the learning process, the development of learning policies refers to influencing the general direction of the learning network, that is, what people should learn and in what way they should learn it. The development of learning programs comprises the making of coherent sets of activities in which people learn. The execution of learning programs are activities in which people are actual learning, such as solving difficult work problem or taking on-line course. Third, learning structures refer to certain more stable patterns developed from people who have been interacting to organize learning activities over a longer period of time. According to this theory, learning networks are not limited to network-type organizations, matrix organizations, or team-based organizations. People learn in every organization, even in hierarchical or chaotic one, and the learning network merely represents how learning is organized. Four theoretical types of learning networks and their characteristics are presented in Table 2.

Table 2 Four theoretical types of learning networks

	Learning networks			
components	Liberal	Vertical	Horizontal	External
1. Learning process	Single activities	Linearly planned	Organically oriented	Externally coordinated
(1) Development of learning policies	Implicit	Planning	Learning	Inspiring
(2) Development of learning programs	Collecting	Designing	Developing	Innovative
(3) Execution of learning programs	Self-directing	Guiding	Counseling	Advisory
2. Learning Structure				
(1) Content structure (profile)	Unstructured (individually oriented)	Structured (task or function oriented)	Open or thematic (organization or problem oriented)	Methodical (profession oriented)
(2) Organizational structure (relations)	Loosely coupled (contractual)	Centralized (formalized)	Horizontal (egalitarian)	Externally directed (professional)
(3) Learning climate	Liberal	Regulative	Integrative	Inspiring

Source: Adapted from Van der Krogt(1995, 1998) and Poell et al. (2000).

Learning network theory assumes that an organization displays characteristics of one, or of more in hybrid forms. The liberal learning network is mostly seen in organizations where loosely-coupled structure is developed, and there is an entrepreneurial learning attitude. Also, organizations that take the notion of individual employee empowerment (Andrews and Herschel, 1996) seriously are likely to develop a liberal learning network. The vertical learning network is common in many large organizations where the organizational structure is centralized and dominated by the management, though the growing unpopularity associated with Taylorism still plays a dominant role in organizational reality (Wilson & Cervero, 1997). In the vertical learning network, learning policies are developed by the management and these are translated into pre-designed learning programs by HRD and training staff. The horizontal learning network has gained popularity through the extensive literature on learning organizations, up to the point where a total integration of learning and work in teams seems to be advocated (Senge, 1990). The horizontal learning network is characterized of horizontal structure and egalitarian relationships among the actors, and open, thematic learning activities in the profile of learning. The external learning networks exist in environments where employees have a strong orientation towards their professional field. Nevertheless, the external learning network may also be the source of the conflicts of powers. On one hand, managers may find that professional field is not easy to control and call it inflexible; on the other hand, professions usually

offer their members greater status and job security and the external network receives great popularity among employees (Poell, et al. 2000).

Learning networks and organizational identity

If learning is promoted through social interactions as assumed by learning network theory, a relationship of organizational learning with organizational identification may exist. And both learning networks and organizational identification occur in a social context as an individual in the organization attempts to understand his or her relationship to the collective group. A learning network perspective highlights the structure of learning relations that surround an individual, providing communication, information and feedback to shape an individual's attitudes and behaviors. Learning networks can be helpful to improve the understanding of how an individual construct one's identity and identification through many episodes of learning activities.

Literatures on organizational identity tend to follow social identity theory and self-categorization theory and suggest it is a process of self-definition (e.g. Bergami & Bagozzi, 2000). Social identity theory highlights self-categorization, social comparison, and the construction of a shared self-definition in terms of ingroup-defining properties (Hogg and Vaughan, 2008). Social identification is the perception of belongingness to a group (Mael and Ashforth, 1992). Mael and Ashforth (1992) and Pratt (1998) contend that through social identification individuals feel "psychologically intertwined" with a group's destiny. Identification is viewing a collective's or role's defining essence as self-defining.

Corley et al. (2006) reflected on the history and future of organizational identity research, and they suggested two distinct perspectives with different underlying ontological and epistemological views: the "essentialist" or the social constructionist. The essentialist or institutional (Elstak, 2008) define organizational identity as the central, enduring, and distinctive attributes that distinguish an organization from others in its social category. However, postmodern perspectives have suggested a dynamic approach (Hatch and Schultz 2002). That is, a social constructionist describes organizational identity as being adaptive, unstable, and less enduring. A dynamic process of organizational identity emphasizes the interactive process of members' sensemaking (Ravasi & Schultz, 2006). A sense-making process allows organizational members to overlay new events on top of past experiences, and to meaningfully interpret and incorporate new information into a frame of explanatory reference (Nicolini & Mezner, 1995; Weick, 1995). Barraquier (2013) in an ethnographic study on the incremental transformation of identity suggest that two types of identity perceptions concurrently exist in the organization: "identity of organizations" and "identity in organizations." Identity of organizations can refer to a claimed and institutionalized identity while identity in organizations can be tacit, and potential to make changes on a claimed identity. Craig (1998) suggests that identity in organizations involves experience and exploration, and which are shared from within, that is more tacit and embedded in organization members' perceptions (Whetten and McKey, 2002). Barraquier (2013) names this type of identity as adaptive identity. This research adopts a social constructivist perspective toward organizational identity. Besides, this research applies learning network theory to analyze how a learning network with sense making bring new elements of identity or sustain a claimed identity.

The liberal learning network. The liberal learning network can be found in entrepreneurial work place, such as in small and medium-sized enterprises, or in large corporations consisting of small self-supporting units (Poell et al. 2000). This network allows employees to create their own sets of learning activities and their own relevant learning situations. Individual can explore experience and organize work-related learning. Traditional organizational theory has assumed that responsibility for acquiring information has usually been assigned to specific managers to obtain information from outside of the work-unit or organization, filter and adapt it for use by organizational work-units (Guerber et al. 2014). Today, as organizations become flatter and leaner, and as technology facilitates information access; information gathering and brokering activities have been extensively performed by employees (Guerber et al. 2014). Therefore, in the liberal learning network, an individual in a loosely-coupled structure is more likely to have information and perceptions of the environment and learn outside demands that drive identity change.

Proposition 1.

Individuals with *the liberal learning network* are potential to bring new attributes to organizational identity, that is, to create adaptive identity.

The vertical learning network. This type of learning is found in machine-bureaucratic workplace characterized of a simple and narrow work content, and a regulated work climate. In the vertical learning networks, learning programs have a great deal of central planning and pre-designed work with managers as dominant actors. Therefore, the vertical learning network and its related working place give birth to a strong and anchored organizational identity background. Sometimes, CEO characterizes “a specific conceptual domain for organizational identity” (Whetten, 2006). Organizations may use communication strategies to encourage identification. For example, bragging and outsider praise serve a normative purpose: highlighting desirable identity attributes that should be adopted (DiSanza & Bullis, 1999). Sensegiving which refers to attempts to guide the “meaning construction of others toward a preferred redefinition of organizational reality” (Gioia & Chittipeddi, 1991:442) is a top-down process to manage identity construction. Therefore, in the vertical learning network, an individual is more likely to get organizationally sanctioned information or material to craft organizational-based identities.

Proposition 2.

Individuals in the vertical learning network are more likely to craft attributes of identity that are consistent with identity of organizations, that is, the institutionalized identity.

The horizontal learning network. The horizontal learning network is involved with broad, complex learning content. And normally this network is found in autonomous multidisciplinary work groups, or project teams that are created to solve problems never encountered before. As the teams or groups learn, the people working together are increasingly able to make sense of events internal and external to the team. The sense-making process is grounded in identity formulation. Weick (1995) suggest that the collective identity of an organization is born out of and inherently changed by

sense-making activities. Employees in this network are more engaged with sense-making and learning processes due to the context for problem solving and learning; employees are more likely to construct, and reconstruct meaning, potentially changing the nature of the organization's identity. Literatures on organizational identity suggest as members undergo the sense-making process, the perceptions they have of the organization and the worlds will change accordingly (e.g. Elkjaer, 1999).

Proposition 3.

Individuals in the horizontal learning network are more likely to make sense-making process and therefore, reconstruct the attributes of organizational identity, that is, to create adaptive identity.

The external learning network. This learning network is coordinated from the professional associations outside the organization. Learning regarding work innovation is introduced by the professional field. The learning activities are aimed at improving the employees' professional capabilities and work standards. Then, the impact of the professional discipline on the learning network is obvious in terms of professional relationships among actors, and the innovative learning climate. Stormbroek-Burgers et al. (2011) suggest that most professionals' network has the characteristics of homogeneity within social network, which is positively influence organizational identification. Therefore, professionals' interactions with others could be in a way that induces self-verifying responses that support a sense of consistency in the professional identity as well as organizational identity. Nevertheless, incremental changes invoked by innovations introduced by the external learning network will affect organizational identity in a slow way.

Conclusion

This study is an exploratory research on difficulties and facilitators in learning networks and organizational identity in Taiwanese settings. Especially, the patterns and profiles in learning networks render insights to learning contexts, actors, and structures and therefore to organizational performance in the medical industries. As learning is particularly controlled in situated settings when the concept of learning networks is introduced into interview questions, research will have detailed situations of network learning. It is a way to facilitate organizational learning. Hence, knowing the dynamic process of intra-organizational learning networks provides managers with a useful tool for improving organizational performance goals, thus giving solutions to competitive advantages and idiosyncrasies of organizations.

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A Guideline of using Lesson Study for Preservice Science Teachers in Thailand

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Abstract

This paper addressed the results of the attempting of using a lesson study in preservice science teacher classroom. The lesson study was implemented for 42-senior science student teachers who enrolled the professional experience subject. The classroom observations, discussion form and semi-structured interviews were used in order to gain the required data. Preliminary findings showed that a process for practical uses in classroom settings consisted of 7 stages as the following: 1) Classroom observation 2) Group gathering and Goal setting 3) Lesson planning 4) Research lesson 5) Lesson discussion and consolidation 6) Lesson implementation 7) Lesson conclusion. Moreover, these can encourage the preservice science teachers achieve the knowledge.

Keywords: Lesson Study, Higher Education

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Introduction

The effective teacher not only the person who gives a student conceptual knowledge but also teaches the method to acquiring knowledge. Accordingly, good teacher must be knowledgeable and engaged in thoughtful and challenging work to set the stage for serious lifelong professional learning. Consequently, the teacher education program/curriculum have to move beyond the idea that one can amass adequate knowledge, or “learn for teaching.” The courses have to design to help preservice teachers develop a “lifelong ability to learn from teaching (Darling-Hammond and Hammerness. 2005). Therefore, the teacher education curriculum must consist of both the course and the course that connect the acquiring knowledge in university coursework and applying that knowledge in the classroom (Feiman-Nemser & Buchman, 1986; Kennedy, 1999). In Thailand, the one of important course of the preservice teacher in the university is the course related practicum in the school which handles for the fifth year student teachers. The goals of these courses are practice students in the actual classroom context. The preservice teachers have to embedded in a school and learn how to be a good teacher. However, the fourth-year student teachers have to enroll the subject related the teacher profession experience and curriculum and instructional design. This subject emphasizes the student teachers familiar with the connection between their coursework and fieldwork. The student teachers who enroll this subject have to practice analyzing learning units, creating course syllabus, developing one-semester and one-academic year lesson plans, implementing lesson plans in classroom, conclusion on the results of implementing lesson plans, and planning for internship in the future. All of these, the preservice teachers are asked to practice for approving that they have a competency to success in the real context in the future. As a result, in this course preservice teachers have to integrate their knowledge they gained from previously course particularly learning theory, teaching learning design, curriculum, psychology, evaluation and assessment method, learning media, classroom management and classroom environment including teacher knowledge for designing their learning activity for the classroom in the actual context. Subsequently, if the teachers taking the lessons study as an instructional method in their class, it is not only let a student achieve the goal of the lesson but also practice them thinking process especially systematic thinking and collaborative problem solving skill.

Today, many persons agree that the highly powerful means of fostering effective teachers is grounding professional development in actual classroom practice. The lesson study is an idea of learning from teaching that happen in the classroom. It is a teacher-led instruction improvement. It involves a group of teachers who want to improve aspects of the learning of their pupils reaching to curriculum aspects that teachers feel could be taught more effectively. Accordingly, lesson study is an efficiency and effectiveness educational innovation for a professional development. The lesson study process, developed from the lesson study approach, is a process in which groups of teachers direct their professional learning in actual contexts to achieve instructional improvement focusing on students’ thinking and learning. It is a strategy which can support the teachers improve theirs lesson with themselves in the actual context through the systematic collaboration work group. Normally, the cyclical process of lesson study consists of planning, observation, reflection, and revision. This process will inspire teachers improving their potential all the time

(Naphaporn Woranetsudathip, 2011). This is a method of professional development in which teachers collaborate with peers and other specialists to improve teaching and learning. These can help develop the learning activities by using brainstorming, discussing with the critical evidence, and reflecting together. In other words, the lesson study is a systematic and collaborative examination of instruction. It is a process of team of people who have been involved in a similar context to improve their teaching gaining more effectiveness and achieving the goals. In addition, it can promote a collaborative learning network, and create a learning community. Accordingly, the lesson study is an innovation that has the potential to improve instruction in many dimensions both in terms of the students' development, dimension of teaching, and the dimension of professional development. The important component of successful teacher education is learning from teaching (Linda Sims and Daniel Walsh, 2009). One of a workable framework that can provide to make it happen is lesson study. Learning with lesson study is the first step out of the theoretical basic of teaching, the apprenticeship of observation, and position them to look at the complexities of teaching with a more investigative lens-a stance that may help them seek out and grow from the support of fellow teachers as they begin their careers.

In the context of Thailand, lesson study was distributed in the professional development. Because lesson study emphasizes teachers learned from the actual school context, solve problem, and reflect and share data with other teachers. Subsequently, if the teacher taking the lessons study as an instructional method in their class, it is not only let a student achieve the goal of the lesson but also practice them thinking process especially systematic thinking and collaborative problem solving skill. Since the lesson study focus on group discussion process with reasonable and finally they have to make a consensus together for improving their lesson in every step. These can refer that meanwhile the students teachers do the activity they will practice thinking skill in harmony especially critical thinking skill (Kanyarat Cojorn. 2016). Certainly, lesson study is will be very useful for preparing preservice teachers a prompt for step into their first practicum experience. As aforementioned reason, this study tries to discuss the insights gained from an empirical study that explores the feasibility of using a lesson study in high education level setting.

Research Purpose

The purpose of this research was applying the lesson study into learning process of science student teachers.

Methodology

Participants

The target participants consisted of 1) the instructor who teaching in a course related curriculum and instructional design from the department of curriculum and instruction, Faculty of Education, Mahasarakham university, Thailand, 2) 42 students of 4th science student teachers who enrolled in the Curriculum and Instruction in Science 2 course in the first semester of 2015 academic year of Faculty of Education,

Maharakham university. Science student teachers were chosen because science is the area that researchers are familiar with and is the area of researchers' own teaching background especially it is a course which was the researcher responsible.

Research Instrument

The research instruments of this research were as following;

1. An informal interview which question for the problem in teaching process and collected data concerned method or strategies to solve the problem in teaching process.
2. A 5 rating scale questionnaire and open ended question were used as a tool in focus group for finding the Index of Consistency of the lesson study guideline. Moreover, the question was asked the experts' panel related the appropriate of lesson study guideline.
3. A semi-structured interview was asked the science student teachers related the problem, question, and issue that happening during learning with lesson study guideline.

Procedure

The research was a research and development methodology that consists of 3 phase as following;

Phase I : Study of background and problems in studying pedagogy: this phase was run for collecting the basic data for developing the lesson study guideline as a instructional method. Literature review focus on how student teachers and preservice teachers learning to teach were the start point in this phase. Moreover, the instructors who had a responsible in a course related curriculum and teaching methods courses were interviewed in order to explore student teachers' difficulty in learning pedagogy in the authentic context and there guidance. The instructors states that student teachers had low subject matter knowledge and pedagogical knowledge. The Student teachers could not transfer abstract idea to concrete idea. Furthermore, they could not work collaboratively. They lacked of thinking skills especially the collaborative problem solving and critical thinking skill. They cannot create the suitable activity. They just designed the learning activity familiar with their prior experience. They cannot apply their knowledge that they had learned for constructing the learning activity especially the practicality activity in the actual classroom. The instructors claimed that these problems came from student teachers 'lack of teaching experience. The data were analysed and used as a basic to develop lesson study as a learning process.

Phase II: Development of lesson study guideline: the purpose of this phase is developing the lesson study guideline for applying in the science student teachers classroom. The basic data was gathered not only from the literature review but also the instructors' interview. The gained data was used to develop the lesson study guideline. The guideline was constructed based on the basic of the practice-based form emphasized the student teachers gain their teaching experience, develop their teacher knowledge and practice them the thinking skill in simultaneously. Furthermore, the questionnaire was designed and checked for the structural validation and the appropriateness of language used by experts' panel consisted of 3 educators. The Index of Consistency (IC) of the lesson study guideline was 1.00. Despite the

fact that, the focus group technique was used to identify the appropriate of the lesson study guideline. The result was a very good level (4.67 – 5.00) of appropriate. Moreover, the focus group data let to improve the guideline in the point of 1) the classroom observation should conduct in the classroom of the master teacher, and 2) the role of the instructor should be like a coach in step of lesson planning and research lesson.

Phase III: Implementation of lesson study guideline: the lesson study guideline was implemented as an instructional process in my classroom for seeking to resolve perceived shortcoming of the guideline. Especially, I try to find the effective strategies to support my students' initial teaching experience. The period of implementation was 4 months. The student was asked to work in pair for observing classroom and practicing teaching before approaching the second step of the lesson study guideline for seeking there really provoking problem. Subsequently, the lesson study guideline had carry step by step until completely which after finished of each step the students had asked to the classroom for sharing. Every period of sharing the researcher has to participate for observing, debriefing and verifying the accuracy and monitoring the students. The focus group was conducted to collect data related the problem of using lesson study as a learning process of preservice science teachers. The data was analysed and used to improve the lesson study.

Data Analysis

The data analysis was carried out using the qualitative analysis, collected from interview, and open-ended question, analyse content and generate categories and themes for describing the problem, resolution, guideline of lesson study and students view of using lesson study in the classroom.

Results

Regarding the information from expert panel and the literature review, the lesson study process consist of 7 stages ;1) Classroom Observation 2) Group Gathering and Goal Setting 3) Lesson Planning 4) Research Lesson 5) Lesson Discussion and Consolidation 6) Lesson Implementation 7) Lesson Conclusion as showed in figure1.

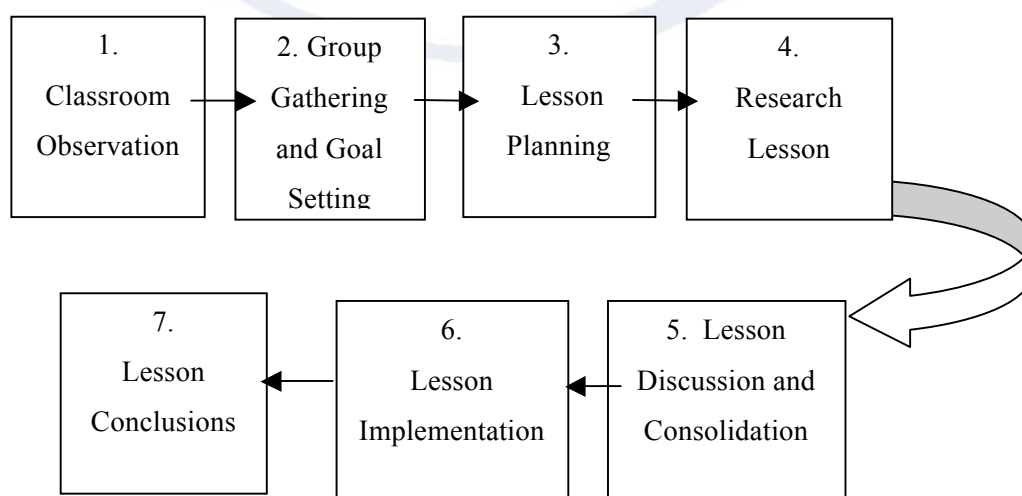


Figure 1: The preliminary of lesson study guideline for preservice science teacher.

Stage I: Classroom Observation: this stage emphasised the student to familiar with the context of a classroom in the school. They have to observe the teaching process, the activity, problem which appears while doing the activity. This stage the student teachers have to practice the classroom observation method and analyse the main point of the problem that encounter in the classroom.

Stage II: Group Gathering and Goal Setting: this stage the preservice science teachers who interested in the similar problem have to form a team and identify the problem then set the target to learn together. They have to share their reasonable problem to the team while open mind and tolerate others. The team have to think critical to make a team target together.

Stage III: Lesson Planning: this stage the each team of preservice science teachers have to brainstorming, sharing, and discussing for designing and constructing the learning activity and lesson plan. This process focus on the reconsider in the learning design of the preservice science teachers including practice them to investigate and inquire the data for sharing in team. Moreover, they have to practice the appraised evidence or argument with reasonable to make the effective lesson plan together.

Stage IV: Research Lesson: this stage some preservice science teacher in each group has to implement the lesson plan in the classroom. Others come to the classroom for observing their peer classroom meanwhile execute the lesson plan for collecting data and evaluation. The preservice science teachers have practice the teaching process in the school context and enhance them observing, collecting data, evidence, and problems while running the activity .

Stage V: Lesson Discussion and Consolidation: this stage addresses the group reflection. The collected data which each person gain from classroom observation have to share, discuss, and brainstorm for making the conclusion of teaching including reflect the problem that occurred in the classroom. Then, they have to brainstorm to solve the problem and concentrated on how to solve the problem. Moreover, they have to discuss the instruction witnessed and what it taught them about the goal they set out to explore. They have to examine their lesson plan and inquire and investigate the more information again for consolidation for reaching the goal they set. Moreover, they have to come together for brainstorming for revising the lesson plan and making others. This process the preservice science teachers have to enhance critical thinking through criticism the collected data, expression their opinion, inquire more information, evaluation the alternative solution, decision making to select the solution for revising a lesson plan together.

Stage VI: Lesson Implementation: the preservice science teachers come to their classroom and implement other lesson plans, while other group members look on their peer classrooms again. The teaching skill, classroom observation, and data collection have over again.

Stage VII: Lesson Conclusion: all member of a group have to come together again for analyzing the gained data and giving a feedback from conducting the lesson plan in the classroom. The debate should concentrate on lesson plan evaluation. They have to criticize the strength and weakness and give their opinion to make a comments or suggestions that could lead to improved teaching and learning also constructing the effective lesson plan.

Considering in the data from the focus group of preservice science teachers, the response from many preservice science teachers indicated that the problem they encountered during learning through the lesson study process was the teamwork related giving a reasonable opinion for solving problem together. There were a problem in timing, the responsibility of a group member, and the efficiency of group discussion process. The quotes were as follow:

Regarding the timing, most of preservice science teachers stated that they do not have enough time and it is hard to find the accordingly time to make a group meeting. The quotes were as follow:

“I have to enroll many subjects which different from friends cause I can’t join the group meeting many time. As a result, I don’t understand my role and make me hard to participate in the next step of the guideline”

preservice science teacher# I

“My class timetable is the same as the timetable of the implemented class make me can’t observe the classroom with my colleagues. Consequences, when I participate the group meeting I can’t share idea or brainstorming with others.

preservice science teacher # II

Regarding the responsibility of a group member, some of preservice science teachers stated that they encounter with the problem if some member group lack of the responsibility. The quotes were as follow:

“It is a hard work to share ideas, brainstorming and discussion with member group since some member groups lack the responsibility when I have. Therefore, in the discussion process or give ideas to construct the lesson plan or generate ideas to solve the problem in our group don’t have alternative choice. We can’t discuss. My friends always tell me like whatever you say.”

preservice science teacher# III

“In our group we always divide the responsibility to all members for taking a time for investigation before discussion. However, I find that some member group can’t give ideas because he didn’t have information. As a sequence, our work was interrupt. We have to repeat the investigation again before proceed the next steps that I think it is a waste time and make me fretful”

preservice science teacher # IV

Regarding the efficiency of group discussion process, some of preservice science teachers stated that they do not be acquainted with learning through the discussion process and brainstorming. The quotes were as follow:

“I lack of the confident to share my opinion since I am not a good student. I afraid that my ideas are denied if I offered.”

preservice science teacher # V

“I don’t acquaint with the discussion process. Usually, it makes me nervous because I don’t know what things I should share in the group meeting or sometime I don’t have the information to share with others. ”

preservice science teacher # VII

Regarding the information from focus group, the lesson study guideline was redesign to get more practically. The improved lesson study guideline consist of 7 stages ;1) Classroom Observation 2) Group Gathering and Goal Setting 3) Lesson Planning 4) Research Lesson 5) Lesson Discussion and Consolidation 6) Lesson Implementation 7) Lesson Conclusion which including writing a reflective journal in every step as showed in figure 2.

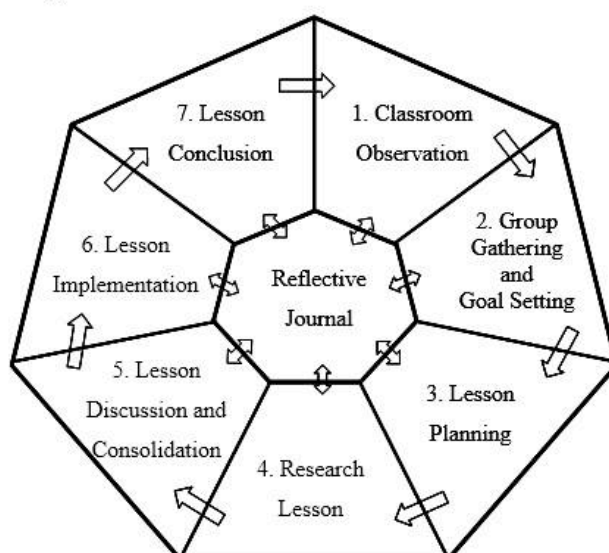


Figure 2: The lesson study guideline for preservice science teacher.

The reflective journal was embedded in to every step of lesson study guideline. The preservice science teachers were assigning to write reflective journal in every step of lesson study guideline. This method was using for reflect themselves. Moreover, it is useful for mentoring the teamwork of each group and gathering the issue that they can consult the teacher who is a facilitator in every step.

Conclusion and Discussion

Lesson study is a teacher-driven and teacher-directed professional learning model. Meanwhile, the important characteristics to drive lesson study successfully are; the lessons are planned collaboratively over a period of time; the taught lessons are observed by others, the lessons intend to bring to life particular goal of learning; the lessons are recorded; and the lessons are discussed and shared with others (Lewis, 200b). As a result, the power of group has more effect to the effective of the lesson

study guideline. Many things in lesson study including brainstorming, sharing, discussion, come up with the collaborative process. If in their group can proceed the collaborative process well, they will have more opportunity to be successful in their tasks. As the important factor effects the successful of lesson study process was the powerful of group (Kanyarat Cojorn, 2016). Therefore, a grouping process should come up with their intention. Moreover, students should spent more time to make themselves clearly in discussion process such as how they should do in discussion process, what the data they should have for share in the group. For more effectively in discussion process, the instructor should make the preservice student teachers a readiness to learning with lesson study guideline specifically what is the lesson study, how is the fruitful of lesson study, how is discussion process, and describe the things they have to do while learning with lesson study guideline. Considering in the problematic about the effective of group discussion, the scaffold of discussion through prompts such as “what if” and “did you notice” observations should be suggest to them. The facilitators also held concerns about the readiness of the preservice student teachers to engage in meaningful, substantive discussions about content and pedagogy with limited prior experience. Therefore, if an instructor should be a professional in lesson study, the lesson study will easy to be productively. This was supported by Fernandez et al. (2003) when they stated “lesson study...must include room for knowledgeable coaches who can stimulate the thinking of groups so they can rise beyond their own limitations”. Additionally, the data from this study indicate that the lesson study guideline have a powerful learning strategies which can help the preservice student teachers get more a adequacy knowledgeable particularly teacher knowledge, content knowledge, general pedagogical knowledge, curriculum knowledge, pedagogical content knowledge, knowledge of learners and their characteristics, knowledge of educational contexts and knowledge of educational ends, purposes, and values, and their philosophical and historical grounds (Shulman. 1987), and skills to the step of internship in the school.

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***The Development of Teacher Knowledge in 4th Year Science Teachers
in Thailand Through Lesson Study***

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Abstract

The purpose of this study was to investigate how and what teacher knowledge preservice science teachers develop in contexts of Lesson Study. In order to gain the required in-depth data, a range of qualitative methods was used. These included lesson plan analysis, reflective journal, group discussions, concept maps, and documentations. Data were collected from a group of 4th science student teachers. The data were analyzed by using Shulman's (1987) forms of teacher knowledge as an analytical framework. Preliminary findings showed that the student teachers developed different categories of teacher knowledge and raised awareness in the important of working collaboratively with their peers.

Keywords: Lesson study, teacher knowledge, science student teacher

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Introduction

In recent decades there has been growing concern internationally with the contribution of education, particularly mathematics and science education, to national economic competitiveness in Thailand. As a consequence, the 1997 Constitution and the 1999 Education Act of Thailand provide a policy for using educational reforms with the aim of developing Thailand into a knowledge-based society, which is a prerequisite for becoming a knowledge-based economy. The intention of these reforms was to provide the Thai people with equal access to life-long education and training, enabling them to acquire knowledge and capital to generate income and to eventually pull the country out of its existing economic and social crisis (Office of the National Education Commission, 2006). As part of developing a more productive workforce and competitive economy, Thailand has identified the need to improve the quality of mathematics and science education.

One way to improve science achievement for school children is through better science education for trainee teachers. Teachers play a significant role in the provision of quality education as outlined in Thailand's 1999 National Education Act. The Act, therefore, intends that teachers become facilitators of learning and use different sources of knowledge. In order to accomplish the goal of better science education in schools and universities, the development of high quality teachers of science and technology begins in their teacher education program. Teachers need to be able to create a learning environment that enables students to learn and acquire knowledge for themselves. For this to occur, it is essential that teachers be true professionals and develop a range of forms of teacher knowledge.

The nature of teacher knowledge is unique. It is a special kind of knowledge teachers own that is characteristically different from scientific, technological, or other kinds of knowledge (Bishop & Denley, 2007). From Clandinin and Connelly's (1995) perspective, teacher knowledge is a "body of convictions and meanings, conscious or unconscious, that have arisen from experience (intimate, social, and traditional) and that are expressed in a person's practice" (p. 7) and "that has arisen from circumstances, practices, and undergoing that themselves had affective content for the person in question" (p.7). This view is similar to that of Tsui (2003), who suggested that teacher knowledge is usually embedded in teaching practice, oriented to a particular situation in which it arises and is often not clearly articulated.

Lesson study has been widely used in Japan for a long time. The Lesson process are: teacher work collaboratively to develop a lesson plan, teach and their peer observe the lesson to collect data on student learning, then use their observations and reflection to refine their lesson, and teach the revised lesson (Baba, 2007). According to Stepanek et.al. (2007), lesson study give teachers a chance to examine and reflect on their own teaching practice as well as other's. They also work together to find the most suitable way to transfer their own content knowledge to their students. For these reasons, it is gaining popularity as an approach in a professional learning community practice in Thailand.

Shulman's Forms of Teacher Knowledge

Shulman's theory of teacher knowledge has had a major impact on the research of teacher knowledge. Shulman (1986a) highlighted the neglect of subject matter in effective teaching research. He pointed out that:

In their necessary simplification of the complexities of classroom teaching, investigators ignored one central aspect of classroom life: the content of instruction, the subject matter. This omission characterized most other research paradigms in the study of teaching as well. Occasionally subject matter entered into the research as a context variable, a content characteristic for subdividing data sets by content categories. But no-one focused on the subject matter itself. No one asked how subject matter was transformed from the knowledge of the teacher into the content of instruction. Nor did they ask how particular formulations of that content related to what students came to know or misconstrue. (p.11)

Shulman and his colleagues referred to the absence of subject matter in the various research paradigms as the 'missing paradigm'. To address questions relating to the 'missing paradigm' of teacher knowledge, Shulman and his colleagues at Stanford University launched a research program called 'Knowledge Growth in Teaching' (Grossman, 1990) to answer the following questions: What are the sources of teacher knowledge? What does the teacher know and when did he/she come to know it? How is new knowledge acquired, old knowledge retrieved, and both combined to form a new knowledge base?

Teacher knowledge is characterized by concreteness and richness in contextual and personal experience (Hiebert, Gillimore, & Stigler, 2002). Shulman (1987) highlighted the importance of teacher knowledge in the fact that "teaching necessarily begins with a teacher's understanding of what is to be learned and how it is to be taught" (p.7). He identified four major sources for teacher knowledge: (1) scholarship in content disciplines; (2) the materials and settings of the institutionalised educational process; (3) research on social and cultural phenomena that affect what a teacher can do; and (4) the wisdom of practice. According to Barnett and Hodson (2001), each teacher relies on a store of collective teacher knowledge. Teachers can develop this knowledge by talking to each other and reflecting on classroom experiences. Wellington (2000) suggested that "teachers have a set of knowledge which they bring to the classroom and a set of knowledge which is developed and learned from their classroom experience" (p. 27).

Theoretical framework

The theoretical framework that influences the conceptualization of this study is Shulman's (1986, 1987) theory of forms of teacher knowledge. He listed categories of knowledge that contributed to successful teaching. Burgess (2006) stated that Shulman's forms of teacher knowledge "relates to the structures of how the teacher knowledge is organized, linked, and represented in the teacher's mind" (p. 2). Initially, Shulman (1986b) suggested three categories knowledge in teaching: (1) subject matter knowledge; (2) pedagogical content knowledge; and (3) curricular knowledge. Then in a following paper, Shulman (1987) reclassified teacher knowledge into seven types:

- content knowledge, which includes three subsets of content knowledge: substantive knowledge; syntactic structures; and beliefs about content matter;
- general pedagogical knowledge; broad principles and strategies of classroom management; and organization that appear to transcend subject matter;
- curriculum knowledge: knowledge of materials for particular instruction;
- pedagogical content knowledge (PCK): knowledge of how to teach specific content effectively;
- knowledge of learners and their characteristics;
- knowledge of educational contexts: knowledge of the working of the group or classroom; the character of communities and cultures and government agendas; and
- knowledge of educational ends, purposes, and values, and their philosophical and historical grounds.

Shulman (1987) claimed that the forms of teacher knowledge are interrelated. He argued that to teach effectively, each category of teacher knowledge cannot be treated separately; all of them have to bind together. However, teachers and preservice teachers are at different stages of development in their careers and may develop different forms of teacher knowledge at different times in their profession. There have been research studies of teacher knowledge for experienced teachers, beginning teachers and preservice teachers.

Methodology

Participants

In this study, the participants were 42 fourth year science student teachers who enrolled in curriculum and instruction in general science 2 course in the university in the Northeast of Thailand. Science student teachers were chosen because science is the area that researchers are familiar with and is the area of researchers' own teaching background. These student teachers had little prior teaching experience in school classrooms. Thus, researchers expected that teacher knowledge would develop in some way during the program.

Phases in the study

There were 3 phases in this study:

Phase I: Study of background and problems in studying pedagogy

Researchers began with doing literature review focus on how student teachers and preservice teachers learning to teach and their difficulties as background knowledge. Moreover, in order to explore student teachers' difficulty in learning pedagogy in the authentic context, instructors of curriculum and teaching methods courses were interviewed. The instructors states that student teachers had low subject matter knowledge and pedagogical knowledge. Student teachers could not transfer abstract idea to concrete idea. Furthermore, they could not work collaboratively. The instructors claimed that these problems came from student teachers 'lack of teaching

experience. The data were analyzed and used as a mean to develop lesson study as a learning process.

Phase II: Development of lesson study guideline

After finishing analyzing data from phase one, the result indicated that practice-based form of teacher learning where student teachers works together to plan, practice teaching, observe and analyze taught lessons would help student teacher gain their teaching experience and develop their teacher knowledge more quickly. For this reason, lesson study which is both collaborative and practice based has a high potential. However, due to many limitations; the implementation of the lesson study differed from the original model. First, student teachers receive feedback from the peers in their team, as well as their course instructors. Second, the student teachers taught each lesson once due to time constraints and the fact they only being at school one day a week. However, they discussed the taught lesson in group meeting and designed and modified their next lesson with this feedback. The modified lesson study was integrated into curriculum and instruction in general science 2 course.

Phase III: Implementation of the lesson study guideline

During the beginning of the course, the fourth year science student teachers were given the detail about lesson study. These student teachers were asked to work in pair. Then they were assigned to do classroom observation and practice teaching in the school they chose. After classroom observation, 2 pairs were grouped together; therefore every team had 4 members based on their concerned problems. Each pair then analyze teaching unit received from their school teachers they worked with and made a lesson plan. However, they had to discuss with their group members about their lesson plan and revise before meeting with the course instructor to receive guidance and revise the lesson plan again if necessary before teaching in the actual classroom. While the lesson was being taught by each pair, the other members observed their peer classrooms. After the class, they organized a group discussion about their teaching and then used feedbacks from their peer to modify the next lesson plan then repeated the cycle again. When they finished all lesson, all student teachers were asked to write the concept on the topic of “teaching science” and reflected on their teaching experience.

Data gathering methods and data analysis

Data for this study came from a range of data-gathering methods in order to enhance trustworthiness. These included lesson plan analysis, group discussions, semi-structured interviews, concept maps, and documentations. Data were collected from a group of 42 fourth year science student teachers a period of 4 months. The data were analyzed by using Shulman’s (1987) seven forms of teacher knowledge as an analytical framework.

Preliminary findings and discussion

All these science student teachers developed teacher knowledge in different respects and to different extents during the course period indicating that teaching experience played an important role in developing their teacher knowledge. The student teachers began to moved from thinking like a learner based on their own experiences as students in schools to thinking like a teacher. These changes tended to occur as a

result of the practicum, as the preservice teachers had to play the teacher role as well (Ineke et al., 1999; Hoban, 2005). The findings from this study are similar to Wickramasinghe (2004) who investigated the change of Sri Lankan preservice teachers' knowledge. That study showed that preservice teachers mainly developed their teacher knowledge during their practice teaching periods. However, lesson study helped facilitate these changes. The expressions of their views about teaching and learning shifted from themselves as science learners to being science teachers concerned about students' learning. Their understanding about teaching became broader and more complex. This is consistent with the study of Erick and Dias (2005), which indicated that during field placement, student teachers initially relied on teaching knowledge from university courses, and their past experiences as a student then began to integrate these experiences with knowledge they gained from their teaching practice. However, their teacher knowledge did not show explicitly in their practice because they had limited teaching experience. The same finding was also found in Da-Silve, Mellado, Ruiz, and Porlan's (2006) work that showed that beginning teachers used a teacher-centred approach in their first years of teaching.

However, science student teachers developed similar views about *content knowledge*, probably because their university subjects preceded their teaching experiences. They believed that the university science subjects provided them with the knowledge necessary for teaching.

Although the university science subjects were one of the influences on preservice teachers' content knowledge, there were some problems in the course itself. The science course consisted of lecture sections where the science concepts are taught to student via a teacher-centred approach. The laboratory activities are conducted by strictly following experimental procedure. Student teachers have to learn too much information in too brief a time, so it is impossible for them to understand science concepts, principle, and theories (Arons, 1989 cited in Cobb & Koballa, 1996). This learning experience also impacted on the student teachers' own teaching style. The finding we consistent with Adams and Krockover's (1997) study on preservice secondary teachers which indicated that the preservice teachers used the instructional approach demonstrated in subject matter courses as a model for teaching. Lesson study made them aware of their misconception in science concepts. One student teacher stated that comments about his lesson the lesson study meeting help him improve his science content knowledge.

The student teachers showed development of *curriculum knowledge*. They were aware of the necessity of understanding the curriculum before planning a lesson. In lesson plan analysis they showed their curriculum knowledge through their ability to indicate the relevant between teaching standards, indicators and content.

There was no evidence indicated the development of *pedagogical content knowledge*. Even through, they showed their effort to find the more effective way to transfer science knowledge to their students. It would seem that this was due to their limited teaching experiences.

Most student teachers developed *knowledge of learners and their characteristics*. They exhibited a concern with students' problems in their classes. In group discussion, they came to identify their students' characteristics and problems and their

solutions from a teacher's perspective. This major development was influenced by his teaching experiences. They discussed and gave each other advice about how to gain students' attention and classroom management.

However, the students did not show knowledge of educational contexts and knowledge *of educational ends, purposes, and values, and their philosophical and historical grounds*.

The presentation of the findings in this study may suggest that the forms of teacher knowledge act independently. As stated by Shulman (1987), all seven types of teacher knowledge are interrelated. In order to teach effectively, teachers have to possess all types of knowledge, which work collectively with other knowledge to influence pedagogy. None of the particular types of knowledge alone can make good teaching. Therefore, to make teaching successful, all forms of teacher knowledge must be woven together into the expression of practices. This claim was supported by Exley (2005) who pointed out that teachers must have all type of teacher knowledge in order to teach successfully. However, teaching experience play a major role in their developing of their teacher knowledge. Lesson study can be a promising practice for beginning teacher use to examine their teaching practice as well as their peers practice in order to develop their knowledge (Marble, 2007).

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***Motivations and Attitudes of Students towards Tourism and Hospitality Study:
The Case of Thailand***

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Abstract

As the tourism and hospitality industry in Thailand grows rapidly, the demand for new qualified human resources has also increased to support the development of the industry. The objective of the study is to explore motivations and attitudes of students and factors influencing their decision to study the tourism and hospitality program. With in-depth interviews, the results showed that the interest of starting their own business attracted the students to select the tourism and hospitality management program. The recommendations of parents and friends are crucial to the student's decision to study. In addition, the opportunity to learn about improving service mind is considered one of the most attractive aspects of tourism and hospitality education. Discussions, conclusions and directions for future research are also provided.

Keywords: Motivations, Attitudes, Tourism and Hospitality Study

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Introduction

Tourism and hospitality program is the foundation for students to be well-equipped with skills and knowledge in order to work effectively in the workplace. Tourism industry is obviously crucial for Thai economy and its long-term economic development in the future. Tourism and hospitality sectors are also considered the important job markets for the new graduates. However, with the fast growth of tourism demand, hotels, tour operators, and airlines faced shortages in human resources across sectors.

The purpose of this study is to understand the motivations and attitudes of students in studying tourism and hospitality program in the context of Thailand, where tourism industry is the major driver for its economy. Thailand is known as one of the highly popular tourism destinations in Asia and the increasing number of international tourists has surged significantly in the past decades. In addition, to strengthen the foundation for long-term development of tourism industry, human resources are essential to be further developed and recruited for achieving sustainable growth in the future. Amoah and Baum (1997) noted that development of human resources in tourism is highly important to support the growth of the tourism industry in all levels, from operations to managerial levels. Furthermore, in order to enhance the quality of human resource development, tourism education should be consistently improved to be in line with the tourism and hospitality trends or new groups of tourists. Dale and Robinson (2001) stated that tourism education has to combine both theory and practices and tourism stakeholders have responsibilities to also help shaping the tourism education policy so that the graduates can be well-prepared to start working the industry.

Tourism activities in developing countries has been growing rapidly, especially in tourism education (Zhao,1991 and Airey et al., (2015) in response to the need for the systematic management in tourism and hospitality sectors. This implied the necessity of tourism and hospitality education to be developed to cope with the fast growth in tourism development, driven obviously by tourism demand in the developing countries.

Literature Review

Tourism education

Based on the study of Amoah and Baum (1997), several aspects should be incorporated in developing the new groups of tourism human resources, including acquiring new information technology and facilities, raising the image of careers in tourism, and responding to the new demand of tourists.

Mayaka and Akama (2007) and Hjalager (2003) identified that human resource training and capacity building, especially at supervisory and managerial level, are the key for success to support tourism development in the developing countries. In addition, this effort should be supported by governmental organizations and tourism educators. Sheldon et al., (2008) and Hjalager (2003) highlighted that there are five important skills for students to develop to be successful in tourism organizations, including destination stewardship skills, political skills, ethical skills, enhanced human resource skills, and dynamic business skills. Obviously all these skills require time and willingness to develop through years of practical experiences. O'Mahony (2015), noted that government has great responsibility to promote tourism and hospitality to prepare the human resources to support the growing demand of tourism, because it is not only the functional skills, but it is also about the knowledge and managerial skills to develop the tourism and hospitality organizations successfully.

According to Wu et al., (2014), one of the limitations in tourism education is that faculty members lacked practical industry experiences, affecting the student's perspectives about the expectation about the real work environment. Sigala and Baum (2003), noted that there are five forces of change, which affected tourism education, including global competition, the student market, educators and teaching methods, and the changing characteristics of tourism and hospitality industry. According to Sigala and Baum (2003) and O'Mahony (2015), there are clear challenges for both students and universities to adapt in order to meet with the environmental changes, especially information literacy and knowledge management skills. Formica (1996), Sheldon et al., (2008) and Hjalager (2003) suggested that the development of hospitality and tourism education needed to be international standards (such as American or European standards). For example, it is beneficial to students to have a combination of European and American educational systems to enhance the perspectives of students when it comes to working the real environment because the customers can come from anywhere around the world. Tourism educators can provide clear career paths for the tourism students so that the students can have sustainable career in the future (Dale and Robinson, 2001). Based on the study of Airey et al., (2015) and Wu et al., (2014), tourism education has significant impact on the quality of their graduates. Therefore, the measurements of the tourism and hospitality program development are crucial to verify the quality of those educational programs for students to work effectively in their careers.

Motivations to study tourism and hospitality management

In order to study in any educational field, students are driven by different motivations in finding information, selecting the program, and deciding to pursue their career goals through the education. Kim et al., (2007) stated that based on the empirical research of the students from China, Taiwan and South Korea, there are six types of motivation, including job opportunity, interest in practical aspects, scholastic achievement, apparent attraction, interest in foreign country, and ease in studying. Furthermore, Cothran and Combrink (1999) indicated that it is worth exploring the

level of motivation in different ethnic group to identify similarities and differences among many countries to achieve better understanding. In addition, Kim et al., (2007), stated that students studying tourism and hospitality programs in several countries had different types of motivation and the level of motivation for each nationality was also varied.

Attitudes towards Tourism and Hospitality

Attitudes toward the industry can directly affect how tourism and hospitality graduates intended to work or to join the industry after their studies. Li et al., (2012) and Beeka and Rimmington (2011) noted that students tended to have positive attitudes towards the tourism industry in terms of career orientation and employment. Furthermore, the attitudes about working in tourism sectors can also influence the length of time that the employees will continue to work in that industry or to change to work in other industries. In addition, Getz (1994) conducted the longitudinal study on the change in perceptions and attitudes towards careers in tourism and hospitality and found that people working in the industry for over 14 years had higher negative attitudes towards the industry. The reasons for having negative attitudes included the absence of local training, problems in local tourism industry and increasing negative views about their jobs.

Research Methodology

Demographic information was collected at the beginning of each interview. The semi-structured interviews allowed in-depth investigation that included key terms of the study, such as intention to work in the tourism and hospitality industry, sources of influence for their decision, and expected duration of working in the field.

Furthermore, interview process was designed to be open-ended and flexible, giving participants opportunity to develop their responses. During the interview, related questions were included to be consistent with qualitative semi-structured interview approach. 35 interviews with current students of tourism and hospitality programs in Thailand were conducted. The target samples were undergraduate students from the first year to the fourth year in order to understand viewpoints of all the groups.

Results

Demographic characteristics indicated that more than half of the respondents (65%) were female students. Out of 35 respondents, 25% were first year students, 20% were in their second year, 18% were in the third year and the rest were in the fourth year and beyond. Our interviews indicated that the students provided insights related to the key concepts of the study, including types of motivation and positive and negative attitudes towards the industry.

From the results and keywords mentioned by the respondents, the key themes can be concluded into several important aspects as follows.

-Information Search

To find information about the university, programs and other details of the tourism and hospitality program, students received information from mainly teachers, advertisements, social media (e.g. Facebook) and university websites.

One respondent stated that *“I learned about the program from my high school consultant.”* Another respondent noted that *“I know it from advertisement, Facebook and the university websites”*.

-Motivations to study tourism and hospitality programs

Learning about the program through various sources, the respondents contemplated and eventually decided to study. Entrepreneurial opportunity is one of the motivations for students to study tourism and hospitality. The growth and important roles of tourism industry to the Thai economy clearly affected the students' decision. In addition, the nature of industry is attractive to many respondents. One respondent stated that *“Tourism and hospitality are the main source of income in Thailand. So, I want to be in the growing industry and in addition, knowledge from this field can be adapted to my own business in the future....”*

A male respondent noted that *“After graduation, I want to start my own boutique hotel. I want to learn how the hotel operates. This can help me to prepare myself to start my own business. There are great opportunities for young people now to start their own companies.”*

Furthermore, one female student mentioned that *“I love hospitality business and I love to service people to make them happy.”*

Another student noted that *“Thailand is known for tourism and has more opportunity to grow in the future. That is why I join the program.”* Moreover, the influence of parents and friends are highly crucial for the educational decision. This issue was mentioned by many respondents.

One respondent stated that *“For me, it is really important to meet parent's expectation and that is also self-preference in my career.”*

Another respondent said that *“I am usually influenced by my friends and parents. They have high influence on my decision about big issues in life”*.

-External environments

About 70% (25 respondents) said clearly that the growth of Thai tourism and hospitality had a major impact on joining the program. The continuous growth in hotels and tourism businesses has spread from highly popular tourism destinations (e.g. Chiang Mai and Pattaya) to smaller destinations around the country. This led to the development of new tourism destination to be promoted to both Thai and foreign tourists.

One stated that *“Since tourism businesses are still growing not just in Thailand but also in the southeast Asian region. It helps opening more opportunities for works and career growth”*.

Another student mentioned that *“As in Thailand now, there is an increasing number of international tourists and there are many more activities to help promote tourism in Thailand. The more I hear about the development of tourism development and strong supports from the government in both policy implementation and the*

involvement of several organizations to increase the importance of tourism industry. So, I feel that I want to be working in this industry”.

-Benefits from studying in tourism and hospitality program

Based on the results of the interview, the respondents noted that the main purpose of joining the tourism and hospitality program is to prepare themselves for work in the industry. Most respondents acknowledged that they have gained variety of useful concepts and practical skills.

One stated that *“The main benefits for me are to be able to handle a variety of things at the same time, including customer services, manners, language and people.”*

Another student mentioned that *“The most important thing that I learned is that I have a chance to study about people, or customers and it is complicated but there are many ways that I can apply to those issues.”* One respondent stated that *“I feel that I am equipped with knowledge and skills that I can work in many different types of tourism and hospitality fields.”*

-Attitudes to tourism and hospitality program

Regarding attitudes of the respondents, in terms of positive aspects, the respondents explained that tourism and hospitality industry is about happiness (making people happy) and good income as the respondents stated as shown below;

“For me the most attractive feature of this field is that we can find the solutions to meet the needs and wants of the tourists and the hotel guests. I like to service people and make them happy.”

“It is fun and the returns are high.”

“The characteristics of tourism and hospitality are to always be active and I can always meet new people. I hate working on the desk with only papers and files.”

On the contrary, a number of respondents mentioned some of their negative aspects, such as uncertain working hours, stress from dealing with difficult customers. Some of their responses were identified as follows;

“Most works have uncertain working hours. We have to work in shifts and it is difficult to manage time.”

“Dealing with difficult customers appears to be the unavoidable issue and it can be very stressful.”

“Time management is the real challenge because in tourism and hospitality industry, you tend to have different working periods from other industries.”

In addition, external environments played important roles in the ups and downs of tourism industry. One male respondent noted that *“I feel that tourism industry is highly sensitive to the political situations happening in Thailand. Some hotels had extremely low occupancy during the political unrest. If this persists, I do not know whether I want to continue working in this industry, because it means that I may not have a stable or good income in the future.”*

To summarize the results from the interview, the Figure 1 was drawn to represent the findings.

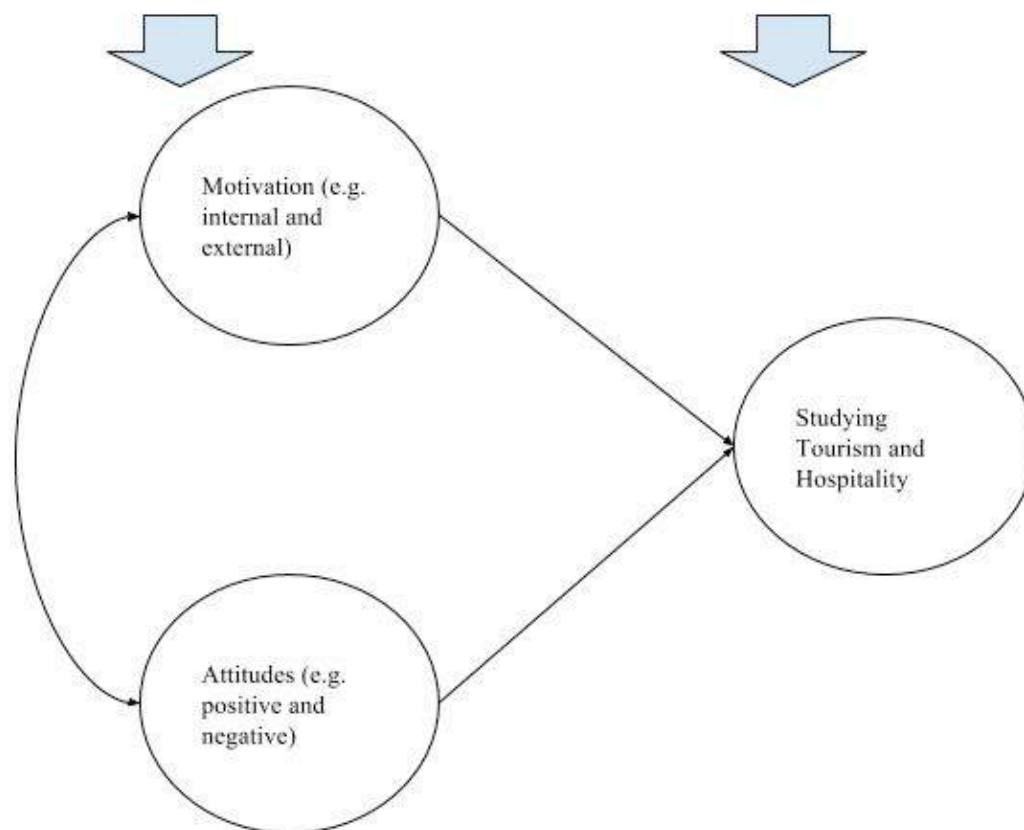
External Environment (e.g. economic, political factors and trends)**Figure 1: The Model of Studying Tourism and Hospitality**

Figure 1 summarized the results and key themes of the study. External environments, including the growth of tourism development, provided greater opportunities for the students to pursue their career and to earn a good salary. In addition, motivations and attitudes toward tourism industry led students to join the tourism and hospitality program.

Discussions

Based on the results, respondents stated that learning in tourism and hospitality program supported them to improve both knowledge and practical skills to be ready to work in the future. The study of Sigala and Baum (2003) and Hjalager (2003) had also highlighted that there is a challenge in tourism education to properly prepare students to be ready for real work life in the tourism industry.

Variety of motivations was mentioned such as loving to travel, gaining high income, and having service mind. Similar findings were also found in the work of Kim et al., (2007). In terms of attitudes, most students indicated positive attitudes towards tourism industry and expecting to be working in the industry. This is supported by Li et al., (2012). In addition, tourism industry of Thailand has been well-known among international tourists and the number of tourists has been increasing annually, despite of some political problems. The political and economic environments caused the changes in attitudes of the respondents. For example, a series of negative political unrest made the respondents uncertain about the future of the industry and they cannot decide whether they will continue to be a part of the industry in the long run.

The respondents feel that they can earn good income working in tourism and hospitality industry. This may result from the great importance of tourism for Thailand and therefore, the income discrepancy was not significant comparing with those working in other industries in Thailand. However, the work of Chang and Tse (2015), showed that graduates in tourism and hospitality field earned less than those in other industries.

Most students are concerned about salaries and other benefits that can be earned from the organizations. This is supported by the study of Shibata et al., (2015). Surienty et al., (2014) support that job characteristics, which should match with the employee expectation, can influence the decision to leave or to stay with the organizations.

Conclusion and Recommendations

Positive attitudes and passion to service others are important for the students to join the tourism and hospitality program to later build their career. In addition, tourism industry in Thailand has generated income for the country and tourism and hospitality organizations. For this reason, working in this area can gain high financial returns and employee benefits, not less than in other industries, and this dimension of the findings is different from the past literature. However, the current study was conducted in the context of emerging countries and therefore this may present the limitation of the findings to be used to explain the context of developed countries, such as Switzerland.

This raised a crucial point for further study and also an important concern for sustainable human resource development for the industry. In order to improve tourism education and the future of tourism industry, tourism educators have to always update the contents and topics provided in the curriculum so that students can directly start working in the industry.

Future research may investigate the changing nature of tourism and hospitality education as mentioned by Sigala and Baum (2003) and its role on intention to work after graduation. In addition, more research studies should be conducted in the area of cultural dimensions of working in tourism and hospitality industry. The level of development of tourism industry in different countries can affect its tourism and hospitality job markets.

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***Promoting Education for Sustainability in
Early Childhood Education***

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Abstract

Environmental issues have become a public discussion in the last two decades since the Brundtland Report in 1987. It is because environmental issues, such as climate change, air pollution, and water crisis, create a significant impact not only on a local but also on a global society.

Education is considered as one of ways to overcome problems in environment. Ironically, in practice, education still emphasizes in economic development (Greenwood, 2014). As a result, many environmental issues are caused by educated people (Orr, 2010). For example, the danger of DDT invented by the winner of Noble Prize for Physiology or Medicine, Paul Hermann Muller. DDT is used as a pesticide to kill insects, weeds or other pests. However, this substance also causes harm to human and other animals. Therefore, in the era of environmental crisis, it is time to shift education to also involve in environmental sustainability.

Early childhood education can be a good start to foster environmental awareness to children as early as possible. Also, the definition of sustainability offered by the Brundtland Report mentions that sustainability is needed to ensure the needs of future generation. Therefore, in the discussion that influences their future's life, children need to be seen as an active participant. In addition, in the future, children might face sustainability issues that might be different from now. Consequently, they should be taught with the way of thinking that enable them to solve the issues in the future.

Keywords: environmental issues, education for sustainability, early childhood education

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Introduction

Environmental issues have become a public discussion in the last two decades since the Brundtland Report in 1987. It is not surprising why they attract a public concern. Environmental issues, such as climate change, air pollution, animals' extinction, forest degradation, and water crisis, create a significant impact not only on the local, regional but also on the global society. Indonesia can be used as an example of a country with complex environmental issues.

This country suffers some big impact as the result of environmental issues. It is not difficult to find the news in media about them. As reported in the *Jakarta Post Newspaper*, The National Institute of Aeronautics and Space (LAPAN) informs that Indonesia suffers drought in 2015 that is believed as the worst condition in the last five years (Dipa, 2015). Consequently, in some places in Indonesia, it causes massive crop failure that will influence economic sector and has high possibility to harm food supply. It also creates a water crisis. Comparing with the rich who can afford to obtain water, the worst victim will be the poor who have less power. They should queue for long hours only to obtain clean water that is very limited. Air pollution in the cities, such as in Jakarta, the capital city of Indonesia, is higher than the standard proposed by the World Health Organization (WHO) (Muhammadi & Elyda, 2013). In terms of biodiversity, there are many species in Indonesia in the edge of extinction because of the decreasing of their population. For example, the extinction of the Sumatran elephant will be predicted in thirty years since the number of them are declined as the result of deforestation (The Jakarta Post, 2012). Those are some examples of many environmental issues in this country that need to be addressed. These examples also show how those issues connect with the discussion of this paper.

Meadowcroft (2002) as cited in Baker (2006) argues that comparing with developed countries, the impact of the environmental crisis will be worse for developing countries. It is because they are already in less disadvantages condition and have low ability to overcome the problems. This paper explores education for sustainability as one of the solutions that can be promoted to address the environmental issues faced by Indonesia as a developing country. It is also suggested that early childhood education can be a good start to implement education for sustainability, including in Indonesian context.

In this paper, the definition of sustainability will be explained firstly. The discussion will be followed by the role of education in education for sustainability. It will be focused more on early childhood education. Finally, the promotion of implementation of education for sustainability in early childhood education, especially in Indonesia will be provided.

The Definition of Sustainability

The definition that commonly used to define sustainability can be found from the Brundtland Report (the United Nation, 1987), *Our Common Future*. It is explained here that sustainability development as “development that meets the needs of the

present without compromising the ability of future generations to meet their own needs” (the United Nation, 1987, p. 41).

It can be seen that the term used in the Brundtland Report above is sustainability development instead of sustainability. However, the two terms share similarities. This argument is supported by Lockley and Jarrath (2013) who claim that the term sustainability and sustainability development are used interchangeably.

The Concept of Sustainability

In western society, the concept of sustainability is generally understood in three aspects, namely social, economic and environment (Herremans & Reid, 2002; Sterling, 2010). Instead of being separated, those three aspects are interrelated with each other. The example of the linkage between the three aspects can be seen from the case of climate change. One of the impact of climate change as an environmental issue is a severe drought. As a result, economic aspect will be influenced since drought will cause crop failures and a higher price of clean water. Famine, as caused by the lack of food supply and water crisis, can be seen as the impact from the social aspect.

However, in the current situation, human tend to put more attention in economic aspect than the other two aspects, social and environment (Ärlemalm- Hagsér & Davis, 2014). The cases of forest fires in Riau Province, Sumatera, Indonesia that usually happens almost every year, provide a good illustration of this situation. To reduce the cost of clearing land for planting, forest fires have been used as an inexpensive and fast solution. The impact of fire on the society, such as people’s health because of smoke from the fire and their difficulties to see clearly while travel because of smoke that might cause an accident and the impact for biodiversity and animal extinction are neglected.

Supposed sustainability is a chair with three legged represent the balance between economic, social and environment and compared with the reality that economic is stronger than the other two aspects, it can be imagined how inconvenience to sit down in that chair. Furthermore, as explained earlier, the three aspects are interrelated to each other. Paying attention to economic aspect without considering environmental factor will cause detrimental effect not only for environment but also for social and even economic. Therefore, the need for changing the way of human life should not be neglected.

The Dual Roles of Education

Education is expected to persuade people to live in a sustainable way in order to solve the uncertainty of the future and environmental issues (The United Nation, 1987). In line with this statement, Elliot and Davis (2009) argue that education plays a significant role to change the way of life of a human in this current situation from unsustainable into a more sustainable way. However, in some cases, education can be seen as a source of a problem instead of a solution of it.

Orr (2010) states that “education is no guarantee of decency, prudence or wisdom” (p. 238). Furthermore, he explains that many environmental issues are caused by

educated people that hold a degree (Orr, 2010). His claim seems contradictory with the previous argument mentioned by the United Nation (1987) and Elliot and Davis (2009) who believe that education can be used as a solution to address environmental issues. However, his claim is not made without any evidence.

Some examples of environmental issues are the work of educated people. The innovation of chlorofluorocarbons (CFCs) that causes a hole in the ozone that becomes a public concern nowadays. The danger of dichlorodiphenyltrichloroethane or usually known as DDT invented by the winner of Noble Prize for Physiology or Medicine, Paul Hermann Muller. DDT is used as a pesticide to kill insects, weeds or other pests. On the other hand, at the same time this substance causes harm to human and other animals. Exploitation of forest using advanced technologies is also usually done by educated people to meet their demands.

Greenwood (2014) explains this condition as the result of education that still put more concern in economic development. Therefore, in the era of environmental crisis and the issue of sustainability, it is the appropriate time to shift education that is still controlled by economic driven. Education is expected to be brave to challenge its status quo from economic oriented. As suggested by Greenwood (2014) in the era where socio- ecological impact becomes more detrimental, it is the right time to drive education to put more attention also for sustainability. Education is expected to address the issue of sustainability possibly because education can be a catalyst for people to be aware of environmental issues and to change the people's behavior in sustainable ways of life. Early childhood education as a part of education levels is argued can be a good start to embed the awareness toward environment as early as possible.

Education for Sustainability in Early Childhood Education

Comparing with other educational levels, such as primary, secondary and tertiary education, early childhood education makes a less significant progress in engaging and taking a part in education for sustainability (Elliot and Davis, 2009). Their argument is supported by their findings that research related to the education for sustainability in the context of early childhood education is considered as a new interest and not as much as those who have been conducted in the other educational levels. In their study, Elliot and Davis (2009) explain clearly some common belief in the early childhood education as the reasons why this area makes a slow progress in engaging with sustainability issues.

Firstly, educators in early childhood education might assume that sustainability in the context of early childhood only means playing in outdoor places. This assumption possibly because for a long time, it is very common in early childhood to combine learning in indoor and outdoor places for children.

Secondly, some sustainability issues, such as famine and drought are not good news. Therefore, they are considered frightening for children. As a result, children that are commonly assumed as innocent, fragile and inexperienced should be protected from thinking about issues in sustainability.

Thirdly, issues in the context of sustainability, for example, global warming, climate change and a hole in ozone are too complex and abstract to be taught for young learners in early childhood education.

Based on that common belief, it is possible that it will be considered as an unwise decision to promote education for sustainability in early childhood context. Children might be seen as too young to be involved and engaged with complex environmental issues, such as climate change, water crisis, deforestation and global warming. Early childhood education is still perceived to provide more opportunities for children to play instead of forcing them to think complex issues such as water crisis, animal extinction and drought. Limited knowledge that children have, also can be used as an argument against the idea of supporting education for sustainability in the context of early childhood. It is doubtful that children will understand some technical terms used in the discussion of sustainability, such as El Nino, ozone, or climate.

However, to promote education for sustainability in early childhood education that common belief and misconception about children should be changed. Davis et al. (2009) believe that early childhood education can be a foundation stage for children to learn education for sustainability. Furthermore, the definition of sustainability offered by the Brundtland Report (The United Nation, 1987) clearly mentions that sustainability is needed to ensure the needs of future generation will not be neglected. Children can be considered as a future generation. Therefore, in the discussion that will be influenced their life in the future, children need to be seen as an active participant instead of being passive. Årlemalm-Hagsér (2013, p. 1784) also emphasizes this argument in her study.

There has also been a transition from seeing children as passive vulnerable recipients to acknowledging them as competent, resilient and active agents with the right to be involved and to be heard in matters that affect them, that is, to recognizing them as active and competent citizen.

A study conducted by Davis (2005) can be seen as evidence that children have the capability to engage with environmental issues and participate in finding the solution. Davis (2005) conducted her study in a kindergarten school in Brisbane, Australia. Teachers in that school believed that children are competent learners to deal with sustainability. Therefore, teachers involved children in a project dealing with environmental issues called Sustainability Planet Project. One of the projects was the water conservation project in which children and teachers discussed the inefficiency of the use of water while at that time Australia suffered a serious drought. Children were given opportunities to participate in finding the solution to that problem. The findings showed that to conserve water used in their school and remind others to use water efficiently, children use a variety of media, such as making signs, drawing pictures and writing messages and put them near the water spots. Furthermore, children's action as a respond to conserve water is not only done in their school but also at home. They tried to persuade their parents to do the same action also at home. In our daily life, there are some experiences that can also be used as counter arguments of those misperceptions.

Frequently, during my experience as an educator in early childhood education and spending time with children, they often make me surprise with their capability to

understand complex issues. I remembered how my student could solve a complex puzzle faster than I did and taught me how to fix a complicated broken toy. In addition, sometimes children become a better problem solver than adults. For instance, when having a conflict with their friend in sharing toys, they can find a solution that can be assumed as a win-win solution for themselves and also for their friends.

Davies et al. (2009) explain that not only based on experience but also from research, young learners have abilities to be involved in complex thinking such as environmental issues. Therefore, they explain further that more advantages will be obtained when children are taught earlier about education for sustainability. From this argument, it can be said that students will have a deeper understanding about the issue of sustainability when it is started from earlier, which is in early childhood education. As a result, they will be more aware and knowledgeable when they are taught about education for sustainability in the next level of school. In addition, Davies et al. (2009) argue that children have the capability to be agents for change and can persuade their parents and family in relation to the idea of sustainability and behavior. The argument from Davies et al. (2009) reminded me of the story from one of mothers of my kindergarten students. She told me that she felt shy with what she did when her child complained when she just threw a plastic bag to the road from her car's window. Her child told her to throw the rubbish in the bin instead of just throwing anywhere.

Promoting Education for Sustainability in Early Childhood Education in Indonesia

In the previous discussion of this essay, it is mentioned some rationale why education for sustainability is expected to be promoted in the early childhood education. In the case of Indonesia, considering the complexity of environmental issues happened in this country, one of the efforts done by the government Indonesia in relation to the promotion of education for sustainability can be seen from the agreement made by the ministry of education and the ministry of environment. As the result of the agreement made in 2005, the ministry of education that in charge in developing a national curriculum and textbooks, has integrated education for sustainability in the content of curriculum (Surendra, 2011).

However, there is something missing here. Education for sustainability in Indonesia is only integrated into the curriculum for primary, secondary and vocational education (Surendra, 2011). It is not also included in the curriculum of early childhood education. Possibly, it is because early childhood education in Indonesia is still an optional while primary and secondary education is a compulsory education.

Early Childhood Education Curriculum in Indonesia

The national curriculum for early childhood education, including kindergarten in Indonesia is developed by the Ministry of Education. The framework of the curriculum can be found in *Peraturan Menteri Pendidikan Nasional Republik Indonesia* (Rules of Republic Indonesia Ministry of Education) number 58, the year 2009 about *Standar Pendidikan Anak Usia Dini* (Early Childhood Education Standard).

The absence of education for sustainability in the curriculum for early childhood education can be seen, for example from the curriculum for kindergarten. Seven subjects are taught for children whose age 4 - 6 years old in the kindergarten's curriculum, namely ethic, religion, fine and gross motoric, physical health, cognitive including science and numeracy, linguistic including literacy and social-emotional competence.

From seven subjects in the current kindergarten's curriculum, there are only two contents founded in cognitive, particularly in science, which have relation with the environment. The first content is children are taught to understand a simple concept in their daily life, such as drizzle, rain, dark and light. The second content is children understand the cause and effect of natural phenomena, such as water causes something to be wet and the wind causes leaves to move. Those two contents are considered not sufficient to be connected with environmental issues in Indonesia currently. Lingard (2007) argues that learning in the class should connect with the issues in the society. Some environmental issues mentioned at the beginning of this essay are the problems faced by the current society of this country. Therefore, it is also important to integrate education for sustainability in early childhood curriculum in Indonesia.

Elliot and Davis (2009) believe that education for sustainability in the context of early childhood education is a significant approach in education based on valuing human and other than human that will stimulate change toward those who learn. Furthermore, the importance of involving children in education for sustainability is well known as a foundation to develop lifelong awareness and positive attitude toward environment (Hacking and Barratt, 2007 as cited in Duhn, 2012). Consequently, education for sustainability in early childhood is aimed to change the way of thinking of children and adults in order to reduce the environmental impact and to develop the practice that is more sustainable in the context of schools, home and wider community. In addition, students will face sustainability issues that might be different from the issues that they face now. Therefore, they should be taught with the way of thinking that enable them to find the solution for the sustainability issues they might face in the future.

Nevertheless, it should be taken into account that education for sustainability is complex. UNESCO Decade of Educational for Sustainable Development (2005) as cited in Elliot and Davis (2009, p. 68) explain that there are some main principles in education for sustainability, namely "interdisciplinary and holistic, values-driven, critical thinking and problem-solving, multi-method, participatory decision making, applicability and locally relevant". It means that education for sustainability involves more than just doing recycle, reuse, reduce or plant trees together with children although those activities can be done as one of the ways to promote sustainability. Gadotti (2010) emphasizes this argument by saying that one of the challenges in education for sustainability is to move from the promotion of isolated actions, such as reuse, reduce and recycle.

Education for sustainability is not simply just changing the learning from classrooms into visiting natural places. Early childhood educators sometimes assume that they already implement education for sustainability since children in early childhood

education are often taught in outdoor or natural places (Elliot and Davis, 2009). Although nature is important to raise children awareness about their environment, however, it is considered as not sufficient to deal with the sustainability issues in the recent situation. Some issues in sustainability such as climate change, a hole in ozone and forest degradation can be a challenge for early childhood educators to communicate those issues to children in order to help them understand.

Based on the explanation above, it should be noted that the success of education for sustainability relies on teachers. Teachers should be knowledgeable and possess skills needed in order to assist children understanding the concept of sustainability and take a part to live more sustainable. Teachers can develop children awareness in environmental issues as long as teachers have sufficient knowledge and possess positive attitude (Tuncer et al., 2009 as cited in Burmeister and Eilks, 2013).

Children learn best with examples, not a theory (Davies et al., 2009). This means early childhood education setting as well as their educators also expected to be active and be a role model in promoting education for sustainability in practice. It seems hypocrite to teach children to save water while the school or teachers ignore the water drip from a tap. One good example for teachers and school might have a significant impact more than one hundred words to children to be persuaded to live in a sustainable way.

Environmental issues are everywhere. It is impossible to ignore that fact. It relates to children's daily life and their life in the future. Education that does not teach and neglect about those issues cannot be considered as a *true* education. It means, a different kind of education from the current education is needed. It is also emphasized by Orr (1992) as cited in Elliot and Davis (2009) by saying "the crisis [of sustainability] cannot be solved by the same of education that has helped create the problem (p. 68). One of expectation from education is to help students to think in order to find the solution to the issues around them. If education only teaches theories that cannot be practiced in daily life, the purpose of education should be questioned.

Conclusion

The survival of people and the destiny of environment are intertwined. Therefore, it is an appropriate time to change the way of our life to be more sustainable. In the case of Indonesia, this country is a developing country that faces many environmental problems. It is an urgency to take some action to address those problems otherwise they will become worse and detrimental. One of them is changing the old paradigm of education that is still economically driven into education for sustainability.

Early childhood education can be a good start to teach education for sustainability for children in order to develop their awareness of sustainability issues and take a part to find the solution. Children can be involved as active agents to deal with the environmental issues and promote a sustainable way of life. However, it should be noted that education for sustainability involves more than a surface understanding. Therefore, it requires educators who are knowledgeable, especially in the context of early childhood education that deal with young learners.

In contrast, teachers cannot teach what they do not know. The current curriculum of early childhood education in Indonesia does not include education for sustainability. It means teachers might have a lack of experience and face difficulties to integrate education for sustainability in their pedagogy. To address this issue, it is expected to include education for sustainability in the curriculum for early childhood education in Indonesia. Deepening education for sustainability in Indonesia is also suggested to consider teachers' professional development, such as pre-service and in-service training to improve their knowledge and understanding of education for sustainability. In addition, children learn best through examples. It means early childhood education and educators in early childhood can play as a role model of sustainability in their practice in order to develop children's awareness of sustainability.

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The logo for the International Association for Frontiers in Education Research (iafor) is centered on the page. It features the lowercase letters "iafor" in a light blue, sans-serif font. The text is surrounded by several overlapping, curved lines in shades of red, pink, and light blue, creating a circular, abstract design.

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Student Perceptions toward Computer Supported Collaborative Learning on Chinese Language Learning

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Abstract

The discussions on second language learning in higher education facilitated by computer supported collaborative learning have increased over the past decades. To generate learners' communications in the target language is the purpose of practicing CSCL for L2 learning. However, few studies have done to understand Chinese L2 learners' perception on computer supported language learning. In this study, computer supported collaborative learning structure was designed to cross the boundary of the languages and cultures. Forty-eight American high school students worked on CSCL assignments with twenty-seven Chinese-native-speaking college students in Taiwan via communication medias such as Skype, Facebook, and emails. Data from survey, interviews and the instructor's observation were collected, and the results showed that the American high school students agreed that this computer supported collaborative learning activities have increased their confidence of learning Chinese language and their confidence of speaking Chinese language, as well as their future learning motivation of Chinese language. During the collaboration, the American students also automatically developed strategies for studying and for more efficient communication methods with native speakers. Furthermore, this study also discusses the problems that the learners encountered during the process and the suggestions for future research.

Keywords: Distance Education, Chinese Language Teaching and Learning, Computer Supported Collaborative Learning, Student Perceptions, Social Interaction

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Introduction

Distance education is one of the main streams of current higher education because it offers a platform for rich learning resources. Distance courses could be scaffold by various Internet learning software such as intro-college Internet learning resource platform or chat rooms, or Internet communication software like email, Skype, Facebook, etc. These are generally considered to have the advantages of overcoming the limits of time and space, so that learners could learn anytime and anywhere. However, distance learning has also been questioned for its lack of peer contact and social interaction, and educators are searching for an alternative solution. The blended e-learning system (BELS), believed to be a promising solution, combines multiple teaching and learning methods including traditional face-to-face instruction and synchronous and/or asynchronous online learning (Wu et al., 2010).

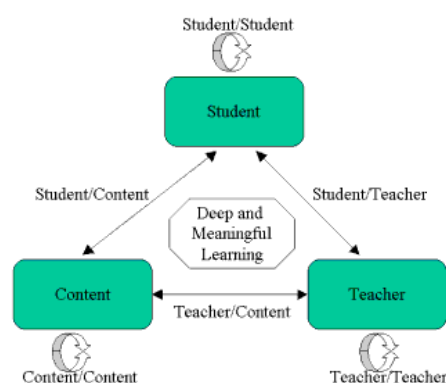
In addition, more and more educators and researchers of Chinese language education found that distance synchronized interaction could provide natural stimulus and environment to a second-language learner from a living environment lack of application of Chinese language (Wu & Tsai, 2008). Therefore, researchers of this study wish to offer a BELS environment and apply computer supported collaborative learning on Chinese language learners and native speakers as a pair and conduct a study of cross-lingual and cross-cultural distance Chinese language learning. Yet, numerous researches on distance education emphasize more on learning effectiveness (Gokhale, 1995; Tian, 2011; Chen & Liu, 2008; Murugaiah & Thang, 2010). Quantity increase of distance teaching and learning does not mean quality learning (Vonderwell, 2003). Consequently, to understand the communication in between learners and instructors and between learners and learners is also important in computer supported learning. This study will explore Chinese language learner perceptions toward cross-cultural computer supported collaborative learning, the relationship between learner perception and learning effectiveness, and the challenges that learners encounter and the solutions.

Literature

1 Interaction of Distance Learning

Recently, more distance educators find out that “interaction” has been playing an important role in distance learning (Anderson, 2003), and there are numerous researches discuss the interaction between instructors and learners and among learners (Cecez-Kecmanovic & Webb, 2000; Jones & Issroff, 2005; Kreijns et al., 2003; Lee, 2004; Lou, Abrami & d’Apollonia, 2001; Shih, 2002; So & Brush, 2008; Stahl, 2005; Stahl, Koschmann & Suthers, 2006; Summers, Beretvas & Gorin, 2005; Vonderwell, 2003). Anderson (2003) uses Wagner’s (1994) definition that defines “interaction” as “reciprocal events that require at least two objects and two actions. Interactions occur when these objects and events mutually influence one another” (pp. 1-2). Anderson and Garrison (1998, cited in Anderson, 2003) introduce an interaction model (Figure 1) and divide interaction into three types: interaction between student and teacher, interaction among students, and interaction between student and content. Anderson (2003) concludes some interaction rules as followed: As long as one of the three interactions reaches high degree of interaction, deep and meaningful learning will be supported; and if students have one or more high-degree interactions, they will gain more satisfactory education experience.

Figure 1. Modes of Interaction in Distance Education from Anderson and Garrison, 1998



2 Computer Supported Collaborative Learning (CSCL)

CSCL has been viewed as one of the promising technology-supported education. The connection of computers and Internet provides learners medias, such as emails, chat rooms, forums, net meetings, and messengers, to communicate and cooperate with each other (Stahl, Koschmann & Shuthers, 2006). Researches show that with rich information and resources, distance computer conferencing could encourage learners to develop social skills, collaborative learning and relationship during the learning process (Anderson, 2003; Lee, 2004). Thus, CSCL is the application of collaborative learning in computer communication media. CSCL is not only an education idea but also an education approach. Educators design a collaborative task as a problem, which requires learners to discipline and apply strategies to solve together. During CSCL, instructors need to interact with learners to guide them through the process. Therefore, how to provoke and maintain the interaction with learners needs to be delicately planned so to coordinate and meet the balance among curriculum, education and technology is an important concern of researchers and instructors (Stahl, Koschmann, Shuthers; 2006).

Current studies on CSCL application on Chinese language teaching and learning, however, are still very rare. During this era of Internet technology, CSCL should be a proper mode for cross-national and cross-cultural cooperation. This study applies CSCL rationale and model, connects Chinese language learners and Chinese language native-speakers from two different nations to work collaboratively to complete assignments and tasks.

3 Social Presence

During the CSCL process, strategies to increase connection and belongingness is important to learners (So & Brush, 2008). In fact, when doing CSCL, the learner sits alone in front of the computer screen and learns; although he or she seems to have "classmates," they are somewhere out there, which also means "virtual." During this learning process, learners' social presence disappears. So and Brush quote the definition of "social presence" by Short et. (1976) as "degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationships." That is, the intimacy from face-to-face interaction and prompt immediacy developed during social process may disappear during the process of CSCL. Consequently, more and more distance teaching and learning research projects focus on learner experiences and perceptions, and on that if "social presence"

has any impact on distance learners (So & Brush, 2008). Study of So and Brush (2008) also shows that students with high degree of collaborative learning have higher social presence. Vonderwell 's (2003) study also indicates that isolation due to physical distance is a big issue in distance education or online courses. Lee (2004) further induces many research studies and emphasizes that language learning is not only based on individual learner's production, but also related to the interpersonal interaction during a collaborative activity, because language learning is a developing process, and learners will use the language as a social communication tool and the social interaction as a tool to enhance their knowledge. Therefore, under the scaffold of CSCL, via peer assistance, learners could solve problems together as well as improve their own language abilities.

4 Student Satisfaction

Another important element to affect the effectiveness of distance learning is student satisfaction. Enormous research results show that general learners give positive feedback to the effectiveness of distance learning (So & Brush, 2008; Lee, 2004), and student satisfaction is not significantly correlated to age, gender, grade, computer proficiency, but it is correlated to social presence (So & Brush, 2008). In general, what learners are not satisfied with distance learning includes not clear teacher expectations, tight timeline, too many assignments, malfunctioned software, slow Internet, and not in-time communication (Gaddis et., 2000; Kitchen & McDougall, 1998, cited in So & Brush, 2008).

5 Challenges of Distance Learning

Lee's (2004) study points out some challenges encountered in distance computer-supported language learning. First of all, learners are from different time zones, and it is not easy to have a common time for them to get online and learn the target language together. Sometimes learners feel frustrated when they misunderstand their partners and thus miss the appointment so they have to re-arrange the appointment. Second, due to their insufficient language proficiency, learners may not understand the native speakers, or they may not know how to fully express themselves. Third, learners may have anxiety from speaking to native speakers with insufficient language proficiency, especially at the beginning. The fourth challenge is technical problem. Some learners waste a lot of time on solving technical problems such as Internet, installation or usage of school software. So and Brush (2008) echo this issue by mentioning that media may have bad impact on learner interaction, especially when learners are not familiar with the communication technology in distance education. These elements may cause some emotional affect like frustration or impatience, which may further affect their learning motivation and the entire effectiveness of CSCL.

When encountering problems, however, some learners would find their own solutions, such as clarifying, verifying, asking for assistance, and self correction. Through these negotiation, communication and correction, language learners in CSCL improve their semantic ability and expand their vocabulary (Blake, 2000; Pellettieri, 2000, cited in Lee, 2004). Lee (2004) suggests researchers take learner language proficiency, computer skills and age into consideration when designing similar distance CSCL activities. Vonderwell (2003) also recommends that icebreaking activities could ease learners' anxiety at the beginning, and a learning community could increase learner motivation and interaction. These suggestions have been

taken into consideration in this study so to provide a more comfortable learning environment.

Methodology

1 Study purpose

The purpose of this study aims to understand the learner's perception of CSCL teaching mode on Chinese language learning. Although CSCL has been widely employed in education, including language learning, discussion of learner perceptions toward CSCL in Chinese language learning is still scarce. Through a cross-national collaboration via media communication, this study explores learner opinions and thoughts toward CSCL in Chinese language learning, and the challenges encountered, and we expect to provide more insights into distance Chinese language teaching and learning.

In this study we will try to understand learner perceptions toward CSCL in Chinese language learning and challenges encountered, if any, and if learner perceptions are correlated with the effectiveness of this CSCL program. In order to reach the goal, we try to answer the following research questions:

1. What are learner perceptions and opinions toward this CSCL program?
2. To what degree do learner perceptions and opinions have impact on their learning achievement?

Hypothesis 1: Learners with better confidence in learning Chinese language have higher learning achievement.

Hypothesis 2: Learners who believe this CSCL mode helps with their Chinese language learning have higher learning achievement.

Hypothesis 3: Learners who encounter the most challenges in this study have lower learning achievement.

Hypothesis 4: Learners who believe they have not worked hard enough in Chinese language have lower learning achievement.

3. What impacts does this study have on learners' behaviors in Chinese language learning?

2 Participants

Participants in this study include 48 high school students in the U.S., 21 males and 27 females, aged from 14 to 19, who took Chinese Language I or II as their selective course. Before the practice of this study, the textbooks used in these two Chinese language courses were equipped with software that students could use school or home computers to complete assignments. In this study, each high school student was assigned a Chinese native speaker as a tutor so to complete four collaborative assignments. These 27 tutors are students from one college in northern Taiwan, including four males and 23 females, aged from 18 to 26.

There were two researchers in this study; one was the instructor for Chinese Language I and II, and the other was a professor of a Chinese language teaching program, also a professor of those 27 college students. Researchers, as well as instructors, thus could conduct the research, observe the process, and properly adapt the intervention to fit student needs.

3 CSCL assignment and activity design

3.1 CSCL assignment designing

In order to enhance the effectiveness of this cross-cultural CSCL, four assignments and one cultural activity were designed. Each collaborative assignment contains four language learning skills: listening, speaking, reading and writing. The instructor of Chinese language course would explain each assignment goal and content to the American learners and remind them to preview the assignment before meeting their Taiwanese tutors. For example, they needed to ask the tutor questions like “What date is your birthday?” in Chinese, as well as answering the same question in Chinese when the tutor asked back. After the conference meeting, students needed to write, in Chinese characters, the correct answers collected from their tutors and submit the assignment to the instructor.

According to Chu (2011), the CSCL assignments in this study are divided into two types. First, blending authentic situations into discussion allows learners and tutors to play roles and asking each other questions in selling and buying things and in comparing the diet cultures in their nations. Second, using pictures helps learners practice in certain authentic situations, such as using authentic Taipei road map for learners to ask their tutors for directions.

3.2 Cultural activity for Dragon Boat Festival

Jones and Issroff (2004) induces from researches and suggests create “shared histories” to increase meaningful learning and attachment during CSCL. Vonderwell (2003) also promotes “learning community” to improve learning motivation and interaction. White (2006) further suggests scholars to actively study the impact of CSCL in language learning on the development of cross-cultural competence. Peck (2012) also points out that any cultural activity should include festival celebration and hands-on activities so to allow learners physically experience the culture. Therefore, in order to enhance American student motivation and their interaction with Taiwanese tutors, as well as to better understand Chinese culture, the two researchers in this study had designed a cultural activity: Dragon Boat Festival Cosplay Competition. Before the competition, two researchers had discussed the legends of Dragon Boat Festival: Qu Yuan and Lady White Snake, and announced the in-coming Cosplay competition. American students and Taiwanese tutors needed to choose a role from the two stories and made their own costumes. On a certain date, students and tutors dressed up and, via conferencing meeting, appreciated each other’s cat walk show. Afterwards, students and tutors used Facebook to vote their favorite character. Through this activity, distance students and tutors not only shared a common experience but also personally experienced the culture.

Research method

4.1 CSCL process

From 2011 through 2012, we recruited 48 high school students who learned Chinese language in the U.S. and 27 college students from Taiwan to join this distance CSCL project. During one academic trimester, American students had 5-hour Chinese language instruction in class per week, plus 1-2-hour conferencing meeting with Taiwanese tutors to complete assignments. Based on the Chinese language curriculum, there were four collaborative assignments, which required learners to work with their own tutor via computer medias like Skype, Emails, Facebook or MSN, and one cultural activity in this study.

American students and Taiwanese tutors were both required to have 4-hour pre-assignment training, so that they were familiar with the communication software like Skype, knew the time difference between the U.S. and Taiwan, and learned how to contact each other and make an appointment politely.

4.2 Data Collection (Assessment, survey, interview, and teacher observation)

In order to see the impact of this study on learner effectiveness, we use the final grades of previous trimester as pre-test scores and the final grades of the current trimester as post-test scores. Background questionnaires and related surveys will be administrated before this study. Moreover, the Chinese language instructor will keep an observation journal of student behavior during the study. After the study, the researchers will administrate another questionnaire to collect learners' perception and opinions toward the study and do further student interviews.

Results

4.1 Survey results

After completing the CSCL research, the researchers have asked 48 American students to do a questionnaire so to understand their opinions and thoughts about this study, and the results are shown in Table 1 and 2.

The numbers in Table 1 show that half (50.0%) of Chinese language learners in this study agreed that this study has made them more confident when learning and speaking Chinese language. Also, 66.7% participants have found out that they needed more time to learn Chinese language so to have more successful communication in Chinese. Results in Table 1 indicate that over 70% participants believed that this study helped them the most in listening and speaking; over 60%, pronunciation in Chinese; and almost half (47.9%), Chinese language grammar.

Several points are concluded from Table 2. First, challenges that participants encountered in this project include: 1. Time difference between Taiwan and the U.S. made it very difficult for students to set up an appointment with their tutors (56.3%); 2. it is not easy to understand the tutor's pronunciation and vocabulary (48.5%); and 3. the interaction with the tutor (22.9%). Second, participants felt that the most interesting parts of this project include chatting with tutor (45.8%), using Skype and Internet (41.7%) and the tutor himself/herself (35.4%).

Table 1. Learners' opinions toward CSCL study (Part I)

Questions	Frequency	Percentage
E-tutor program makes me confident with learning Chinese		
Strongly disagree & Disagree	10	20.9%
Neutral	14	29.2%
Strongly agree & Agree	24	50.0%
E-tutor program makes me confident with speaking Chinese		
Strongly disagree & Disagree	11	23.0%
Neutral	13	27.1%
Strongly agree & Agree	24	50.0%
E-tutor program makes me understand more of Chinese Culture		

	Strongly disagree & Disagree	15	31.3%
	Neutral	15	31.3%
	Strongly agree & Agree	18	37.5%
E-tutor program makes me realize I need more time to study Chinese			
	Strongly disagree & Disagree	6	12.5%
	Neutral	10	20.8%
	Strongly agree & Agree	32	66.7%

Table 2. Learners' opinions toward CSCL study (Part II) (Multiple-choice questions; only top three choices are shown)

In which way (s) do you think this E-tutor program help you the most with learning Mandarin?		Frequency	Percentage
1	Listening & speaking	37	77.1%
2	Pronunciation	30	62.5%
3	Grammar	23	47.9%
Which part (s) do you think is the most challenging in this E-tutor program?			
1	Setting up meeting time	27	56.3%
2	Understanding tutor's pronunciation/vocabulary	22	45.8%
3	Interacting with tutor	11	22.9%
Which part (s) in this program do you like the most, or is the most interesting? And why?			
1	Chatting with tutor	22	45.8%
2	Using Skype	20	41.7%
3	My tutor	17	35.4%

In order to understand if students' perceptions are related to their academic learning achievement, the researchers ran t-test on their pre-test and post-test scores. Since exams are different between Level 1 and Level 2 Chinese courses, we ran separate t-tests. The results in Table 3 show that among students in Level 2 (N=27), there is statistical significance on learning achievement between students with increasing confidence in Chinese learning and students without increasing confidence ($t=-2.925$, $p<0.05$). That is, students increasing their confidence of learning Chinese language due to this project also have significant improvement in their learning achievement. Similarly, among students in Level 2, there is statistical significance on learning achievement between students increasing confidence of speaking Chinese and students not increasing confidence ($t=-2.829$, $p<0.05$), as well as between students who believed that this project helped them a lot and students who did not believe so ($t=-2.628$, $p<0.05$). In conclusion, among Level 2 students, those who believed this project had helped them and enhanced their confidence of learning and speaking Chinese language had significant improvement in learning achievement. However, although the belief that this project had increased their confidence of learning Chinese language are correlated to their post-test scores, there is no any statistical significance between those beliefs and their learning achievement among Level 1 students (N=21).

Table 3. T-test results for Level 2 student learning achievement

		N	Mean	SD	<i>t</i>
Increasing confidence of learning Chinese	NO	14	85.1057	11.21848	-2.925**
	YES	13	98.4931	12.56404	
Increasing confidence of speaking Chinese	NO	14	85.2657	11.19871	-2.829**
	YES	13	98.3208	12.77776	
This program is helpful for learning Chinese	NO	12	84.6608	11.65277	-2.628*
	YES	15	97.0640	12.59026	

* $p < .05$ ** $p < .01$

Additionally, there is no statistical significance between challenges encountered and their learning achievement. After further examining the distribution of student scores, we find that students with lowest post-test scores in Level 1 marked “understanding tutor’s pronunciation” as very challenging, and that students with lowest post-test scores in Level 2 marked “understanding tutor’s pronunciation” and “making an appointment” as very challenging. We also note that challenges from students with low post-test scores in Level 1 are equally distributed, while challenges from students with low post-test scores in Level 2 are skewed in technical problems like “making an appointment” and “using Skype and Internet”.

4.2 Interview and observation results

After the project, the researchers interviewed 8 participants on Facebook in order to better understand their thoughts about this project, and the results, along with the instructor’s observations, are further analyzed as followed:

4.2.1 CSCL enhances participant social network

This study not only helps learners build new social network but also tightens the bounds among instructor and students and among students. Thanks to the connection between American high school students and Taiwanese tutors, the interaction between the instructor and American students increases. Before the project, the communication tubes between American students and the instructor was limited to class lecture and emails; but after the project, the communication tubes have been expanded to other computer medias like Skype and Facebook. Besides, the relationship between American students and their tutors has been developed as well. Although American high school students showed their hesitations when first contacting with tutors, they are impressed later by tutors’ enthusiasm to help them learn Chinese language and wish they could have more similar learning opportunities in the future.

Furthermore, to the researchers’ surprise, American participants were found to form their own study group automatically and discuss the assignments before meeting tutors. Study groups not only reduced student embarrassment when they faced tutors but also enhanced peer relationship.

4.2.2 Facing native speakers derives communication strategies

Learners have encountered some challenges, such as language anxiety from facing native speakers, or frustration from not being able to understand native speakers. Some learners have developed some communication strategies, such as using body languages or pictures, asking native speakers to repeat or slow down, or previewing the assignments so to smooth the communication. All of these are the communication strategies derived from the contact between second language learners and native speakers in this CSCL project.

4.2.3 Increasing icebreaking activities and time helps CSCL

Although the two researchers had designed the first CSCL assignment as an icebreaker and also planned a cultural activity so to enhance the connection between learners and tutors, learners still think that they should have had more time knowing a stranger from a different culture. Also, some learners suggest the instructor assign one tutor for a group of learners; dividing learners into groups of three and assigning each group one tutor allows learners to be able to discuss assignments together and then to complete the assignments with the tutor as a group.

Discussion

We try to answer the research questions in the following discussion.

(1) What are learner perceptions and opinions toward this CSCL program?

The majority of American participants in this study express positive opinions toward this CSCL project, including increasing their confidence of learning Chinese language, confidence of speaking Chinese language, and motivation of learning Chinese language. More than 60% participants believe that this CSCL project helped with their listening and speaking abilities, especially pronunciation. Over half participants think the biggest challenge they encountered in this project is the time difference; it was not easy to set up an appointment with the tutor from the other side of the earth, which caused some misunderstanding and frustration. Although only one third of participants believe that this project helped them better understand Chinese culture, more than half of the participants in the interview pleasantly talked about the Dragon Boat Festival Cosplay competition, and they were very impressed by tutor's enthusiasm of helping American students to learn Chinese language and hoped that they would have future opportunities to contact Chinese tutors in the future.

(2) To what degree do learner perceptions and opinions have impact on their learning achievement?

Our first hypothesis is: Learners with better confidence in learning Chinese language have higher learning effectiveness. T-test results show that among Level 2 learners, compared to learners who do not increase their confidence of learning Chinese language, those who increase confidence of learning Chinese language have statistically significant higher learning effectiveness. Similarly, learners who increase their confidence of speaking Chinese language in this study have statistically significant higher learning effectiveness. Our second hypothesis—Learners who believe this CSCL mode helps with their Chinese language learning have higher learning effectiveness—is also established in this study, but limited to Level 2 learners only. Hypothesis 3—Learners who encounter the most challenges in this study have lower learning effectiveness—is not established because T-test has no statistical significance. However, learners with the lowest scores in two levels all

choose “understanding tutor pronunciation” as the biggest challenge, while learners with low scores in Level 2 choose technical problems as the biggest challenge, instead of language problem. Hypothesis 4—Learners who believe they have not worked hard enough in Chinese language have lower learning effectiveness—also is not established due to no statistical significance in T-test. In summary, the study results indicate that among Level 2 learners, those who believe this study have helped and enhanced their confidence of learning and speaking Chinese language have higher learning effectiveness in Chinese learning.

(3) What impacts does this study have on learners’ behaviors in Chinese language learning?

There are three points worthy of discussion. First, the collaborative relationship is the key element for CSCL effectiveness. This study not only establishes the interaction between American high school students and Taiwanese tutors, but also enhances the connection between the instructor and American high school students as well as the connection among students. However, it needs further discussion that if students contacts the instructor to ask for assistance with CSCL assignments or to reduce the language anxiety from facing the native speakers. Second, this cross-national collaborative project has improved student learning motivation. Many researchers agree that second culture acquisition is the key factor to second language acquisition (Altstaedter & Jones, 2009; Brown, 2000; McKay, 2002; Robinson, 1991; Storm, 2010; Chu, 2011). Through this cross-national collaborative experience, learners have the opportunities not only to contact Chinese native speakers’ culture but also to do culturally comparative thinking. Consequently, cultural interaction could provoke learner motivation and reach a better learning effectiveness on second language acquisition, which is also the best result in this study for the researchers. The third point surprises the researchers the most: This study has stimulated self-regulated learning. Although this behavior only happened among few students, they automatically formed a study group, previewing and discussing the assignments, and then video-conferenced with the tutor. This study group helps learners not only reduce the embarrassment from facing the tutor but also reinforce peer connection, as well as promoting Chinese language learning atmosphere in class. This situation did not exist before the CSCL project; before CSCL project was practiced, most learners had completed their assignments alone on computer. As a result, this CSCL project has unexpectedly allowed learners to develop their own learning methods, which deserves attention in the future CCSL projects.

Conclusion

This is a Net Generation, and distance CSCL model will be applied more commonly in various courses, because this model could extend learning and reach more learners in the world (Hoopingarner, 2007). Beside exploring the learning effectiveness of this learning model, researchers also need to understand learner perspectives for their opinions involve their learning motivation, interaction with instructors, social interaction among peers, satisfaction toward the course and related activities, and the challenges encountered during the process, which all have impact on learning effectiveness, as shown in this study. Through our study, we hope to shed light on learner perceptions and opinions about distance CSCL so to assist future CSCL projects in Chinese language teaching and learning.

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Automated Students' Thai Online Homework Assignment Clustering

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Abstract

This paper proposes a model to clustering students' Thai online homework assignments before teachers go further for grading, in other words Automated Students' Thai Homework Assignment Clustering. The proposed model consists of 5 parts: 1) Thai Word segmentation, 2) Stop-word removal, 3) Term Weighting, 4) Document Clustering, and 5) Performance Evaluation. The Thai Word segmentation splits sentences into individual tokens. The Stop-word removal defined as a term which is not thought to convey any meaning as a dimension in the vector space. The Term Weighting converts all tokens to vector space by TF-IDF. The Document Clustering is the process that is related to clustering algorithms computing a k-way cluster of a set of other documents. The last element of the prototype is performance evaluation of clustering validation measures in comparison between machines and human beings. The prototype was developed and tested by using Java programming, K-Means Library of Weka 3.7.9, and MySQL DBMS. The experiment was conducted with 1,000 undergraduate students who were assigned to complete a particular exercise in the course of Information Technology for Learning. The experimental results showed that the performance of the model could be as effective as the human performance with the 0.92 of Entropy, 0.80 of Purity and 0.80 of F-measure notwithstanding, the model apparently produced similar results significantly to human begins and faster outcome, which can facilitates teachers in terms of clustering into student groups and the students' responses, compared to other students or homework assignment grading.

Keywords: Document Clustering, e-Learning assessment, K-Means

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Introduction

Education is great challenge, as a result of technology and its influence in the school. As a result, there are new ways of teaching, new tools for learning, new ways of living and even new ways of thinking. In the 21st Century, the classroom is especially advent of large scale e-Learning. For instance, Massive Open Online Course (MOOC) is an online course aimed at unlimited participation and open access via the web [1]. Teaching activities are different from traditional teaching activities. Students will be taught according to their own abilities and interests. The contents of the lessons which include text, images, audio and video will be delivered to students via a web browser. Students can consult teachers and share their ideas with each other as well as students in regular classes using modern communication tools such as e-mail, web-board, and chat. It is a class for anyone, anywhere and anytime supporting a large number of students. Homework assignment is a task or piece of work assigned to someone as part of a course of study. The students' homework assignment and their submission were provided in the electronic form. Although the e-Learning has a grader, it has a problem in terms of wages and the consistency of graders. The e-Learning classes are likely to increase in term of the number of attending students. One course may have several thousand students enrolled. It takes enormous times in grading students' homework assignment. Teachers do not have time to prepare teaching material or perform a research.

Essays are the most useful tool for assess of learning outcomes. However, it has in terms of the different human assessors, according to Mason [2] reported about 30% of teachers' time is devoted to marking on essays. Researchers were interested in the development and in use of automated assessment tools for essays which have grown exponentially, due to both the increase of the number of students attending universities and to the possibilities provided by e-Learning approaches. The idea of automated essay grading is based on text categorization techniques. Valenti, Neri, & Cucchiarelli [3] reports current tools for automated essay grading such as Project Essay Grade (PEG), Intelligent Essay Assessor (IEA), Educational Testing service I, Electronic Essay Rater (ERater), C-Rater, BETSY, Intelligent Essay Marking System, SEAR, Paperless School free text Marking Engine and Automark. NLP and classification techniques were applied for the current tools for automated essay grading mentioned above. However, no tools for automated Thai essay grading has been done yet.

The advance of technology, results in the immense of amount information in the form of e-document; therefore, document clustering is necessary in grouping information and doing text mining, information retrieval, pattern recognition, and keyword clustering [4], [5], [6], [7]. Document clustering allows these operations to be more efficient in terms of speed.

According to the problems mentioned above, the researcher is interested in developing a model to analyze students' Homework assignment clustering using K-Means technique. It is hoped that this model can help teachers in grouping students' Homework assignment more effectively with shorter time.

Literature Review

Document Clustering systems are used more and more often in text mining, especially to analyze texts and to extract knowledge they contain [8][9]. For example, Business: Market research companies use clustering a lot. With the clusters defined, the marketing companies can try to develop new products or think about testing products for certain clusters in the results. The Internet: Social media network analysis uses clustering to determine communities of users. Regarding to Computing: With the rise of the “Internet of Things”. Clustering can be used to group the results of the sensors. Course work in the education sector, especially with the advent of large scale learning online, can be clustered into student groups and results. Clustering is used often in digital imaging. When large groups of images need to be segmented, it's usually a cluster algorithm that works on the set and defines the clusters. Algorithms can be trained to recognize faces, specific objects, or borders. Law Enforcement: crimes are logged with all the aspects of the felony listed. Police departments are running clustering and other machine learning algorithms to predict when and where future crimes will happen.

The Clustering are several algorithms in clustering data which are difficult to define the best one because each algorithm has its own strengths and weaknesses. Several researchers compared the effectiveness of algorithms such as Abbas [10] who studied and compared the differences of 4 data clustering algorithms, i.e. K-Means, HCA, SOM, and EM. All these algorithms are compared according to the following factors: size of dataset, number of clusters, type of dataset and type of software used. He conclude that the performance of K-Means and EM are better than HCA and SOM, the quality of K-Means and EM become very good for huge dataset. Amine, Elberrichi, and Simonet [11] conducted a research on evaluation of text clustering methods using WordNet. The results obtained show that the SOM-based clustering method using the cosine distance provides the best results. Karnjana [12] proposed a new method of data clustering called K-Inverse harmonic means (KIHM) by using inverse radial basis function to calculate the interval instead of Euclidian distance measurement. She conclude that the data clustering with accuracy from the highest to the lowest as follows IHM, KHM, KM, and when considering the performance of each method has descending order of the KHM, KIHM, KM. Kantiga [13] compared the effectiveness of data clustering and concluded that SOM together with Fuzzy C-Means resulted in better effectiveness when each clustering data overlapped. Kwale [14] conducted a study on K-Means and family including K-Means, K-Medians, Bisecting K-Means and K-Medoids (PAM, CLARA, CLARANS) to find strengths and weaknesses. He can conclude about K-Means and family is easy to use effectively with few weaknesses. Besides, he suggested that it should be used together with other document clustering algorithm to select the strength of certain manner. There are several researchers who are interested in the effectiveness of using clustering algorithm and have applied in several works.

Kanokrat and Nattanon [15] applied data clustering technique to investigate the research on the analysis of specialists' opinions: Inference analysis and data clustering for Delphi Technique researchers. They analyzed the inferences by clustering words and phrases with the same structure level using bi-setting K-Means clustering technique. They conclude that their developed model can help reduce analyzing time and errors from bias. Albayrak and Amasyali [16] have developed medical diagnosis

system using clustering technique in grouping data of thyroid patients. Chureerat, Jetsada, and Sataporn [17] have employed clustering technique in categorizing Thai news. Oranuch [18] conducted a research by grouping Thai handicraft customers by Kohonen's Self Organizing Maps (SOM) together with K-Means and found that they were appropriate in dealing with a high number of data while Hierarchical Cluster (HC) together with K-Means are appropriate for dealing with a low number of data. Sasithorn [19] using SOM with Fuzzy C-Means for grouped Technology Transfer and Agricultural Service centers in local area of Thailand.

As mentioned in the literature review above, clustering technique has been widely used in grouping documents and other applications. However, there has been no application of document clustering in analyzing students' Thai homework assignment. The researcher has an applying K-Means algorithm for clustering students' Thai online homework assignment.

Research Methodology

The researcher has a concept in Automated Students' Online Homework Assignment Clustering to help teachers to grouping students' Thai online homework assignment effectively with shorter time. The conceptual framework of the research is shown in Figure 1. Principles of Automated Students' Thai Online Homework Assignment Clustering can be described as follows. When the teacher assigned the homework assignment via e-Learning system, after students finished their homework assignment, they sent it on line in the system. The Automated Students' Thai Online Homework Assignment Clustering will group answers of students according to the similarity of the documents before submitting them to the teacher grading.

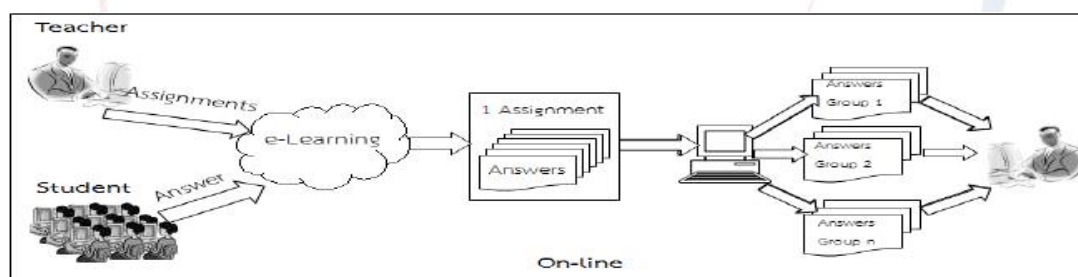


Figure 1: A conceptual framework of Automated Students' Thai Online Homework assignment Clustering.

1) Research Method

The proposed model of Automated Students' Thai Online Homework Assignment Clustering consists of 5 parts: 1) Thai Word segmentation, 2) Stop-word removal, 3) Term Weighting, 4) Document Clustering, and 5) Performance Evaluation. Each part is processed sequentially as shown in Figure 2. The Thai Word Segmentation that splits sentences into individual tokens. The Stop-word removal defined as a term, which is not thought to convey any meaning as a dimension in the vector space. The Term Weighting converts all tokens to vector space by TFIDF. The Document Clustering is the main focus of this research, the process that is related to clustering algorithms computing a k-way cluster of a set of other documents. The last element of the prototype is performance evaluation of clustering validation measures in comparison between machines and human beings.

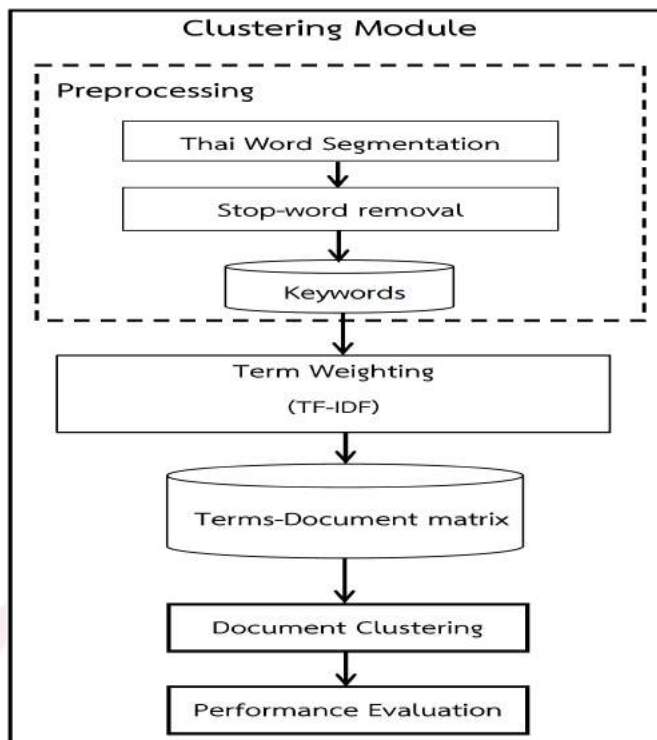


Figure 2: The proposed model of Automated Students’ Thai Online Homework Assignment Clustering.

The detail of proposed model of each process is explained and illustrated in Figure 3.

Document	Thai Word Segmentation
Doc1	ค้นคว้า ความรู้ เพิ่มเติม จาก เนื้อหา การเรียน ใน ห้อง เรียน
Doc2	ค้นคว้า ข้อมูล ใน เรื่อง ที่ เรียน และ สิ่ง ที่ อยาก ได้ ความรู้ เพิ่มเติม
Doc3	ช่วย ใน การ ค้นคว้า ข้อมูล ได้ สะดวก และ มี ประสิทธิภาพ มาก ยิ่งขึ้น
Doc4	ใช้ ติดต่อ สื่อสาร กับ เพื่อน กับ อาจารย์ ได้ สะดวก มาก ขึ้น
.....

Document	Stop-word removal
Doc1	ค้นคว้า ความรู้ เพิ่มเติม จาก เนื้อหา การเรียน ใน ห้อง เรียน
Doc2	ค้นคว้า ข้อมูล ใน เรื่อง ที่ เรียน และ สิ่ง ที่ อยาก ได้ ความรู้ เพิ่มเติม
Doc3	ช่วย ใน การ ค้นคว้า ข้อมูล ได้ สะดวก และ มี ประสิทธิภาพ มาก ยิ่งขึ้น
Doc4	ใช้ ติดต่อ สื่อสาร กับ เพื่อน กับ อาจารย์ ได้ สะดวก มาก ขึ้น
.....

Key word	tf _{ij}				df _i	N/df _i	IDF _i	W _{ij} =tf _{ij} *idf _i			
	N1	N2	N3	N4				N1	N2	N3	N4
ค้นคว้า	1	1	1	1	4	1	0	0	0	0	0
ข้อมูล	3	0	1	0	2	2	0.3	0.9	0	0.3	0
ความรู้	0	0	1	1	2	2	0.3	0	0	0.3	0.3
อาจารย์	0	1	0	2	2	2	0.3	0	0.3	0	0.6
สื่อสาร	1	1	2	1	4	1	0	0	0	0	0

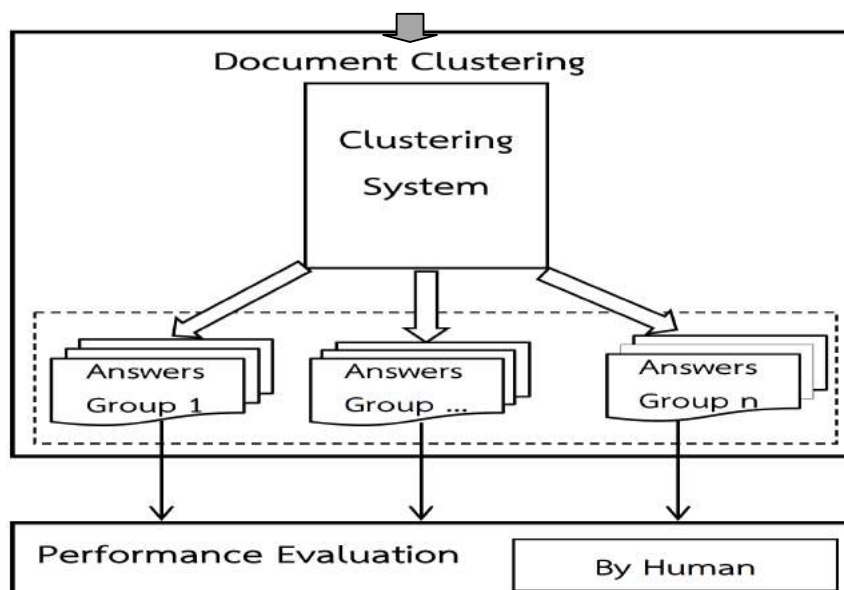


Figure 3: The detail of proposed model of Analysis of Automated Students' Thai Online Homework Assignment Clustering.

2) Population and Sample

The research was conducted with 1000 undergraduate students, registering for the subject of Information Technology for Learning at Thepsatri Rajabhat University. Each answer document contains less than 250 words. The label or evaluation clustering had been done by 23 teachers.

3) Evaluation Instruments

The evaluation was done by using the Entropy, Purity, Recall, Precision and F-measure [20] are calculated as follows.

-The entropy of a cluster

$$E_i = \sum_j -(P_{ij}) \log_2 (P_{ij})$$

- The overall entropy

$$E = \sum_{i=1}^r \frac{n_i}{n} * E_i$$

- The purity of a cluster

$$purity_i = \frac{1}{n_i} \max_{j=1}^k \{n_{ij}\}$$

- The overall purity

$$purity = \sum_{i=1}^r \frac{n_i}{n} purity_i = \frac{1}{n} \sum_{i=1}^r \max_{j=1}^k \{n_{ij}\}$$

-The F-measure of a cluster

$$F_{ij} = \frac{2 * Recall(i, i) * Precision(i, j)}{Recall(i, i) + Precision(i, j)}$$

$$Recall(i, j) = \frac{n_{ij}}{n_j}$$

$$Precision(i, j) = \frac{n_{ij}}{n_i}$$

-The overall F-measure

$$F = \sum_{i=1}^r \frac{n_j}{n} * \max \{F(i, j)\}$$

4) Data preparation

The subjects in this study were asked to complete the exercise in the course of Information Technology for Learning with 1000 answers. The preprocessing had been done on Thai Word Segmentation and Stop-word removal before Thai Word Segmentation split the sentences into individual tokens. The Stop-word removal was defined as a term, which was not conveyed any meaning as a dimension in the vector space using stop-word dictionary.

5) Research tools and algorithm for clustering

The prototype of Analysis of Students' Thai Online Homework Assignment Clustering was developed and tested by using Java programming, K-Means Library of Weka 3.7.9, and MySQL DBMS. The answers were clustered into groups of similar documents using K-Means algorithm. The main advantages are that K-means clustering is easy to use and understand, and works faster and more efficiently with smaller documents, and uses less memory $O(k)$ and with less time complexity $O(knl)$: whereas, n is the number of patterns, k is the number of clusters, and l is the number of iterations taken by the algorithm to converge [21].

Experimental Results

The experiments used K-Means algorithm for clustering by configuring $k = 2, 3, 4,$ and 5 . The tables below are present the performance of document grouping using K-Means algorithm. The research findings are described in details as follows:

Table 1: Measures of cluster Validity (2 classes).

Label	By Human		Total	Entropy	Purity	Recall	Precision	F-measure
	Cluster #0	Cluster #1						
By Machine								
Cluster #0	296	40	336	0.53	0.88	0.93	0.88	0.90
Cluster #1	23	641	664	0.22	0.97	0.94	0.97	0.95
Total	319	681	1,000	0.32	0.94	0.93	0.92	0.94

Table 2: Measures of Cluster Validity (3 classes).

Label	By Human			Total	Entropy	Purity	Recall	Precision	F-measure
	Cluster #0	Cluster #1	Cluster #2						
Cluster #0	295	12	35	342	0.69	0.86	0.86	0.86	0.86
Cluster #1	21	360	40	421	0.73	0.86	0.94	0.86	0.90
Cluster #2	27	9	201	237	0.74	0.85	0.73	0.85	0.78
Total	343	381	276	1,000	0.72	0.86	0.84	0.86	0.85

Table 3: Measures of Cluster Validity (4 classes).

Label	By Human				Total	Entropy	Purity	Recall	Precision	F-measure
	Cluster #0	Cluster #1	Cluster #2	Cluster #3						
Cluster #0	361	28	38	24	451	1.03	0.80	0.89	0.80	0.84
Cluster #1	8	78	11	8	105	1.23	0.74	0.48	0.74	0.58
Cluster #2	26	17	105	45	193	1.67	0.54	0.64	0.54	0.59
Cluster #3	12	39	11	189	251	1.13	0.75	0.71	0.75	0.73
Total	407	162	165	266	1,000	1.20	0.73	0.68	0.71	0.73

Table 4: Measures of Cluster Validity (5 classes).

Label	By Human					Total	Entropy	Purity	Recall	Precision	F-measure
	Cluster #0	Cluster #1	Cluster #2	Cluster #3	Cluster #4						
Cluster	146	9	27	28	51	261	1.78	0.56	0.72	0.56	0.63
Cluster	12	125	22	14	25	198	1.66	0.63	0.80	0.63	0.70
Cluster	12	6	78	7	17	120	1.59	0.65	0.51	0.65	0.57
Cluster	14	6	19	98	8	145	1.51	0.68	0.65	0.68	0.66
Cluster	19	11	6	4	236	276	0.85	0.86	0.70	0.86	0.77
Total	203	157	152	151	337	1,000	1.44	0.68	0.68	0.67	0.68

Table 5: The average efficiency rating of Automated Students' Thai Homework Assignment Clustering.

No. of Cluster	Entropy	Purity	Recall	Precision	F-measure
2 Cluster	0.32	0.94	0.93	0.92	0.94
3 Cluster	0.72	0.86	0.84	0.86	0.85
4 Cluster	1.20	0.73	0.68	0.71	0.73
5 Cluster	1.44	0.68	0.68	0.67	0.68
Average	0.92	0.80	0.78	0.79	0.80

The results showed that the developed model can find the similar or the same answers accurately with less time than human work.

Conclusion and Future Work

The purpose of this research was to group students' Thai Online Homework Assignment using document clustering. Students participated in the experiment consisted of 1000 bachelor degree students registered in Information Technology for Learning. The assignments were administered to the students and the students' answers were clustered. The experimental results showed that the performance of the model could be as effective as the human performance with the 0.92 of Entropy, 0.80

of Purity and 0.80 of F-measure; notwithstanding, the model apparently produced similar results significantly to human begins and faster outcome.

According to the research finding, this research showed that document clustering technique can grouping the documents correctly with similar results done manually. However, document clustering took less time compared to human. It can be grouping homework assignment before grading. It clearly clustering can perform reduce the time in grading the homework assignment. The teachers have more time to develop other innovative works such as research or new teaching medias and help them reducing employment of graders in institutions.

There are still several ways in which our work can be enhanced. Based on our results, we plan to use classification techniques to develop automated Thai homework assignment grading system.

The logo for 'iafor' is centered on the page. It consists of the lowercase letters 'iafor' in a light blue, sans-serif font. The text is surrounded by two large, overlapping, semi-transparent circular arcs. The outer arc is light blue and the inner arc is light red, both curving around the central text.

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Entrepreneurial University: A Case Study of De La Salle Araneta University

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Abstract

The results of this study will benefit De La Salle Araneta University in the Philippines, other Higher Education Institutions (HEIs) and its policy makers. It provided DLSAU with insights regarding their present status as an entrepreneurial university and consequently serves as basis for strategic planning. Other HEIs will gain valuable insights regarding entrepreneurial university in the Philippine setting that can help in institutional planning. The larger task on this research is to assess the DLSAU entrepreneurial system through the creation of a prototype framework focusing on the institution viability towards an entrepreneurial university. Using the seven areas to determine if the university is an entrepreneurial university, the study conducted revealed that the said university partly was able to comply. Using the institute's contextualization of the areas as guiding framework for entrepreneurial university, the said university may not be considered an entrepreneurial university due to the partial or total absence of the compliance for the said areas.

Case study was used as research design. Research material sources include individual interviews, direct observations, and physical artifacts documented through transcription, voice recording and pictures taken, reference materials from the university archives and library.

This research is both relevant and timely as it explores ways in which an entrepreneurial university can embed an authentic entrepreneurial model within DLSAU's education systems. The researchers took an expansive view of an entrepreneurial university as the "practice of creating, finding and acting on opportunities to create value" that can apply equally to other realms outside of business.

Keywords: Entrepreneurship, Leadership and Governance, Strategic planning, Mission and Vision, Stakeholders

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Introduction

Entrepreneurial university is a concept that came about as a response to the changing demands of society. Gibb, Haskins and Robertson (2009) observe that it is a university's response to the entrepreneurial challenges in the environment. Citing Casson (1982), they define entrepreneurial as a way of coping with uncertainty and complexity and at the same time creating uncertainty and complexity. In order to be responsive to the constant shifts in environmental demands, innovation and renewal are necessary. Such are possible only by deconstructing and reconstructing referred to as 'creative destruction' by Schumpeter (Gibb, Haskins and Robertson, 2009).

The entrepreneurial concept offers a formula for a university's institutional development where structural changes are effected through a redefinition of its identity including the encouragement of diversified financing schemes, development of new university departments and activities in response to the needs of society (Peterka, 2011). The idea of Gibb and Hannon (2009) is that an entrepreneurial university should be flexible, strategic and coherent with the needs of their environment; and "is unafraid to maximize its potential for commercialization of its ideas and create value in society and do not see this as a significant threat to academic values".

The Entrepreneurial University: Leadership and Institutional Capacity to Respond

Peterka (2011) posits that entrepreneurial universities are institutions capable of change, without compromising their mission, towards complex and uncertain environment - active actors of the society, affecting their environment (industry), just as the environment affects them. The evolution of these universities created a need for a paradigm shift in its leadership and governance (Gibbs, Haskins and Robertson, 2009). The authors argue that the leadership needed is one that is both intellectual and visionary for two reasons - "to remove ideological and 'concept of a university' barriers associated with the entrepreneurial paradigm; and to carry this through in the particular context of the nature of the university itself and its existing culture, mission and strategy".

Peterka (2011) argued that three of the characteristics of an entrepreneurial university is that one, each of its parts has to be entrepreneurial, and that it has to be a unified university where all its employees and departments share a common vision; two, it should create alternative sources of financing to ensure its financial independence, and enable it to preserve independence and prevent complete commercialization; three, the university's leadership capacity should be strong. Leadership for an entrepreneurial university entails an assessment of the institution's capacity to respond to environmental demands and building on this capacity (Gibbs, Haskins and Robertson, 2009). Due to differences in organizational culture and leadership capacity, the process of building the entrepreneurial capacity differs from one university to another (Peterka, 2011).

Technological changes, innovations, and increasing global competitiveness demand a change in the organization and functioning of each market actor, including

universities. "Universities must turn into evolutionary entrepreneurial organizations to fulfil their mission in an economy which must increase wealth and create employment by incorporating new knowledge in innovative products and technologies" (Röpke 1998: 8 in Peterka, 2011). Entrepreneurial orientation is the way in which some institution/ organization/ company should be organized in order to be able to respond to the turbulent environment in which it operates (Lumpkin and Dess, 1996 in Peterka, 2011).

Emergence of entrepreneurial university is a response to growing importance of knowledge in the national and regional innovation system in which university is the agent of effective and creative creation and transfer of knowledge and technology from university to society (Etzkowitz and Leydesdorff 2000, Etzkowitz et al. 2000 in Peterka, 2011). In knowledge-based economy, university is becoming the key institution of the innovation system - both as a producer of human capital and as a foundation for the development of new businesses, and together with government and industry, appears as an indispensable element in the development of society.

Partnerships with Stakeholders

Peterka (2011) notes that an entrepreneurial university should form partnerships and connections with the world outside the university. This allows for transfer of knowledge and technology, establishment of connections with the business world, development of intellectual property, lifelong learning, maintaining connections with the alumni, as well as finding additional sources of funding.

There is no exact definition of an entrepreneurial university. A framework is developed and has been designed around seven areas which cover many of the commonly identified features of an entrepreneurial university. Therefore this Guiding Framework can be used as a model which supports many of the existing definitions (European Commission, 2012).

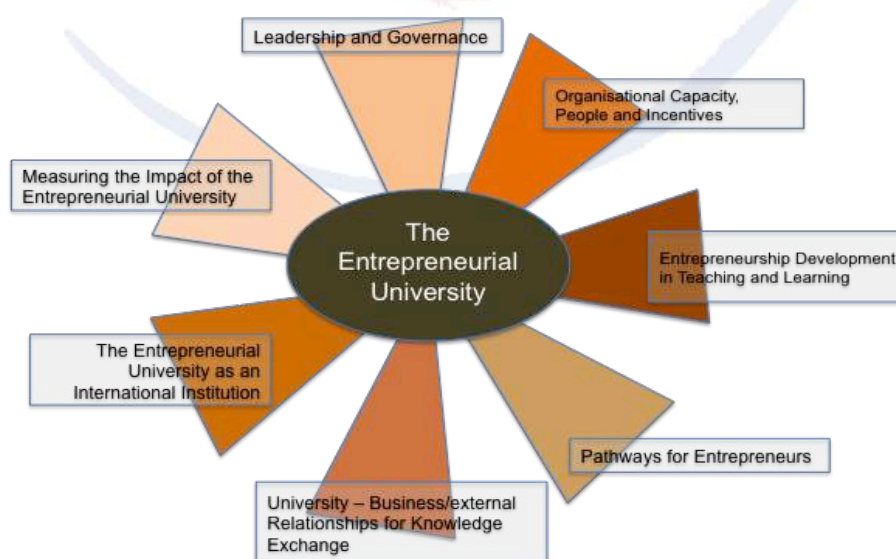


Figure 1. Represents a Guiding Framework for Entrepreneurial University

Why do we need a Guiding Framework for Entrepreneurial Universities? Higher education is facing unprecedented challenges in the definition of its purpose, role, organization and scope in society and the economy. The information and communication technology revolution, the emergence of the knowledge economy, the turbulence of the economy and consequent funding conditions have all thrown new light and new demands on higher education systems across the world. One significant European response is seen in the development, in concept and in practice, of the Entrepreneurial University epitomized by innovation throughout its research, knowledge exchange, teaching and learning, governance and external relations. The Guiding Framework began as an idea first discussed at the March 2011 University Business Forum; a European Forum which brings together universities and businesses to look at mechanisms for cooperation and encourage the transfer and sharing of knowledge. The study does not attempt to invent new models and factors but brings together existing, available literature and models, and adapts them for best use in the European Higher Education Area (European Commission, 2012).

1. Leadership and Governance

This section of the Guiding Framework explores those factors which relate to the leadership and governance of a university. In order to develop an entrepreneurial culture in an institution, strong leadership and good governance are crucial. Many universities include the words "enterprise" and "entrepreneurship" in their mission statements but these needs to be more than a reference.

2. Organizational Capacity, People and Incentives

Universities can be constrained by their own organizational structures and approaches, making it more difficult to carry out the types of entrepreneurial activities which support their strategic objectives. This section highlights some of the key areas a university may look at if it wishes to minimize the organizational constraints to fulfilling its entrepreneurial agenda.

3. Entrepreneurship development in teaching and learning

Universities are expanding their entrepreneurship and entrepreneurial education offer to the institution as a whole, including all staff and students. This section of the framework highlights a number of areas in which entrepreneurial development can take place, reflecting the need for the organizational structure to support entrepreneurial development as well as provide the right tools to deliver education and training opportunities both internally and via the external environment (European Commission, 2012).

4. Pathways for entrepreneurs

The decision to commit to entrepreneurship is not a single act but a process. For universities to be entrepreneurial they need to support the pathways taken by would-be entrepreneurs (staff and students) from ideas to market growth or into employment. This is not just a process internal to the university but one where a pluralistic approach is necessary providing access to internal and external opportunities and expertise.

5. University – Business/External Relationships for Knowledge Exchange

Active involvement of a range of stakeholders has been shown to be a contributing factor in successful Entrepreneurial Universities. Building and sustaining relationships with key partners and collaborators is essential in achieving the full potential of a university, in entrepreneurship in research, teaching and in other third mission activities.

6. The Entrepreneurial University as an internationalized institution

An international perspective at all levels has been identified as one of the characteristics of an Entrepreneurial University. As internationalization is increasingly integrated into strategic processes, it becomes essential for universities to be able to make informed decisions on institutional direction, as well as assess and enhance performance according to different objectives over a wide range of international activities.

7. Measuring the Impact of the Entrepreneurial University

Underlying the drive to create a more entrepreneurial university is the need to understand the impact of the changes which are made. There are many different types of impact a university may seek ranging from the local to the global. The impacts affect internal stakeholders (students/graduates, staff) and also external stakeholders (local businesses, organizations and whole communities).

Becoming an entrepreneurial university may involve difficult institutional change towards a position of intellectual entrepreneurship (Cherwitz, 2002, 2005) in experience (Jameson & O'Donnell, 2015) where each and every individual and unit within the organization internalizes entrepreneurial characteristics and implement entrepreneurial practices within their area of influence, creating a living entrepreneurial culture. Institutional change can be defined broadly in terms of both changes in formal and informal ways of doing things. It therefore embraces not only changes in organizations and organizational relationships but also changes in the governance systems and underpinning culture. (Gibb & Hannon, 2006 cited in Jameson & O'Donnell, 2015).

In the Philippines, there is a dearth of researches exploring the concept of entrepreneurial university. This study explores the concept of entrepreneurial university in the Philippines, specifically, De La Salle Araneta University.

Statement of the Problem

This study explored the contextualization of entrepreneurial university of De La Salle Araneta University. Specifically, it sought to answer the question: How does DLSAU contextualize itself as an entrepreneurial university in terms of:

1. Leadership and governance?
2. Organizational capacity, people and incentives?
3. Development in teaching and learning?
4. Pathways for entrepreneurs?
5. University-business/external relationships for knowledge exchange?
6. Being internationalized institution?
7. Its impact?

Conceptual Framework

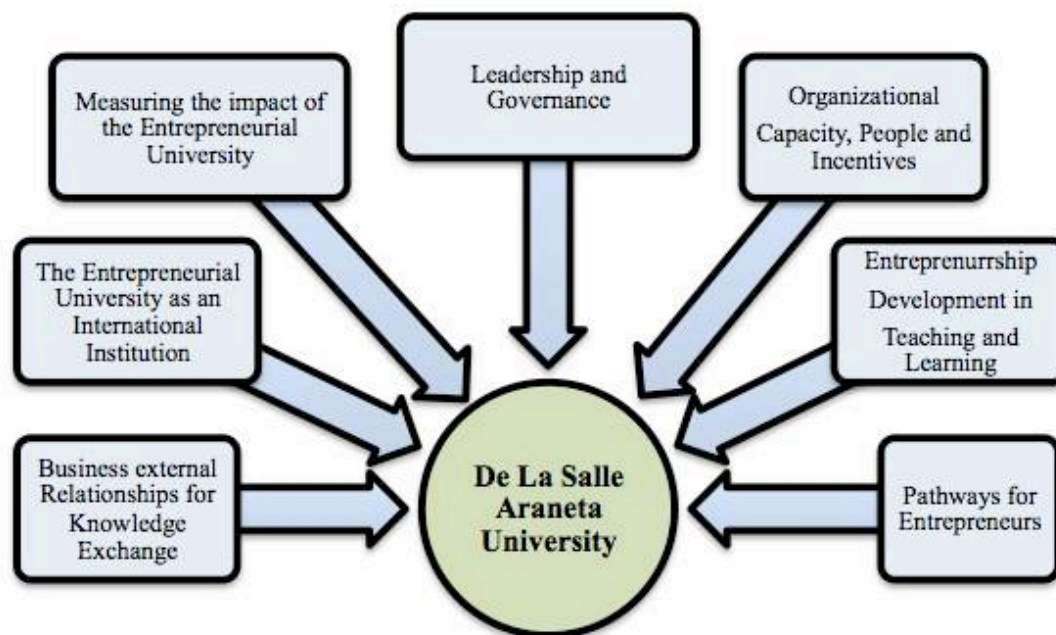


Figure 2. Entrepreneurial University: DLS-AU Conceptual Framework

The conceptual framework is based on the Organization for Economic Cooperation and Development (OECD) and the European Commission (2012) framework. This model has been conceptualized to promote an important research initiative and an evidence based tool that tries to assess entrepreneurial practices in a higher education institution particularly of De La Salle Araneta University in the Philippines. The created model gives a well-defined guidance as to the objectives, strategies, behaviors, systems and structures required of a university to be entrepreneurial. The external shapes in this relationship model offer a suitable design standard and evaluation framework for the university under in seeking to organize around the concept of the 'Entrepreneurial University'. In the Philippine context the development process for an Entrepreneurial and Engaging university is essential. The conceptual framework is relevant to the current and future university requirements as well as its stakeholders in creating a positive contribution to the Philippine Higher Educational Institutions as an entrepreneurial university.

Significance of the Study

The results of this paper will benefit De La Salle Araneta University, other Higher Education Institutions (HEIs) and policy makers in higher education. The results will provide DLSAU with insights regarding their present status as an entrepreneurial university and consequently serve as basis for their strategic planning. Other HEIs will also gain valuable insights regarding entrepreneurial university in the Philippine setting that can help in their own institutional planning. Lastly, the results of this study will provide lawmakers and policy makers in higher education with valuable inputs that can serve as basis for policy making.

The Research Setting

The De La Salle Araneta University (DLSAU) is the seventh member of De La Salle System. It was established in 1946 as the Araneta Institute of Agriculture in Bulacan,. Integration of the university to the DLS System started since 1987 and in 2002 became an official member of the system. The university specializes in Veterinary Medicine and Agricultural Sciences.

Participants

The researchers included the following participants in the study:

- a. University President
- b. Head Alumni Relations
- c. University Chancellor
- d. Vice Chancellor for Student and Mission
- e. Vice Chancellor for Academics and Research
- f. Director for Academic Linkages and Internationalization

Methodology

Research Design

The researchers used Case study as their research design. Mitchell (1983) defined a case study as a “detailed examination of an event (or series of related events) which the analyst believes exhibits (or exhibit) the operation of some identified general theoretical principles” (p. 192) Instruments.

Research material sources include individual interviews, direct observations, and physical artifacts documented through transcription, voice recording and pictures taken, reference materials from the university archives and library. Triangulation is the rationale for using multiple sources of evidence. With data triangulation, the potential problems of construct validity can also be addressed because the multiple sources of evidence essentially provide multiple measures of the same phenomenon.

Interviews

The interviews with the Brother President and administrators provided the backbone of the data. Communication letters/notices was sent to the participants in advance before the agreed time of the interviews, in order to make sure that they are present during the scheduled time. Interview questions were adapted from a European entrepreneurial framework entitled: “A Guiding Framework for Entrepreneurial Universities Final Version” of 18 December 2012 by the European Commission and OECD. The self-assessment tool is divided into seven areas. As a self-assessment tool, the framework has the simple purpose of helping universities identify their current situation and potential areas of action, taking into account their local and national environments. This is not a benchmarking tool; it is for individual universities to determine their own strengths, weaknesses and finding ways to go forward (EC, 2012).

Results and discussions

Research Question 1: How does De La Salle Araneta University DLSAU contextualize itself as an entrepreneurial university in terms of in leadership and governance?

DLSAU contextualizes entrepreneurship in the area of leadership and governance through aligning of its programs in education, business, technology with agriculture and veterinary medicine. It is important that all of the other programs must have an entrepreneurial bent. The whole idea of making use of the discipline is that it generates itself rather than waiting for businesses to hire them, they hire themselves whether in agriculture or agricultural entrepreneurship. The university makes sure that the students get to learn what it is to create entrepreneurial spirit in the discipline. It is also filtered to other programs in the university not necessarily academic whether generating capital, finances and creating resources.

It is more of what is the mission of the university. What can I do so that I will fulfill at least partially I partake in the mission of the institution? And the third, it is a mindset. It is a way of looking at things. How can I make use of my resources, other people's resources so that together we can build something? It is not so much as if they are working for somebody. They are working on something because they have a mission to fulfill. It is just so happens that these people also have this mission. The friends with resources and the university join hands together to fulfill that mission.

As the chief executive, it is part of the University President's overall function and responsibility with the directive from the board to make sure the university meet its entrepreneurial agenda. On the other hand, faculty members and academic staff are encouraged to initiate entrepreneurial activities and ideas. This is because of the University President's belief in the Principle of Subsidiarity within their level. An award is given to anyone, faculty or staff to encourage them to exercise entrepreneurship and creativity and honesty. This is based on academic performance, research, extensions, creative teaching, integrity, and honesty.

The main concern of the DLSAU is in the area of agriculture that is really much evident. It is emphasized to the graduates of the school, to create an entrepreneurial spirit while they are in school. Many times the administrators themselves are kind of hesitant to take initiative themselves. Maybe it is of the fear of making mistakes. Still, they are encouraged to do so. The niche of the university is more in the context of liberating kind of culture. It is where students, personnel faculty are able to explore the ways of looking at things or problems and how to solve the problems so that they can be part of the solutions rather than be part of the problem.

Research Question 2: How does DLSAU contextualize itself as an entrepreneurial university in terms of organizational capacity, people and incentives?

DLSAU does have its own organizational capacity processes towards an entrepreneurial university such as collaboration within existing internal and external partners. Though it is evident in the interview that such entrepreneurial system exists it seems not to be directed towards a comprehensive system.

DLSAU to become an effective organization needs to have strong organizational capacity and structure aligned with entrepreneurial system as a program. That means that they need to be able to identify and engage the community, form collaboration with other organizations, and continue to hold effective meetings in order to effectively plan and implement projects. Entrepreneurial planning is a way to organize the university's action that will hopefully lead to the fulfillment of their vision.

Research Question 3: How does DLSAU contextualize itself as an entrepreneurial university in terms of the development of teaching and learning?

DLSAU is considered themselves as entrepreneurial university in relation to their three programs in business, veterinary medicine, and agriculture. They contextualize and translate the concept of entrepreneurship relative to the learning and teaching in their syllabus. They develop the syllabus that will help the students to learn and become entrepreneur.

Research Question 4: How does DLSAU contextualize itself as an entrepreneurial university in terms of pathways for entrepreneurs?

The university does not have student organization activities that can help develop entrepreneurial activities among staff and students but what they have is Salikneta and a farm in San Jose Del Monte that help add on to our finances so far the university just rely in the tuition fees of the students.

Research Question 5: How does De La Salle Araneta University contextualize itself as an entrepreneurial university in terms of university-business/external relationships for knowledge exchange?

DLSAU involvement in a range of partnerships for knowledge exchange is strongly manifested in its mandatory internship and practicum programs across all the discipline. Alumni-entrepreneurs are active participants in providing the students and faculty with the knowledge and skill-based workshops and trainings and financial support to various research and extension activities. There is no concrete institutional policy on knowledge exchange through collaboration and partnership but the university supports staff and student's initiatives to engage in entrepreneurial activities.

Research Question 6: How does DLSAU contextualize itself as an entrepreneurial university in terms of internationalized institution?

De La Salle Araneta University (DLSAU) contextualizes entrepreneurship in the area of being an internationalized institution through external linkages with foreign universities mainly in South Korea and in the past Taiwan, Republic of China. This linkage has resulted in a number of opportunities (ten in all) for students of DLSAU to study in partner universities in South Korea and vice versa despite the absence of a written comprehensive international program. This student mobility, although dawdling as described by Vice-Chancellor for Administration, is possible because of the support extended by DLSAU in terms of accommodation, socialization, and other needs. This linkage however has not generated exchange of staff between DLSAU and partner universities.

There is program provided by the Lasallian Language Center that caters mostly to Korean students who wish to study English in the Philippines for 4 months also involves cultural trips embedded in the curriculum.

Research Question 7: How does DLSAU contextualize entrepreneurship in terms of measuring the impact of the Entrepreneurial University?

There was no mention of assessing the impact of strategy on entrepreneurship across the institution. Although there was an academic council who oversee the curriculum development, it was not clear whether the impact is assessed or measured. The assessment of the level of engagement in entrepreneurial teaching and learning was not across the institution. The assessment of the level of engagement in entrepreneurial teaching and learning are observed in specific courses of programs. These programs are those in the Agriculture and Veterinary medicine and Business Administration. Since entrepreneurial is part of the course syllabi in some courses in Agriculture, Veterinary Medicine and business Administration, the assessment tools like the examinations and projects may be a way of assessing the impact of entrepreneurial teaching and learning on the regular basis from classroom level.

In the institutional level, there was no formal study conducted to assess the impact of entrepreneurial teaching and learning even if there is an Academic Council who is supposed to monitor the assessment of impact of such. The University carries out regular monitoring and evaluation of the universities' knowledge exchange activities. This happens only through entrepreneurial courses that involves practicum component.

There is no clear prescription and provision as to its inclusion and implementation in the curriculum. The inclusion of entrepreneurship is very limited to three programs namely Agriculture, Veterinary Medicine and Business Administration. The institution needs to improve on the information dissemination to the students, faculty, staff, and some administrators on the importance of entrepreneurship and its impact on the institution, graduates, stakeholders, and the community.

Conclusion

A Philippine university having entrepreneurship as part of its vision and mission statement was tested if it is in compliance with the Guiding Framework for entrepreneurial universities. Using the seven areas to determine if the school is an entrepreneurial university, the study conducted revealed that the said school partly was able to comply with areas:

Area 1 – Leadership and governance. This was shown in the initiative of the administrators in alignment of education, business, and technology with agriculture and veterinary medicine and that all of the other programs must have an entrepreneurial bent. The purpose of which is to make their graduates more of an entrepreneur rather than just being an ordinary employee. To create the business themselves. To create the enterprise.

However there was no specific person in charge for the development of entrepreneurial agenda but the president's responsibility as mandated by the Board.

Area 2- Organizational capacity, people and incentives - the sustainable financial strategies in place to support entrepreneurial development programs is through scholarship programs. It was the Human Resources Department that is in charge of recruiting people with entrepreneurial skills in terms of managing a program but there is no clear indication that they have that people not the office to do that.

Area 3: – It was essential for the university to develop an entrepreneurial mind-set and skills focusing on their three programs in business, veterinary medicine, and agriculture. We live in an era where technology is changing but a lot of Philippine HEIs still have whiteboards and chalkboards.

The university must collaborate and engage with external stakeholders across all research and teaching activities, with the results of research integrated into entrepreneurship training.

Area 4- Pathway for entrepreneur – there was no indication that students and staff are guided to be entrepreneurs. The only possible proof of the university practicing entrepreneurship is through their local store “Salikneta” that sells the produce by the school laboratory from students’ works.

Area 5 - University-business/external relationships for knowledge exchange. The university has partnerships with the stakeholders. Partnerships exist between the university and Public Sector, Industry/Businesses, other Education/Academe/Schools, alumni, and local/Regional Organizations.

Area 6 – As an international institution. Although there was no written comprehensive program for the internationalization of the institution, there was evidence of the institute’s involvement in the international area. The institute has foreign students although it is decreasing in terms of population. There is continuous but limited student and staff mobility through their practicum courses and research programs.

Area 7 – Measuring the impact of entrepreneurial university - There was no evidence on the part of the institute to measure the impact of entrepreneurship in the curriculum aside from its existence in the course syllabi for selected programs. There was also no study made to trace the graduates if they have applied the entrepreneurship in their work after college.

Using the institute’s contextualization of the seven areas as a guiding framework for entrepreneurial university, the said university may not be considered an entrepreneurial university due to the partial or total absence of the compliance for the said areas.

Recommendations

On the basis of the findings drawn from the study, the following recommendations are given:

1. De La Salle Araneta University needs to have strong organizational capacity and structure aligned with entrepreneurial system as a program.
2. People and organizations supporting DLSAU entrepreneurial efforts also need to be able to identify, support, and train leaders.
3. They should have specific objectives for entrepreneurship with associated performance indicators.
4. Mechanisms for entrepreneurial strategy must be created to better deliver the entrepreneurial strategy.
5. The entrepreneurial agenda should be translated in the culture and activities of the university.



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Development of Problem-Solving Ability, Using Problem-Based Learning of Mathayomsuksa 5/8 Students at Borabuwittayakhan School, Mahasarakham, Thailand

Pramote Rungsri, Mahasarakham University, Thailand
Ritthikrai Chai-ngam, Mahasarakham University, Thailand

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Abstract

This action research aims to develop the problem-solving ability and learning achievement, using the Problem-based Learning (PBL) in Physics. The target students are 27 students in Matthayomsuksa 5 from Borabuwittayakhan School, Mahasarakham, Thailand. The research process is divided into 2 main periods. Each period is consisted of 4 cycles having 4 steps; planning, acting, assessment and learning reflection, one cycle one Physics - problem situation. In order to develop the ability, various situations, many of objects, and instruments are restricted. The problem must be solved within a limited time. Students in a group, 4 members, have to think and make up their decision how to solve the problem. The problem-solving ability test, 3 scoring rubrics, was developed and used during students study. In addition, learning process and learning outcome are present on flip chart of 0.80 x 0.45 square meters, which is used for presentation in front of the classroom. As a result, after the both periods, we found that 1) Student's problem-solving ability increases from 75.03% to 95.13% on average. 2) Student's achievement increase from 54.44% to 62.27% on average. These PBL achievements are higher than that non-PBL, 48.15%.

Keywords: problem-solving ability, Problem-based Learning, Learning achievement.

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Introduction

The enrichment science classroom is an important part for promoting students who will be the science of developing leaders, improving students to the best persons in science, mathematics and the technology. Moreover, it makes students have kindness, morality, health and ready to be officials for developing the country. (Suranaree witaya school, 1 : 2557)

The enrichment science classroom students are important groups of person for developing the Thailand's science. The Institute for the Promotion of Teaching Science and Technology (IPST) has set main goal of the institute that developing and support talent-science students (Suranaree witaya school, 1 : 2557)

As analyzing the 5/8 student final test, found that the average is 9.69 and the percentage is 32. The result is weak in the enrichment science classroom level and the students' Problem-solving ability is weak because they are unsuccessful in the test. From the observing teaching, we found teacher teach in passive learning style. However, the Problem-based leaning is the leaning by active learning style (Delisle, 1997 : 26-36). So the Problem-based leaning was bring to improve the Problem-solving ability and student' achievement.

Action and assessment plan.

This action research was divided into 2 phases, big circles. Each phases were consisted of 4 smaller circles celled the cycle. Cycles in the figure 1 are depend on appropriate contents of Physics in the upper secondary school and on limitations of laboratory equipment that the schools have. Overall, main process of the research was shown in the figure 1.

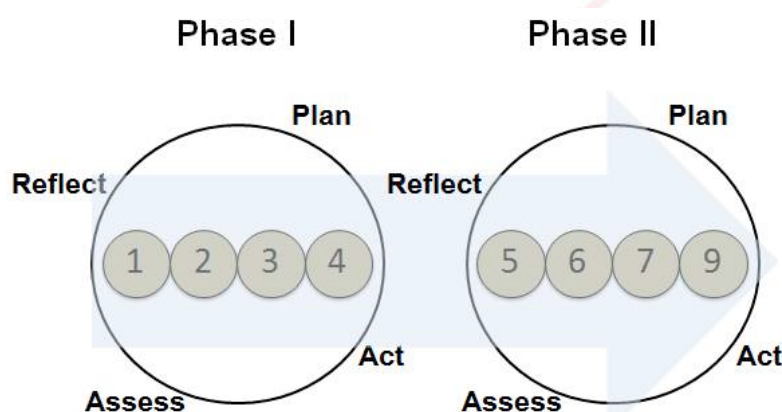


Figure 1 : The process of the action research (Inoue N. 2015 : 1)

As you see in the Figure 1, there are 4 steps of processes: Planning, Acting, Assessing and Reflecting which are explained following these;

Planning is the first step of preparing the action plan or to use the instruction innovation as well as the assessment plan.

Acting is using the prepared plans to the target. 8 instructive plans were designed by following Problem-Based learning ideas. The 4 plans were used in the Phase 1 and other plans were used in Phase 2

Assessing; the Problem-solving ability was assessed by the Problem-solving ability evaluation from which was developed. The ability was assessed after the Problem-based plans had used in each Phases.

Reflecting; evident such as student works, picture and the evaluated result were brought to analyze and reflected. Then the results become the facts called Finding and can use for developing the instructive process in the next phase.

Action plan

According to the Planning, the Problem-Based learning plans would be used in the Acting and they depend on the contents which are shown in the table 1. Then an example of teaching processes in the Refraction of light cycle was shown in the table 2.

Table 1 : The structure of contents following the problem-based learning.

Phases	Cycles	Contents	Time (hr.)
1	1	Reflection of light in the plane mirror	2
	2	Reflection of light in the curved mirror	2
	3	Refractions of light	2
	4	Tin lane	2
2	5	Ohm's law	2
	6	Electrical resistivity and conductivity	2
	7	Magnets and magnetic fields	2
	8	Motor	2

Table 2 : The example of teaching processes in the Refraction of light cycle.

Step	Detail
Preparing the students.	Teachers talk about how to learn in the Problem-based learning and what students and teacher support to do as well as grouped students.
Giving student the problem situation.	Teachers give a problem situation and some related tools.
Proving the problem.	Let the students solve the problem. they might search the related knowledge, plan and doing something to solve the problem.
Analyzing their answer.	Students might find the error of their answer, analysis their mistake or replay to solve the problem again.
Synthesis their knowledge.	Students might gather the gained knowledge and preparing to the presentation in front of the class by writhing their problem-solving method, answer and the knowledge.
Assessing students.	Asking student some questions during their presentation.

In addition, the problem situation which was given to the students in the step 2 is that let students try to identify what is the given translucent cube. Equipment follows that 1) a translucent cube 2) a low intensity laser 3) a paper 4) a ruler 5) a slit

Assessment

According to the Planning, the Problem-solving ability was assessed by a test was developed. The evaluation of the ability was similar to what the students' activities taken during they leaned. There was a problem situation and related tools gave and let student try to solve the problem as before. During they are taking the activity, the Scoring Rubric observation would be used to assess the students as groups. The scoring rubric observation are detailed in the table 3,

Table 3 : The detail of the scoring rubric observation

Problem-solving ability	Sub-title problem-solving ability
Understanding the problem ability	Know the elements of the problem
	Know the knowledge that should take
	Set hypothesis
Planning ability	Plan
	Gather knowledge form sources
Doing ability	Doing by follow the plan
	Result
	Record
	Calculation
Concluding and evaluation ability	Concluding and evaluation

The results of Problem-solving ability

Table 4 : Problem-solving ability of Phase 1 and Phase 2

Problem-solving ability		Content	Thin lane (Phase 1)	Motor (Phase 2)
Understanding the problem ability	Know the elements of the problem		2.16	3.00
	Know the knowledge that should take		2.50	3.00
	Set hypothesis		2.50	3.00
Planning ability	Plan		2.50	3.00
	Gather knowledge form sources		3.00	3.00
Doing ability	Doing by follow the plan		1.83	2.50
	Result		1.50	2.33
	Record		2.50	**
	Calculation		2.50	**
Concluding and evaluation ability	Concluding and evaluation		1.16	3.00
Average			2.26	27.00
Percentage			75.30	95.13

Table 5 : The students' achievements between Problem-based leaning versus Normal leaning

Learning forms	Content	Percentage	Average
Problem-based leaning	Reflection of light in the plane mirror	54.07	54.44
	Reflection of light in the curved mirror	58.00	
	Refractions of light	62.69	
	Tin lane	38.39	
Problem-based leaning	Ohm's law	76.54	62.27
	Electrical resistivity and conductivity	83.95	
	Magnets and magnetic fields	55.55	
	Motor	47.02	
Normal leaning	Electrostatic	55.30	48.15
	DC resistor in series and parallel	22.96	
	Electrical Measurement	51.85	
	Electrical energy	51.85	

Discussions

a) *The problem-solving ability significantly increases.* As a result of the ability, it is clear that every sub-titles of the ability rose in Phase 2 compared with Phase 1. The percentage is 75.30 in Phase 1 and 95.13 in Phase Phase 2 because the result of the Problem-solving ability in Phase 1 and other evident was collected, reflected and analysis to find weak points and improved them. For example, Concluding and evaluation ability was developed by adding the recording solution form in Phase 2 leaning. My students can use it to record their answer with the interesting questions in the form. The problem situation had given to the students before they take the class 3 days because they would prepare themselves to leaning.

b) *The doing by follow the plan and the result ability was improved.* They got 1.83 and 1.50 in Phase 1 respectively, and changed to 2.5 and 2.33 in Phase 2. It means that the doing by follow the plan and the result ability are in the good level. Because the Problem-based leaning in this plans engaged in the active leaning such as thinking, planning and doing by themselves as well as talking each other, this make students improve their skills such as measurement's skill, observation's skill and Formulating hypotheses' skill. These skills make good results which related the Problem-solving ability as well.

c) *The students' achievements of Problem-based leaning style is obviously higher than the normal leaning style* because they can remember what they do thought out many cycles. There is the presentation in the end time of the class and it is the important thing that makes the students more remember the contents.

Conclusion

The action research occurs through 2 Phases and 8 cycles. The problem-based learning was used to be the good innovation teaching in my mind because it makes students more remember the context and it can develop the Problem-solving ability higher than before. More students are careful in measuring and the good observation and they have higher achievements.



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The Influences of ICT on High School Students' Understanding in Physics Courses: A Review of the Literature

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Abstract

This paper focuses on elaborating the influence of ICT on students' understanding in physics courses. The discussion emphasizes deepen understanding on three key issues (1) what the methodologies are used in ICT implementation in classroom, (2) how ICT improves students understanding in physics, and (3) what factors help ICT effective in physics learning. The information was collected through literature associated with ICT and physics learning. Generally, the studies revealed three main methodologies which are mostly implemented to examine the influence of ICT in physics. Furthermore, studies found that ICT is able to change a classroom environment and the need of the collaboration among school administrators, teachers, and policy makers in order to optimize the use of ICT in the learning processes.

Keywords: ICT; students' understanding; physics

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Introduction

Physics plays a crucial role for the environment sustainability. It explains the processes of phenomena and the component of materials in the universe (Thiong'O et al., 2013; Smetana & Bell, 2012). However, the number of students who registered in physics courses for upper education is reported decrease across the world. For example, Trumper (2006) argued that students major in science were decrease significantly in senior high school in Israel (p. 49). This phenomenon also happened in England and Wales (Osborne et al., 2003), and Nigeria (Adegoke, 2011). Seeing to this phenomenon, the experts motivated to investigate the reasons why students tend to drop physics in their higher education.

Saleh (2006) stated that many students think physics is the most difficult lesson among other subjects in the school. Physics needs more complexity of study such as memorising, analysing, evaluating, and calculating in solving physics problem. Moreover, some of physics courses seem more abstract because their physics phenomena are invisible and hard to be imagined by students. Students are more interested in physics when they find those physics phenomena relevant to their life (Adams et al., 2006; Trumper, 2006). This kind of complicated study makes most of students achieve low score and do poor performance in classroom. Students believe that physics deals with higher risk to get failure in their study. Therefore, avoiding physics is a step to avoid failure.

Another reason is a poor teaching method (Adegoke, 2011). Many teachers, especially in developing countries, transfer physics courses using conventional instruction. Presenting the complicated and abstract materials based on the passages in the textbook does not seem effective to address them to the students (Jimoyiannis & Komis, 2001). An additional, this method is a teacher-centered classroom and it makes students perceive that learning physics is a textbook-based learning since it is like to reread materials or transmitted by teachers (Siorenta & Jimoyiannis, 2008). Therefore, many research were conducted to find new teaching methodologies which can draw students' interests in physics and improve students' understanding both of verbal and nonverbal abilities.

Paper Focus

In this modernisation era, both of teachers and students have been familiar with technology in their daily life. To introduce Information and Communication Technology (ICT) in the classroom, many researchers constructed their research by involving ICT in teaching physics courses. The results showed that ICT gives positive influences for senior high school students' understanding in physics courses. In this paper, I focus on the involvement of ICT in physics courses to prove that ICT can help physics teachers transferring the materials easier without reducing their meaning. Therefore, this paper concerns on the discussion of three structured questions which broaden the description about how ICT influences high school students' understanding in learning physics. They are:

1. What methods are used in implementation of ICT in physics learning?
2. How does ICT improve students understanding in physics?
3. What factors help ICT effective in physics learning?

The discussion begins with the methodology, followed by the discussion about three structured questions, and then closed by conclusion.

Methodology in selecting references

All further analysed references were collecting through ERIC and Monash Google Scholar. The chosen references were searched using four key words relate to the research; ICT, physics, students, understanding. In this paper, ICT stands for every form of ICT from the simple one to the sophisticated one, such as PowerPoint to the certain software related physics concept. Moreover, students' understanding embraces both of students' performance and students' achievement.

Discussion

1. What methods are used in the implementation of ICT in physics learning?

Numerous research were conducted to examine the influences of ICT in physics courses. Researchers used a variety of methodologies when applied ICT in their investigation to make them easier to analyse the influences of ICT. I classify those methodologies into three categories:

1.1 ICT vs traditional instruction

The studies compared two or more groups to see the differences between students who were taught using ICT (experiment group) and those who were taught using traditional instruction (control group). In this method, ICT has role as a teaching methodology because it dominates the learning processes. ICT plays as the core of information while teachers supervise the learning processes. It shows the materials, illustrates the phenomena and demonstrates the procedure of activities. Students observe the visualization and gain information through ICT. Meanwhile, teachers control the condition of class environment and add the needed information or the unclear information.

Studies, which used this method, usually utilize sophisticated forms of ICT such as a certain software which is intentionally invented to facilitate physics learning processes. There are several studies focusing on this methodology; (1) Ajredini et al., (2013) investigated the effectiveness of Phet Simulation on students' understanding in electrostatic charging. The participants were divided into experimental (implemented ICT) and control group (implemented real experiment). The results showed that there is no significant differences between ICT class and real experiment class; (2) Thiong'o et al., (2013) investigated the differences of depth understanding in magnetism effect of electric current between class which was facilitated by computer-based simulation module and control class; (3) Kiboss and Ogunniyi (2005) applied computer-augment physics (CAP) module to investigate students' understanding in measurement concept; (4) Kiboss (2002) used computer-based physics instruction (CBPI) program to improve measurement concept; (5) Kiboss (2011) developed electronic learning environment program (ELEP) contains basic lessons of instrument concept which were presented on the computer.

1.2 ICT + Regular teaching method

ICT is instrument of teaching methods. Many studies investigated how ICT supports the teaching processes by combining ICT and regular teaching methods. In these cases, teachers give the information of materials dominantly and lead the learning processes. They use ICT as a complement of teaching to support their teaching activities. ICT is used to provide an additional information or to help them demonstrate how to operate physics instruments and describe the steps of physics processes.

Zacharia has conducted a series of investigation regarding of the effectiveness of real experiment (RE) and virtual experiment (VE) (Zacharia & Anderson, 2003; Zacharia, 2005, 2007). Zacharia (2007) conducted experiments which compared RE and VE to examine which one is better for developing students understanding. Furthermore, Zacharia combined both of experiments to see the different effects of using ICT alone or combined ICT and regular instruction. The results show that the simulation can promote students' scientific conception either alone or in combination with real experiment. However, the combination of both real and virtual experiment showed the best results of students' understanding. Therefore, Zacharia believed that the best method to promote students' understanding in physics is when ICT supports the real experiment. In addition, Borghi et al., (1987) emphasized that the proper balance of simulation and real experiment activities in delivering physics concept will help students engage with physics theories and reality.

1.3 Ranking of ICT

There are numerous kinds of ICT used in education. The experts had constructed research to investigate the most effective implementation of ICT in learning system. For example, Adegoke (2011) compared three kind of multimedia; combination of on-screen text + animation, animation + narration, and on-screen text + animation + narration. This study found that the best performance was students in animation + on-screen text + narration class by obtaining the highest mean score. In addition, this result was also supported by the evidence that students in this class took the best quality of notes. Taking notes is important for learners to remember information about materials. The researcher suggested that the combination of on-screen text + narration + animation enables students to catch the missing information of teachers' explanation through both on-screen text and narration.

2. How does ICT improve students understanding in physics?

According to the evidences, ICT enhances students' understanding in physics in several ways:

2.1 Bring abstract phenomena, high-cost apparatus and hazardous activities into classroom

Simulations are effective to develop knowledge about abstract physics concepts because simulations provide those concepts become more visible and concrete experiences (Zacharia & Anderson, 2003; Zacharia, 2007). Students use to imagined those abstract phenomena in physics and it complicated them to understand the

materials. They only relied on the teachers' explanation and textbook, though textbooks usually make them confuse of its limited explanation and drive students' misconception on physics concepts. The existence of illustration of those physics materials helps both teachers and students in learning processes; it helps teachers to explain and demonstrate the materials easier and enables students to watch those phenomena as the real one. Therefore, computer simulation seems able to bridge the gap between students' pre-conception (imagination) with teachers' explanation. Thereby, computer simulation helps students achieve conceptual change and deepen understanding in physics (Jimoyiannis & Komis, 2001; Thiong'o et al., 2013; Smentana & Bell 2012). Furthermore, ICT enables high school students observe the hazardous activities and expensive apparatuses in physics experiment because ICT can manipulate the dangerous physics processes and high-cost apparatus into classroom hence students are able to see them in the more real ways.

2.2 Encourage students use complexity learning activities

Computer simulation brings multi learning sensor in their implementation. ICT enables students learn through their visual and auditory. Although recently textbooks have been more attractive to draw students' interest to read textbooks, the combination of visual and verbal learning are more effective than ranges of passages in textbooks in helping students' understanding physics concept (Stelzer et al., 2009; Adegoke, 2011). A finding of research showed that the best kind of ICT to implement in physics courses is the combination of on-screen text, animation and narration (Adegoke, 2011). The reason is that students use both of their visual and auditory ability to get the information. Through their visual, they get information from text and animation, while their auditory acquires the narration. In addition, they can catch up the missing information on on-screen text through narration, or vice versa.

The computer simulation encourages students use complexity learning activities. The use of computer simulation in learning activities helps students promote their scientific skills development because the computer simulation facilitates learning by linking learners to information sources and virtual learning tools. Therefore, the involvement of the computer simulation in classroom environment increases students' abilities in visualisation, critical thinking, classification, identification, data interpretation, problem solving and practice skills (Smetana & Bell, 2012; Zacharia, 2003).

2.3 Create students-centered classroom

ICT can change the condition and situation in classrooms. It seems that using ICT in classroom changes the ways of teachers deliver the materials (Achimugu et al, 2010). Comparing to traditional environment classes, ICT helps teachers to more concern on monitoring during learning processes rather than instructing (Chandra et al, 2008). It will surely help teachers embrace whole students in strict time rather than use the laboratory work and approach students one by one to explain how to operate those instruments.

ICT enhances students' understanding both verbally and nonverbally. Students do not only gain better score in physics tests but also be able to explain the reasons behind their answers. The implementation of ICT in learning processes enhances students'

ability to communicate scientifically regarding the physics phenomena. This was found by Kiboss (2000) how CBI (computer-based instruction) influences senior secondary school students in Kenya towards the understanding of physics concept especially in measurement courses. The findings showed that pupils were more active in asking questions about unclear materials, discussing with peers, and transferring their opinions in CBI class than those who are in the conventional class.

Moreover, the using of ICT enriches the classroom environment because it relates to learning variables such as teachers, pupils, and instructional (Kiboss, 2002). The researchers suggested that ICT provides information which makes students less rely on their teachers (Kiboss, 2011). It makes students more actively look for the information in order to solve the problems and/or asked to their teachers to get further explanation.

2.4 Draw students' interest

The implementation of ICT in physics learning provides an enjoyable simulation yet educational (Kiboss & Ogunniyi, 2005; Smetana & Bell, 2012). Visualization of physics phenomena raises students' interest in studying physics. Comparing with listening to teachers' talk and textbook passages, the unfamiliar and interest simulation more encourage the curiosity of students so that they will give more attention to the simulation. The more students are interested in physics the more they engage with physics, because students tend to learn what they are interested in (Chandra et al., 2008; Smentana & Bell, 2012). The heighten engagement will increase students' attention in learning processes and enhance students' understanding as well.

2.5 Give quick feedback

Previous studies found that ICT promotes conceptual change. One of the reasons is that ICT provides automatic error steps. Automatic error steps is a multimedia program which gives the automatically feedback if students make the wrong steps during experiment. One of experiments used this program was conducted by Zacharia (2007) who combined VE (virtual experiment and RE (real experiment) on the electric current concept. This program enables students to reflect their wrong step or misunderstanding because students get feedback immediately. Through this program, students will be able to construct their own understanding on a certain physics process, since they can analyze the causes of the mistake and repeat the steps until they get the right one.

3. What factors help ICT effective in physics learning?

Physics is a sophisticated subject so that complex learning skills are needed to master it. Students should be trained to engage with complexity studies in terms of research approach, critical thinking, collaboration, making decision and conclusion (Ajredini et al., 2013). To achieve the goals of education, all educational stakeholders need to cooperate because the quality of education cannot be relied only on teachers. This part will describe several factors which are important to be considered in order to optimize the benefit of ICT.

3.1 Students' own motivation

Visualization of ICT indeed draws students' attention to learn but it does not derive students' motivation as well. Motivation, as the crucial role in term of learning, is the main factor to begin the phase of learning. It is true that the essence of teachers' role and curriculum management is important, but the fully comprehension of students in learning is depended on the willingness of students themselves to make it happen (Hopkins et al., 2011). Therefore, students' motivation to learn physics is a must to help them immerse during physics learning. Here is a study examined how motivation is a key to achieve success in learning.

Gynnild et al. (2007) measured how extent the use of visualization deepen students' conceptual understanding related to their daily experiences. They predicted that each student has their own pre-conception based on their life experiences. By dividing the participants into small groups, they expected that the students would work cooperatively through the visualization instruction, and then they discuss the situation with their peers even try to understand it. Consequently, it can change or enrich their pre-conception. The results showed that although all students received the implementation of visualization and fostered their interest in learning physics, however there was no significant increase toward students' understanding in physics courses. They said that the fully conception understanding can only be gained for those who commit to deep learning. It shows that students' personal desire on physics more encourages them to consider visualization as their facilitator in reaching their goals, understanding physics.

3.2 Create supported classroom situation

Ajredini et al. (2013) compared the advantages and disadvantages of real experiment and virtual experiment. Findings showed that students in the real experiment class engaged with the real apparatuses and were more capable in procedural skills. However, the real experiment is time-consuming activities because they have to prepare the laboratory needs and usually confront with technical problems during experiment. On the other hand, students in virtual experiment did not need to spend time for organizing activities related to laboratory work, hence they could use much more time for thinking the topics and discussing them with their group members. However, they were lack of procedural skills. Similar findings were found by Stamenkovski and Zajkov (2014). They suggested that these results were caused by two main reasons; shortage of time for real experiment class and number of students per group. They added proper number of group members is essential for a meaning discussion.

ICT will optimize in supporting classroom learning if it is prepared well. As the guide of learning, teachers should highly consider about the time proportion of ICT implementation, problem solving and discussion so that they are not running out of time. In addition, in creating classroom activities, teachers need to reflect on the number of students in the classroom, what activities will be held, and which concepts should be mastered. Thus, I believe that teachers need to more consider about an appropriate learning plan which engages with the time and proper group number for discussion. In addition, teachers ensure the heterogeneity of each group regarding

skills, abilities, and existing knowledge, to maximize students' participation in learning.

3.3 Improve teachers' awareness on ICT

Both of teachers and ICT are complementary in learning activities. However, many teachers still do not apply ICT in their classroom. Two main reasons are; firstly, ICT consumes much time in preparation (Mumtaz, 2000); and secondly, they are not familiar with ICT. Regarding teachers' belief on time consuming of ICT seems contrary to the studies of Jimoyiannis and Komis (2001) and Ajredini et al. (2013) which found that the computer simulation saves a lot of the learning time because it is able to bring time-consuming activities into classroom such as laboratory work. It shows that the wasting time of ICT preparation in learning emerges because teachers are not used to operate ICT in their learning activities.

The diffusion of ICT implementation in education does not spread evenly on the world. It rarely finds schools with integrated computer availability in rural area, especially in developing country. Operating ICT is a difficult thing for teachers, implementing it in their teaching activities is even worse. Yet, the needs of master in ICT are inevitable because of the globalisation and technology advancement. Globalisation encourages teachers to give their best teaching performance in order to make their students can compete globally. Moreover, technology advancement makes most students have been familiar with technology so they will adapt easier with ICT involvement in education. Therefore, teacher's training development is needed to help teacher enhance their teaching performance and engage with both ICT and classroom situation (Smentana & Bell, 2012).

3.4 Integrate with proper curriculum

Visualization has two sides of coin. On the one side, it does attract students' attention in learning and help demonstrating abstract physics phenomena and complex physics processes. On the other side, it does disturb students' concentration. A simulation with interesting features grows students' interest, but it may make students focus only on the feature's point not the purpose of the simulation. To minimize it, teachers need to consider the content of virtual materials. The content must be relevant to the concept that wants to be mastered and be able to support teachers' explanation. The combination of teachers' explanation and virtual explanation will deepen the engagement of students in learning.

However, as a noted earlier, improving education quality is not only teachers' responsibility. It needs the cooperation among government, educators, and education policy makers. Henceforth, the supports from government and education policy maker are needed to create the preparation programs which help teachers arise their awareness of technology advanced and globalisation. The programs can be training programs, include how to operate computer or laptop in the classroom, what the contents should be provided in the simulation, and how to link between the simulation and oral explanation, and between visualization and their existing knowledge. It will surely help teachers increase their confidence regarding ICT operation and the capability in teaching activities since ICT will only maximize its potential in helping

learning processes when it properly integrates with essential physics curriculum and class situation (Zacharia & Anderson, 2003).

Conclusion

Numerous studies with varied purposes and methods had been conducted to measure the effectiveness of ICT in physics learning. They compared ICT with traditional instruction to examine how significant ICT improves students' understanding in physics; combined ICT and regular teaching method to elaborate how ICT supports conventional instruction in teaching physics; and ranked types of ICT to measure which ICT performs the best performance in developing students' understanding in physics. From these studies, I believe that there are two main roles of ICT in learning process; ICT as a teaching methodology and ICT as a complement teaching. As a teaching methodology, ICT is a core of teaching processes. It plays a fundamental role in display both of the materials and the explanation, while teachers monitor and mentor the learning processes. Meanwhile, ICT as a complement teaching is considered as a tool or instrument of teaching. Teachers are the main actors of teaching while ICT only supports their activities. Teachers manage the materials and the classrooms along with observe the processes of learning. Furthermore, teachers give feedback for students' questions about unclear materials. The evidences show that ICT is better implemented as a complement in teaching activities rather than as teaching methodology.

According to evidences, findings and explanations above, it seems that the use of information and communication technology (ICT) improves the conceptual understanding in physics courses. The reasons are; ICT enables to bring visible and real phenomena of abstract phenomena in classroom; ICT is designed entertaining yet educational so that enhance students' interest; and ICT changes teaching methodology into student-centered classroom. ICT provides meaningful learning experiences and enhances peers interaction (Thiong'o et al, 2013).

ICT classes outperform conventional classes because ICT brings multi learning sensor in their implementation. ICT enables students to learn through their visual and auditory (Stelzer et al, 2008; Adegoke, 2011. p.547). Furthermore, ICT uses a range of learning skills such as visualisation, manipulation, classification, identification, data interpretation, problem solving and practice skills which improves their quality of learning and thinking (Smetana & Bell, 2012). ICT not only enrich students' knowledge about physics but also can apply them to solve the physics problems and to communicate the results as well.

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The logo for the International Association for Frontiers in Research (iafor) is centered on the page. It features the lowercase letters "iafor" in a light blue, sans-serif font. The text is surrounded by several overlapping, semi-transparent circular arcs in shades of blue and red, creating a dynamic, swirling effect.

Why Researchers Compared Education Internationally 1994 - 2009 and What This Tells Us about Why We Do This Today

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The Asian Conference on Education & International Development 2016
Official Conference Proceedings

Abstract

This paper is a systematic literature review into the recent history of international comparative education research. I review the reasons given for comparing education internationally in the fifteen years leading up to 2009, discuss the different types of research conducted and identify patterns in terms of research conducted in different locations. This historical review gives an understanding of the academic and political values of this time and of how they impacted upon researchers motives and methods. It also provides a basis for reflection and understanding into changes in the comparative research discourse in the past five years. I developed a systematic approach to building this paper, using a structured intersecting model with multiple starting points, each of these beginning with a strategically chosen node: a significant journal or institution. I then read and classified the comparative research undertaken, also investigating patterns in the most frequently cited references. Although I am framing this as historical research into the recent past, its intention is also to inform current dialogue by enabling reflection on the changing emphasise found in comparative research and enabling exploration of the broader social, cultural and political context of such changes. The conclusion to the study raises issues for debate regarding the opportunities and challenges of recognising a sense of international collegiality amongst teaching professionals and academics when the nature of comparative research by and into different nations has significant and consistent differences. This is fitting within the conference theme of 'international development and international dialogue'.

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Introduction

In this paper I review the reasons people had for comparing education internationally in the years 1994 to 2009. There are two reasons why I chose to do this. Firstly a personal reason, in 2010 I had published a paper in a local journal that I wished to return to and this paper very much grows out of that one. Secondly, by using hindsight I hoped it would be possible to generate among attendees at the conference a reflective discussion on the reasons why we compare internationally today. Therefore although there are two parts to the title in fact, this paper only addresses the first part '*why researchers compared education internationally 1994 – 2009*'. The second part '*and what this tells us about why we do this today.*' is the title for the discussion that this paper was intended to provoke.

I developed a systematic approach to building this paper in order to identify the motives people have for researching in this field. Firstly, I took as my starting point the journal *Comparative Education Review*. I read each article published therein, in the years 2006-2009, with an emphasis on finding the motive given for conducting the piece of research. This was supported by another route into the literature in this area, which was to read each master's thesis, comparing education internationally, written at Cambridge University in the years 2006 to 2009. This way I hoped to gain insight into the motives behind internationally comparative peer reviewed research and also research written by students at an early stage in their academic career. I also trailed the references used to build a picture of research conducted over the fifteen year period 1994 to 2009

The deductive framework used to review this literature

From an initial reading into this area I created a deductive framework with which to analyse the motives of international comparative researchers when reading further. This framework is based on Arnove (2002, 2003) with a fourth motive added which is based on Bray's (2007) modification of Arnove's framework. According to these authors there are four potential motives for comparing education internationally:

- Firstly, a reflective motive to understand other systems and practices as a way of reflecting on our own systems. Researching others simply for the 'value of knowing both them and ourselves' (Arnove, 2003, p.482).
- Secondly, a developmental motive, looking for new strategies and practices, researching others 'to borrow' from them (Arnove, 2002 p.483).
- Thirdly, a motive of enabling global understanding or 'contributing to international understanding and peace' (Arnove, 2003, p.10).
- Fourth and finally, a competitive motive to learn from others so as to compete against them within a global economy. Bray (2007) specifically attributes this motive to large-scale government funded statistical research.

This framework provided the outline for the initial structure of this article. However as I read further another issue emerged. This was a pattern of certain countries where a large amount of research had been conducted often by British and American researchers, specifically the Far East and especially Japan. Exploring this led to the writing of an additional section.

The reflective motive

Many writers in the period 1994 – 2009 emphasised the validity of reflection as a motive for international comparative research, partly on the basis of the dangers implicit within any other kind. Mason, (2007) wrote that the biggest differences in practice are potentially between teachers in the same school rather than between stereotypically representative teachers in different nations. He pointed out that trying to learn from others can lead to simplistic stereotyping, Manzon (2007, p.95) supported this by writing that it is easy and risky to assume a teacher is representative of a school, a school representative of a country or a country representative of a region. He was supported by Leung and Postlethwaite (2007) who argue that comparing between nations is comparing the incomparable because the differences are both so many and so subtle. This caution was to some extent challenged by Givvins, Herbert, Jacobs, Hollings and Gallimore (2005) who argue that teaching is distinctly different in different nations for cultural reasons. They argue that a cultural ‘teaching script’ (p.313) is learnt as a child and replicated as a teacher. However, even they accepted that there are other factors at play in any lesson. They also found that only in Japan was their strong enough evidence for them to conclude that there is a ‘national teaching pattern’ (p.314). Li (2006) and Van Reis Saari (2008) in their research also looked for cultural differences in classroom practice, in these cases in approaches to maths teaching. In all the cases referred to in this section the primary goal was discussion and reflection. Givvins et al. (2005) for example, were unsure whether cultural scripts could be successfully exported. In summary, enabling reflection, in the years 2006 to 2009, was seen by many working in the field of international comparative education as being a valid motive for conducting research. It probably still is today.

The developmental motive

Most researchers found that at least some lesson could be learnt from the comparison they conducted even if they expressed it in cautious terms. For some, pressure to discover concrete strategies by looking abroad came from others connected to their research. For example typically the institution researched into wanted more concrete results. This was an issue that appeared for Szelengi and Rhodes (2007) in a study into how overseas students are shaped by their experiences in the USA. There was also often a difference between the desired outcome of conversations between participants from different nations in different economic circumstances and with different academic traditions. Potts (2007), for example, writes about how for him the primary goal for his research was a process of reflection, However, he found that his Chinese colleagues wanted to learn and transfer concrete practices.

Several writers such as Baker, Kohler and Stock (2007) openly acknowledged that they found that they discovered within themselves, without outside pressure, a tension between the goal of reflection alone and a temptation to discover practice that could be transferred between nations. Others such as Law (2007) did not find this to be a problem. She felt that although reflection is a valid reason for research it is equally valid to accept that concrete lessons can be learnt from researching internationally even and perhaps especially when the research is small in scale. She writes that there is a ‘dangerous paradox’ (p.370) with international comparison. This is that it is at its most interesting when it involves trying to learn from the detail of pedagogy but this

is also when the risk of drawing erroneous conclusions or falling into stereotypes is at its highest. However, to her this does not mean that this motive should be rejected just that conclusions should be approached with caution. Bray (2007) identified a similar problem but felt that in avoiding attempting to learn from the detail of classroom practice there is a danger of simply 'producing descriptive work of a very low calibre' (p.359), which he describes as unfortunately more prevalent in international comparative research than in any other field in education.

Mosselson (2007) is an interesting example of a researcher studying with the clearly expressed motive of discovering concrete strategies. She had particularly strong motives as she was analysing why her own Bosnian ethnic community, especially young women, seemed to be under-achieving academically. This was a situation she wanted to assist in remedying. This motive to compare to improve a community one is part of, or involved in, was also reflected in the work of many others researching in this field (Chinas, 2008; Cosic, 2008). Interestingly a significant number of these researchers used small-scale qualitative methods (Brown and Conrad, 2007; Hinderlitter et al., 2007; Hannum et al., 2007; Stanisic 2007; Blasco, 2009). In summary it seems that at this time there were considerable pressures both personal and professional that led researchers to want to be able to find practical strategies from their research even when it was small scale and qualitative.

The motive of enabling global understanding

Bray in 2007 argued that the motive of enabling global understanding dominated amongst the least formal kinds of international comparative research, that which might not be conventionally defined as research at all. However, as research of this type is harder to access, in this sub-section I will be analysing the role this motive played in academic research. In 2003 Arnove opened a series of collected articles with the statement that the aim of the book was 'global peace and justice' (p.10). Post (2009, p.1) similarly wrote that the reason for the existence of the journal *Comparative Education Review* at all is that such research is 'essential for a peaceful world'. This motive was not only mentioned by both Arnove (2003) and Post (2009) but also by many others. Examples include: Myers (2007) who explored how a shared concept of citizenship could be developed world wide and Suarez (2007) who focused on developing political understanding in South America and the Caribbean;

The motive of enabling global understanding was then and still is mentioned in the literature of large organisations, which fund international comparative research in education. The first sentence of the United Nations Educational, Scientific and Cultural Organisation's constitution is 'since wars begin in the minds of men, it is in the minds of men that the defences of peace must be constructed' (UNESCO, 2009). The world's three largest non-governmental organisations: UNESCO, the World Bank, and the Organisation for Economic Co-operation and Development all support universities in conducting research in international comparative education under the banner of idealistic constitutions (Bray, 2007). University based international comparative research is not necessarily lacking in idealism even though it arguably has a higher level of academic rigour than other international comparative connections.

A significant number of writers in the field of international comparative education stated that one motive for conducting their research was to provide a response to the process of globalisation (Green 1997; Chabbott & Elliot, 2003; Baker & LeTendre, 2005; Levy, 2006; Spring, 2007). People who acknowledged that their writing was a direct response to globalisation can be divided into two schools of thinking. Firstly, those who adhered to a set of assumptions about the nature of globalisation as reflected in not only academic literature but also much non-academic literature on this topic published today. These assumptions, which could be described as mainstream thinking on globalisation, included the following:

- it is new
- it is accelerating
- it involves greater interaction between individuals across nations (socially, politically, economically)
- it will affect the role of the nation state and national governments
- it is driven by changes in technology connected to computing and the internet.

To these writers (Armove, 2003; Bray 2007; Kennedy, Hahn & Lee, 2008; Carney, 2009) globalisation is a process, the nature of which is largely accepted and research is needed to generate an educational response to it. This is interesting as although this article is dealing with recent history. This was also an era that predated the popular use of most social media sites that people and academics use in 2016.

Secondly, there was another school of writers who challenged some of this mainstream view of globalisation. These writers used education to act as a lens with which to understand the process of globalisation and for questioning some aspect of the mainstream view. To some extent these writers should not be described as international comparative educational researchers at all. They were rather sociologists, historians or political scientists who found education a useful vehicle and others sat on a blurred boundary between two or more fields. However, articles of this nature were frequently published in comparative educational journals between 1994 and 2009. Below are some examples:

- Green (1997), Popkewitz (2000) and Sidhu (2007) use an historical approach to education to try to understand globalisation.
- Apple (2000), Burbules and Torres (2000), Lingard (2000), and McCarthy and Dimitrades (2000), all writing at the start of the Bush era, argue that globalisation within world education systems would lead to an increased emphasis on decentralisation. They use the study of education to understand larger economic and political changes as does Hanson (2008).
- Meyer (2006) analyses Japanese approaches to human rights via the lens of textbooks.
- Keating (2007) explores how citizenship education reflects concepts of democracy and citizenship in different European states.
- Toreiphi (2007) uses educational statistics to argue that among the most globalised people are the world's poorer communities including the Nagas.
- Ichilov (2008) analyses Arab-Israeli relations via educational policy.
- Tsvetkova (2008) does the same but in the context of Cold War relations.

In summary the motive of increasing global understanding was certainly prevalent in the decision to conduct international comparative educational research. The temptation to use education as a lens for understanding complex global processes was

also understandably strong. By definition comparative and international studies into education have a large and fascinating space for the expansion of ideas. However, one could argue that for comparative international research to be relevant to teachers today it should ideally be conducted at teacher, student and classroom level and should focus on practice.

The competitive motive

In 2003 Cabbott and Elliott stated that although most international comparative research is small-scale and qualitative most funding in this area is directed towards large scale quantitative surveys. Two of the most well-known of these regularly conducted large scale studies, at the time and in 2016, are the Programme for International Student Assessment (PISA) with a sample of 250,000 students in 32 countries and the Trends in International Mathematics and Science Study (TIMSS), which compares 500,000 students in 50 countries. The intention behind national involvement in these reports as stated by Bray (2007) is educational improvement so as to compete within a global economy. They are not done for interest's sake alone. The intention is that policy makers are able to discover which countries are successful at what and then, it is presumed, researchers will look further to find out why. These studies are not intended to be an end in themselves. It is important therefore to distinguish between criticism of the existence of these studies and criticism of how they are portrayed and used by governments.

Many writers were critical of the use made of such studies. Chabbott and Elliott (2003) described them as leading to a lot of 'national breast beating' (p.15) but very little deep understanding of different educational systems. They go on to write that 'results issued with much fanfare may dominate public debate long after smaller studies with much smaller budgets call them into question.' (p.17). They also stated that the biggest failing of governments in terms of funding comparative research had been to be prepared to fund large scale data collection but not to fund further research into establishing the meaning and relevance of this data. Baker and LeTendre (2005) saw the discrepancy in funding large scale data collection but not subsequent in-depth research informed by this data as being due to politicians with 'solutions already in mind waiting to find a problem that justifies this policy.' (p.154). Theirs' is a long term historical approach. They identify three moments of educational reform in American post war politics each provoked by a sense of national crisis, the most recent of these following the first publication of TIMSS in 1995. They argue that following this, policies were brought in that the US government claimed were developed by learning from other nations but that actually came from a domestic political agenda.

In summary however, there was not widespread criticism of the motives behind the practice of compiling large scale statistical reports that compare internationally. They were and still are, as Fairbrother (2007) pointed out fascinating, as a picture into the field of education worldwide and a potentially valuable starting point for further research. However they were in the eyes of some academics, at that time, often simplified by politicians and the media beyond all usefulness.

Western approaches to East Asian nations 1994 to 2009

From this review of literature it became clear that a disproportionately large number of articles published in *Comparative Education Review* 1994 to 2009 were about the Far East and specifically, Japan (Gerbert, 1993; Lincicome, 1993; Sorenson, 1994; Robinson, 1994; Leng, 1996; Takahaza, 1998; Ban & Cummings, 1999; LeTendre, 1999; Givvins et al. 2005; Meyer, 2006). This was especially the case from 1994-1999. Bray (2007) contextualised this by describing how comparative international educational research as a field of study has two historical points of origin Japan and the West. Samoff (2003) took this even further arguing that schooling as it is commonly practised across the entire world is a model which was exported via empire from Europe and Japan.

However, several writers (Baker & LeTendre, 1995; Green, 1997; Chabbott & Elliott, 2003; Tamer, 2005; Watkins, 2007), even at this time, were critical of many articles written about the Far East and especially Japan. These writers described some of these studies as simplistic and stereotypical. This perception that Western researchers may sometimes idealise the Japanese system is also reflected by some Japanese researchers of the time such as Takayama (2007, p.423), who wrote that 'in striking contrast to the international acclaim during the 1980s and 90s for Japanese schools, the Japanese continued to perceive their countries schooling as steeped in crisis.' An extraordinary sentence by Mason (2007, p.179) illustrates the complexity of the relationship Western researchers had with Japan, 'It is the cultural production of the 'western' centre (including of course Japanese cultural capital) that dominates that of the periphery.' The description of a Far Eastern culture as Western and the use of the word periphery seem to show something about the complexity of Western approaches to both the Far East and to other nations.

Conclusion

In conclusion it seems that in the years 1994 – 2009 a reflective motive was certainly present in much research in this field. However, it seems that many and perhaps a majority of researchers used international comparison to try to discover transferable practices or policies. Looking for concrete strategies particularly dominated when the researcher was part of or was involved in one of the communities researched into. There was also another powerful motive of using educational research to increase global understanding and also to understand the process of globalisation. However, while much of this research is fascinating to read some of it may have had little relevance for the day to day practice of teachers. In the last two decades the use of large scale statistical research comparing nations internationally has become established and this paper focuses on the beginning of that process. However, while usually seen as valid in origin and intention these programmes were widely criticised by academics (Baker & LeTendre, 1995; Bray 2007) who felt that they were too often misused in terms of their public presentation by politicians and the media. As with research related to globalisation these large scale statistical research programmes could also seem distant from the day to day practice of teachers. In geographical terms there was a considerable amount of dialogue on education between the West and the Far East, especially Japan, and a clear motive of learning from each other.

This is interesting but it is also significant as it raises questions regarding the nature of the dialogue the West had with other nations. Also at times this may have been expressed in rather simplistic ways.

The purpose of this paper was to present an overview of research during a narrow period of recent history. However, its deeper purpose was to generate discussion on how much has changed and how similar we, are as researchers today, in 2016. This discussion was opened up at the ACEID, IAFOR Conference, Kobe, 2016. However, I hope that it is long running and engaging. Please feel free to contribute further to this. My email is below.



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***Gender Differences in the Predicators of Intention to Attend University Using
an Extended Theory of Planned Behaviour Model***

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Abstract

Despite claims made in previous research reporting the elicitation of students' intentions to study at university, from a social cognitive perspective, these studies' conceptualisation of intent may be closer to students' hopes or aspirations. There is evidence to suggest that behavioural intention, as it is defined in this study, is an effective proxy measure of future behaviour (Ajzen, 2014). The aim of this study is to investigate if there are significant differences between genders in relation to the predicators of intention to attend university using an Extended Theory of Planned Behaviour Model (TPB). 252 year 12 students completed a survey questionnaire eliciting the constructs described in the extended TPB model. Structural Equation modeling (SEM) and multigroup analysis was used to examine predicators of students' behavioural intention to attend university and afterwards, differences in these predicators between gender. The results reported in this study may support the idea that males' attitudes are more important in the formation of behavioural intention compared to females. At the same time, females were typically more influenced by subjective norm and perceived behavioural control. These results may have implications for those designing interventions aiming to increase university attendance.

Keywords: Theory of Planned Behaviour, higher-education, social-psychology

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Introduction

A construct that has received much attention in the field of social psychology is that of intention. Intention is formed by a number of beliefs representing the perceptions that people have about a behaviour including its likely consequences, the normative expectations of others, and the likely barriers of performing a particular behaviour (Ajzen, 1991; Ajzen, 2005; Fishbein & Cappella, 2006; Kautonen, Gelderen & Tornikoski, 2013). Intention is considered a highly significant predictor of future behaviour (Ajzen, 2005) and this study aims to extend understanding of students' intentions to attend university and its predictors. If the salient predictors of intention can be measured, the intention to attend university, and theoretically future behaviour, can be incorporated into interventions aiming to increase such outcomes. The TPB has been utilised successfully to explain the predictors of a range of behaviours (Armitage & Conner, 2002). While Ajzen's conceptualisation of intention has been used across different fields of research, the field of education research has not been as eager to embrace a psycho-social explanation of intention and/or behaviour (Taylor, 2015).

Although there are studies that report to elicit students' intentions to study at university (e.g. James, 2002; Davies, Qui and Davies, 2014), at least from a social cognitive perspective, these studies' conceptualisations of intention could be considered inadequate. The ontological limitation of how intention has been defined in the current literature is a seminal reason supporting the rationale for the present study. For example, James (2002) asks students in his survey instrument if they are "Definitely planning to enrol in a university course" (p.31) and "Hoping to go to university but may not be able to" (p.31). In order to accurately measure one's intention to perform a future behaviour, research instruments must ask a series of validated questions that measure their attitudes, subjective norms and perceptions of behavioural control (Ajzen, 2005). Compared with Ajzen's explanation of intention, James' questions are more representative of students' hopes or aspirations. Additionally, there was no evidence of reliability testing of the instrument (e.g. Cronbach's alpha). James' research raises questions not only about statistical reliability, but more importantly, about the ontological merits of how he has conceptualised intention. This is not an issue of semantics; the main concern here is the validity of the evidence purporting to represent students' intentions to go to university. More recent research by Davies, Qui and Davies' (2014) highlights similar problems. Davis et al's study (2014) attempted to synthesise economic analyses theory and sociological concepts to explore students' intentions to participate in higher education. They reported that students' intentions were predominantly formed by their own prior educational achievement, parent's education, students' knowledge, their interpretations of the labour market and expectations of graduate premium (e.g. Higher pay job with a degree). While it could be argued that Davis et al's study highlighted important influences on students' intentions to study at university, their measurement of what they describe as intention did not include any discussion of salient predictors of behaviour such as self-efficacy or consideration of social influences other than parents (e.g. Peers or teachers). Compared with Ajzen's treatment of intention, Davis et al's conceptualisation of intention is arguably too heavily rooted in human capital theory (e.g. Fiscal/labour market trends as significant motivators to attend university) to explore other salient psychosocial factors that are likely to affect students' intentions. The core weaknesses of both James' and Davis et

al's research is a evidence base supporting their framing of intention as somehow representative of students' future behaviour.

A major contribution of the present study is to advance the conceptualisation and measurement of students' intentions in the education research field. The ontological framing of intention used in this study is expected to be a more accurate measure of the future likelihood of students actually attending university in the future compared to previous research (e.g. James, 2002; Davies, Qui & Davies, 2014). Based on the former, there is a strong rationale for using a psychosocial model to investigate students' intentions to attend university.

The Theory of Planned Behaviour

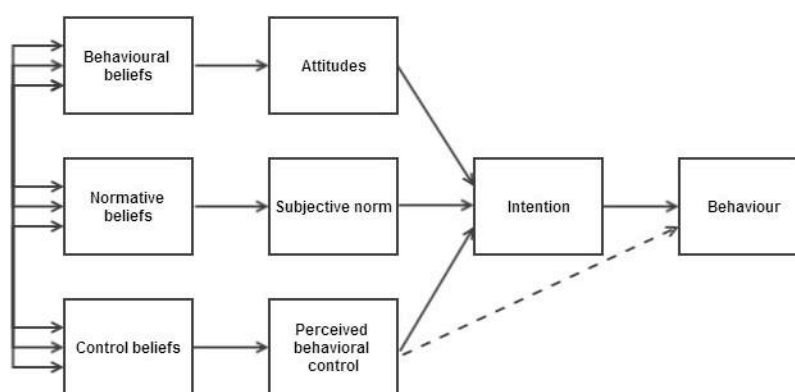


Figure 1. Theory of Planned Behaviour (Ajzen, 1991)

The Theory of Planned Behaviour (TPB) (Ajzen, 1991, Figure 1) is used as the primary theoretical framework of this study. The TPB has been in studies examining intention and entrepreneurial behaviour (Kautonen, Gelderen & Tornikoski, 2013), environmental conservation intent (Wauters, Bielders, Poesen, Govers & Mathijs, 2010), safe sex practices (Fisher, Fisher, Bryan & Misovich, 2002; Sutton, McVey & Glanz, 1999), exercise behaviours (Ickes & Sharma, 2011), sleeping patterns and intentions (Knowlden, Sharma & Bernard, 2012), dangerous driving behaviours (Elliott, Armitage & Baughan, 2003) and drug use (Hu & Lanese 1998; Norman, Conner & Bell 1999). Researchers have used the TPB in a number of ways to predict and explore reasons for different human behaviour.

Attitudes

Attitude is defined in the TPB model as the perceived positive or negative evaluation of the behaviour in question (Fishbein & Ajzen, 1975). For example, a person who strongly believes that a particular behaviour is likely to produce a favourable outcome is more likely to perform that behaviour. Likewise, if a person strongly believed that a particular behaviour would result in a negative outcome, they would have negative attitudes towards that behaviour and therefore be less likely to perform the particular behaviour. Attitudes can be categorised as cognitive and affective. For example, one's perception of enrolling at university may include cognitive beliefs about the act,

such as whether they believe that studying for a degree is beneficial as well as affective evaluations, such as whether they feel that studying for a degree is advantageous.

Subjective norm

The second proximal construct underpinning intention is subjective norm. Subjective norm is determined by the person's beliefs about how important others think about the specific behaviour and whether important others would approve or disapprove of a given behaviour (Ajzen, 2005; Fishbein & Ajzen, 1976). There is a strong body of research that suggests behaviours are shaped strongly by the social context in which one lives (Ajzen, 2005; Fishbein & Cappella, 2006; Gale, Parker, Rodd, Stratton & Moore, 2013; Norman, Conner & Bell, 1999). Research indicates that social influences varies according to the behaviour being examined (Ajzen, 2005). Depending on the behaviour in question, important others may include family, friends or spouse (Ajzen, 1991). In professional fields, important others may include job supervisors (Renzi & Klobas, 2008) or lecturers in a university environment concerning students (Cooper, Kenny & Fraser, 2012). Of particular relevance to this study, Taylor (2015) reported that the two main normative influences on students' subject choices in their study in the UK, were parents and teachers.

Perceived Behavioural Control

The third proximal construct of the TPB is Perceived Behavioural Control (PBC). PBC is defined as the person's own perception of how easy or difficult it is to perform a particular behaviour (Ajzen, 1991). In other words, PBC measures an individuals' perception that they are sufficiently knowledgeable, skillful, disciplined, and able to perform a particular behaviour (Ajzen, 2005; Kraft, Rise, Sutton, & Roysamb, 2005). Ajzen (1991) stated that the framing of perceived behavioural control stemmed from the concept of self-efficacy. Likewise, Fishbein and Cappella (2006) stated that PBC and self-efficacy are the same concept.

The author is unaware of any research that has used the TPB to explain students' intentions to attend university. There is also a limited amount of research using the TPB to explain and predict students' pathways at different levels of education (e.g. High school). The studies discussed above indicate that use of the model may be of significant value if applied to students' intentions to study at university. Supported in-part by the studies discussed, the thesis advances the argument by aiming to improve current understanding of why students intend to study higher education, and in particular, possible differences between genders.

Limitations of the TPB

It is important to consider the limitations of the TPB because of its significant to this study. Considering the prevalent use of this model, it is perhaps unsurprising that researchers have extensively critiqued the TPB, and identified ways that the model can be improved. A meta-analysis of 185 studies investigating the predictive power of the TPB for a variety of health-related behaviours, reported an average of between 27% and 39% of the variance in behaviour and intention respectively (Armitage &

Connors, 2002). However, Bogers, Brug, Van Assema and Dagnelie's (2004) analysis suggest the predictive power is much higher. These authors dispute the results of Armitage and Connors' meta-analysis, arguing some of the studies included in the meta-analysis were poorly designed and not aligned with the guidelines suggested by Ajzen. As discussed, and of particular significance to the present study, Taylor (2015) used the TPB to explain students' subject choices in senior secondary schools. Her study indicated that the TPB constructs explained between 66% and 68% of the variance in intentions (Taylor, 2015). Taylor concluded that students are likely to spend considerable time planning their subject choice considering the high stakes and possible consequences of a 'bad decision'. Therefore, the behaviour is likely to be highly planned (Taylor, 2015). Nevertheless, Ajzen (2014) conceded that the model does not fully explain future behaviour. Even when the measures are carefully constructed reliabilities rarely exceed 80% (Ajzen, 2014).

Using an Extended Theory of Planned Behaviour Model to examine Students' Intentions to study at University

As with any framework there are limitations and it is accepted that the TPB model is not likely to capture all the beliefs or factors underpinning intent and behaviour. Considering the complexity associated in explaining intention and behaviour, it is generally accepted there are other determinates that may improve the efficacy of the model to explain and predict behaviour. Attempts have been made to address the perceived weaknesses of the TPB by extending the original model (Cristea, Paran & Delhomme, 2013; Heath & Gifford, 2002; Rise, Kovac, Kraft & Moan, 2008).

The construct of self-concept has commonly been used to improve the efficacy of the TPB model in explaining participants' intentions (Armitage & Connor, 1998; Booth, Norman, Harris & Goyder, 2014). An important element of a person's self-concepts is one's academic self-concept (Marsh, 2002). There is research to suggest that academic self-concept and academic achievement are significantly associated with each other (Guay, Marsh and Boivin, 2003; Marsh, 2007; Parker, Marsh, Ciarrochi, Marshall & Abduljabbar, 2014). Moreover, academic self-concept may have a considerable effect on students' educational pathways including post school transitions to further education (Marsh, Byrne & Yeung, 1999). Others state similar findings, suggesting that students with low academic self-concept are less likely to choose more difficult coursework in schools, engage in additional educational opportunities and apply for more competitive courses (Marsh, 2007; Nagy, Trautwein, Baumert, Koller, & Garrett, 2006). A major contribution of the present study will be to investigate academic self-concept, net of other variables, as a predictor of student's intent to study at university. The different types of academic self-concepts measured in this study include general, verbal and mathematical.

How intention formation may differ between genders

Gender may be an important consideration when examining intention, behaviour and possible reasons for variance. Females have higher participation rates in university education when compared to males in 88% of all OECD countries (OECD, 2012). The gender ratio for domestic graduates in Australian universities is approximately 6:4 in favour of females (Martin, 2015). This gender imbalance may be largely explained by primary education and nursing- two highly feminised professions, being moved into the universities (Maslen, 2013). While girls typically have more positive

academic aspirations and attitudes than boys, the impact of gender on children's attitudes and aspirations to university study vary significantly with parent education and attitudes to study, age and different perceptions regarding the value of education (Rampino & Taylor, 2013). There is research to suggest that typically males are more responsive than females to positive parental influences, while educational attitudes and aspirations of boys deteriorate at a relatively younger age (Rampino & Taylor, 2013).

Aim of the study

The primary aim of this study is to examine if there are gender differences between the predictors of intention to attend university using an Extended Theory of Planned Behaviour Model.

Method and Analysis

A survey questionnaire aligned with the TPB constructs in addition to social economic status (ICSEA [Index of Community Socio-Educational Advantage], Mother's employment index number [AUSEI06], Father's AUSEI06, books at home), indicators of ethnicity, school type and other demographical questions was administered to attendees of the VCE Futures Expo 2015 in Melbourne Australia. The survey instrument is shown in Appendix 1. Structural Equation Modeling (SEM) is used to analyze the data collected. Furthermore, a critical ratio difference test is used (Byrne, 2013), where the regression weight estimate is divided by its standard error in order to get a z-score indicating significant ($\alpha=.05$) differences between groups.

Participants

252 year 12 students participated in the present study. When broken into gender, 43.3% (n=109) of the sample reported to be male while 56.7% indicated female (n=143). 64.7% (n=163) of the sample reported attending a government school while 35.3% (n=89) indicated that they attend a catholic or independent school. 87.3% (n=220) of students were born in Australia while 12.7% (n=32) reported being born overseas. 85.7% (n=216) of the sample use English as their main language at home. 60.3% (n=152) of the sample reported no religious affiliation while over a quarter (28.2%, n=71) stated a religious affiliation with Christianity.

The Australian Standard Geographical Classification - Remoteness Area (ASGC-RA) is a geographic classification system by the Australian Bureau of Statistics (ABS), as a statistical geography structure which allows quantitative comparisons between 'city' and 'country' Australia (Australian Government, 2015). 2015). Categorised according to the ASGC-RA classification, 71% of students reported their enrolment in a school (n=53) located in a *Major Cities of Australia* area. 26% of students reported their enrolment in a school (n=19) located in the *Inner Regional Australia* zone. 3% of students reported their enrolment in a school (n=2) located in *Outer Regional Australia*.

Table 1

Mean, Standard Deviations, Skewness and Kurtosis

Construct	Mean	SD	Skewness	Kurtosis
ICSEA NUMBER	1027.21	61.281	0.572	-0.297
Mother's AUSEI06 score	50.502	22.4058	0.556	-1.326
Father's AUSEI06 score	52.2635	22.7714	0.273	-1.396
Books	113.29	74.885	0.002	-1.611
Intent1	5.9	1.587	-1.504	1.461
Intent2	5.91	1.607	-1.529	1.457
Intent3	5.87	1.613	-1.477	1.367
Intent4	5.9	1.568	-1.465	1.351
Intent5	6	1.596	-1.702	2.048
Att1	6.24	1.278	-1.853	3.01
Att2	6.23	1.243	-1.903	3.418
Att3	5.96	1.355	-1.355	1.353
Att4	5.98	1.348	-1.536	2.276
subnorm1	5.89	1.401	-1.473	1.864
subnorm2	5.6	1.585	-1.245	0.966
subnorm3	5.6	1.544	-1.037	0.384
Pbc1	5.94	1.43	-1.463	1.75
Pbc2	5.56	1.448	-0.969	0.481
Pbc3	5.73	1.482	-1.193	0.844
genac1	5.52	1.261	-0.815	0.297
genac2	5.11	1.528	-0.661	-0.183
genac3	5.27	1.403	-0.759	0.297
Verac1	4.91	1.628	-0.64	-0.253
Verac2	4.81	1.686	-0.53	-0.487
Verac3	4.94	1.628	-0.668	-0.295
Mamac1	4.91	1.77	-0.536	-0.694
Mamac2	4.68	1.951	-0.492	-0.872
Mamac3	4.8	1.779	-0.559	-0.599

Results**Descriptive Statistics**

Shown in Table 1, the descriptive statistics from the survey data are presented. SEM is fairly robust against non-normal distribution; even with skewness results as high as 3 and kurtosis measures equal to 10 as acceptable (Kline, 2005; West et al., 1995). Inspecting Table 1, various items departure from normality, although all measures fit well within the recommended guidelines by Kline and West et al.

Table 2

GOF Measures of UPIF

GOF Measure	Result	Acceptable thresholds (Hu & Bentler, 1999)
χ^2 [df](sig)	654.55 [424] ($p < .001$)	($p > 0.05$)
χ^2 /df	1.68	≤ 3
RMSEA	.052 PCLOSE (.277)	$\leq .08$ + (PCLOSE $> .05$)
AGFI	0.82	$\geq .80$
SRMR	0.049	$\leq .09$
CFI	0.96	$\geq .95$
TLI	0.954	$\geq .95$
PGFI	.7	\wedge
PNFI	.783	\wedge

\wedge =No specific recommendations: Score ranges between: 0=poor fit-1=very good fit (Mulaik et al 1989)

Measurement model

As shown in Table 2, absolute fit measures χ^2 /df=1.63 ($0-3 \leq$), RMSEA measured=.052, PCLOSE (.277) and AGFI=.82 ($>.80$) and incremental measures CFI= 0.96 ($>.95$), TFI=0.954 ($>.95$). The parsimony measures = .7 for the PGFI and .783 for the PNFI respectively. Despite the χ^2 [df] being significant, for reasons discussed previously (e.g. χ^2 is sensitive to sample size, χ^2 /df better indicator >200), goodness of fit statistics confirmed that the model was an adequate fit of the data.

Table 3

Validity and Reliability measures

	CR	AVE	MSV	ASV	BI	Att	SN	PBC	GenAC	VerbA	MamA	SES	Eth
BI	0.984	0.924	0.717	0.323	0.961								
Att	0.950	0.827	0.796	0.341	0.847	0.909							
SN	0.880	0.711	0.663	0.304	0.742	0.735	0.843						
PBC	0.850	0.655	0.796	0.383	0.826	0.892	0.814	0.809					
GenA	0.871	0.692	0.471	0.266	0.538	0.576	0.557	0.686	0.832				
VerbA	0.927	0.810	0.396	0.116	0.277	0.355	0.272	0.424	0.629	0.900			
MamA	0.919	0.792	0.278	0.098	0.290	0.279	0.382	0.347	0.527	0.227	0.890		
SES	0.754	0.413	0.142	0.067	0.351	0.315	0.264	0.377	0.224	0.158	0.157	0.643	
Eth	0.763	0.450	0.080	0.024	0.244	0.191	0.282	0.117	-0.025	0.027	-0.019	0.043	0.671

BI= Behavioural Intention Att=Attitude, SN=Subjective norm, PBC=Perceived Behavioural Control, GenAC=General Academic Self Concept
VerbA= Verbal Academic Self Concept, MamA=Mathematical Academic Self Concept, SES=Socio-economic Status, Eth=Ethnicity

Validity

Convergent Validity is indicated by examining the $CR > .7$ and $AVE > .5$ (Hair et al., 2014). As shown in Table 3, all constructs meet the minimum acceptable CR. Most constructs exceeded the more conservative measure AVE except for SES (.413) and ethnicity (.450) as indicated by the bold highlighting in the table. Considering that SES and ethnicity are both conceptually multi-dimensional in nature and notoriously difficult to measure (Jones, 2013, Marks 2000), the satisfaction of the CR criteria was deemed to indicate acceptable levels of convergent validity.

Discriminant validity was measured using three criteria including criterion 1) $MSV < AVE$, criterion 2) The square root of the AVE for each construct is less than one the absolute value of the correlations with another factor and criterion 3) All standard factor loadings $> .3$ as recommended by Hair et al. (2014). Table 3 indicates that all constructs exceeded $MSV < AVE$ except PBC ($MSV = .796 / AVE = .655$). Likewise, the square root of the AVE for PBC is less than one the absolute value of the correlations with another factor (.809). These data indicate relatively high levels of shared variance with the attitude latent construct and this potential limitation should be kept in mind when interpreting results. Otherwise, all other constructs satisfy criterion 2 and 3.

Table 4

Parameter Estimates

Hypotheses	Relationship (positive)	Standardised regression weights (β)	C.R. (t)	Supported
H1	Att \rightarrow BI	.501	4.6	YES***
H2	SN \rightarrow BI	.136	2.22	YES*
H3	PBC \rightarrow BI	.235	1.436	NO
H4	GAsC \rightarrow BI	.034	.727	NO
H5	VbAsC \rightarrow BI	-.09	-2.167	NO
H6	MamASC \rightarrow BI	.001	.016	NO
H7	SES \rightarrow BI	.082	2.05	YES*
H8	Eth \rightarrow BI	.080	1.657	NO

Notes: *** $p < .001$ ** $p < .01$ * $p < 0.05$

Structural model

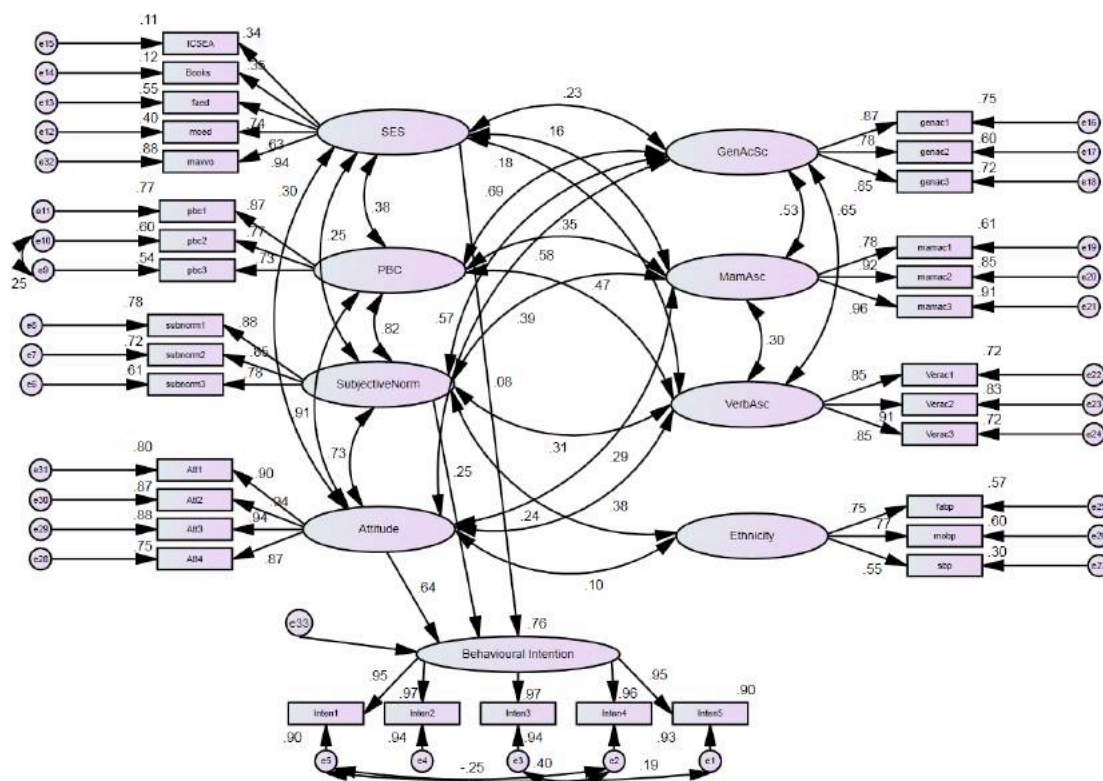


Figure 2. Final Structural Model

Results shown in Table 4 indicated that H1, H2 and H7 were statistically significant. The standardised estimates and critical ratio values for these hypotheses (Att → BI: $\beta = .641, t = 9.677, p < .001$; SN → BI: $\beta = 0.252, t = 4.841, p < .001$; SES → BI: $\beta = .085, t = 2.256, p < .05$) indicated statistical significance and hence support for these three factors. As shown in Figure 2, the $R^2 = .76$. In other words, the exogenous variables explain 76% of the variance in students' intention to study at university.

Table 5

Gender comparison between significant predictors of intention

		(B) Males	(B) Females	z score
BI	← Att	1.447	.703	-3.462
BI	← SN	.168	.386	1.192
BI	← SES	.236	.305	2.173

Notes: z-score=2.58= $p \leq .01$; z-score=1.96= $p \leq .05$ (intent1-Regression Weight)
Bold= sig ($p \leq .05$) z-score (B) =Unstandardised regression coefficient

Discussion

Multigroup analysis offered evidence to indicate that there are differences in how intention is formed differently according to gender. As shown in Table 5, males typically reported significantly stronger attitudes ($z=3.46, p<.001$) to attend university when compared to females, despite both genders having non-significant ($p<.05$) differences of intention to study at university. Similarly, other studies examining computer use have reported that when compared to women's intentions, the intentions of men were more strongly influenced by their attitude whereas women were more strongly influenced by subjective norm and perceived behavioural control (Venkatesh, Morris & Ackerman, 2000). On the contrary, study of intentions to use condoms was more dependent on the attitudes of women while for men subjective norm and PBC were more decisive (Muñoz-Silva, Sánchez-García, Nunes & Martins, 2007). Variation between genders in the predication of intention may vary according to the behaviour of interest. The results reported in this study support the notion that males' attitudes are more important in the formation of behavioural intention compared to females. At the same time, these results support the idea that females were typically more influenced by subjective norm and perceived behavioural control.

Conclusion

All things considered, these data may support the rationale that school programs exploring students' future study options may be most effectively taught separately along gender lines. If the goal is to increase students' intention to attend university, perhaps stakeholders may consider targeting male students' attitudes in university aspiration programs whereas a combination of attitudes, subjective norm and PBC focused interventions may be generally most effective for female students. Further research in this area is needed in order to question or reinforce the notion that males' attitudes are more important in the formation of behavioural intention to attend university as opposed to the opposite sex.

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Appendix 1: Survey Instrument

PLEASE READ THESE INSTRUCTIONS FIRST

Thank you for participating in this study. If you are taking a gap year or a break from study, this should not affect how you answer these questions. Please answer what you intend to do within the next 3 years.

A genuine intent to study at university is indicated by enrolling in a degree course. When questions in this survey ask you about studying at university, **I want you to think about your intention to enrol in a university degree course in the next 3 years**. It is important to point out that there are no right or wrong answers; I'm interested in your beliefs about your future pathway.

Section 1: Some general information about you

In this section you will be asked some questions about you, your family and your home. Some of the following questions are about your parents or people who are like your parents to you — for example, guardians, step parents, foster parents, etc. If you share your time with more than one set of parents/ guardians, please answer the following questions for those parents/guardians you spend the most time with.

Q1. Are you male or female?

- Male Female

Q2. I currently attend a: (Please ask if not sure)

- State Government school Catholic/Independent school

Q3. The name of the school I currently attend is:

Q4. Parent 1 is Male / female.

What is **Parent 1's** main or most recent job? (e.g. School teacher, kitchen-hand, sales manager). Please write in the job title below:

Q5. Has **Parent 1** completed a degree or higher at university?

- Yes No

Q6. Where was **Parent 1** born?

- In Australia Outside Australia

Q7. Parent 2 is Male / female.

What is **Parent 2's** main or most recent job? (e.g. school teacher, kitchen-hand, sales manager). Please write in the job title below:

Q8. Has **Parent 2** completed a degree or higher at university?

- Yes No

Q9. Where was **Parent 2** born?

- In Australia Outside Australia

Q10. Where were **you** born?

- In Australia Outside Australia

Q11. Is English the main language spoken in your home?

- Yes No

If No, what is the main language spoken in your home?

- Arabic Greek
 Mandarin Cantonese
 Italian Other (If other, please
specify _____)
 Vietnamese

Q12. Do you have a religious affiliation?

- Christian Buddhist Islam No religion
 Other (If Other, please specify _____)

Q13. How many books are there in your home?

There are usually about 40 books per metre of shelving. Do not include magazines, newspapers, or your school books.

Please write number of books here: _____

Section 2		Please indicate your response to the following questions/statements:																	
Q. 14	I expect to study a degree at university	Strongly disagree	1	2	3	4	5	6	7	Strongly agree									
	Q.15	I want to study a degree at university	Strongly disagree	1	2	3	4	5	6	7	Strongly agree								
				Q.16	I intend to study a degree at university	Strongly disagree	1	2	3	4		5	6	7	Strongly agree				
							Q.17	I plan to study a degree at university	Strongly disagree	1		2	3	4		5	6	7	Strongly agree
										Q.18		Studying a degree at university is something I will try and do	Strongly disagree	1		2	3	4	

Section 3																		
Q.19	I believe studying a degree at university will be:	Bad for me	1	2	3	4	5	6	7	Good for me								
			Q.20	I believe studying a degree at university will be:	Useless	1	2	3	4		5	6	7	Worthwhile				
						Q.21	Studying a degree at university will be:	Unpleasant	1		2	3	4		5	6	7	Pleasant
									Q.22		I believe studying a degree at university	Unenjoyable	1		2	3	4	

will be:										
Section 4										
Q.23	If I study a degree at university, I will find it easier to get a job I like	Very unlikely	1	2	3	4	5	6	7	Very Likely
Q.24	If I study a degree at university, I will get the opportunity to learn things I am interested in	Very unlikely	1	2	3	4	5	6	7	Very Likely
Q.25	If I study a degree at university, I will have more money in the future	Very unlikely	1	2	3	4	5	6	7	Very Likely
Q.26	If I study a degree at university, I will attend social events (e.g. parties/ social and special interest clubs)	Very unlikely	1	2	3	4	5	6	7	Very Likely
Q.27	If I study a degree at university, I will have a study debt	Very unlikely	1	2	3	4	5	6	7	Very Likely
Q.28	Finding a job I like is:	Extremely undesirable	-3	-2	-1	0	1	2	3	Extremely desirable
Q.29	Learning things I am interested in is:	Extremely undesirable	-3	-2	-1	0	1	2	3	Extremely desirable
Q.30	Having money is:	Extremely undesirable	-3	-2	-1	0	1	2	3	Extremely desirable
Q.31	Attending social events (e.g. parties/ social and special interest clubs) is:	Extremely undesirable	-3	-2	-1	0	1	2	3	Extremely desirable
Q.32	Having a study debt is:	Extremely undesirable	-3	-2	-1	0	1	2	3	Extremely desirable
Section 5										
Q.33	Most people who are important to me think that I:	Should not study a degree course at university	1	2	3	4	5	6	7	Should study a degree course at university
Q.34	It is expected of me to study a degree course at university	Strongly disagree	1	2	3	4	5	6	7	Strongly agree
Q.35	People who are important to me want me to study a degree course at university	Strongly disagree	1	2	3	4	5	6	7	Strongly agree
Section 6										

Q.36	My parents/guardians generally think I:	Should not study a degree course at university	-3	-2	-1	0	1	2	3	Should study a degree course at university
Q.37	My teachers generally think I:	Should not study a degree course at university	-3	-2	-1	0	1	2	3	Should study a degree course at university
Q.38	My friends generally would:	Disapprove of me studying a degree at university	-3	-2	-1	0	1	2	3	Approve of me studying a degree at university
Q.39	My parent's/guardian's approval is important to me:	Not at all	1	2	3	4	5	6	7	Very much
Q.40	What teachers think I should do matters to me	Not at all	1	2	3	4	5	6	7	Very much
Q.41	What friends think I should do matters to me	Not at all	1	2	3	4	5	6	7	Very much
Section 7										
Q.42	I am confident that I could study a degree course at university if I wanted to	Strongly disagree	1	2	3	4	5	6	7	Strongly agree
Q.43	If I wanted to, I feel in complete control of whether to study for a degree at university	Completely false	1	2	3	4	5	6	7	Completely true
Q.44	Whether I decide to study for a degree at university is entirely up to me	Completely false	1	2	3	4	5	6	7	Completely true
Section 8										
Please indicate your response to the following questions/statements:										
Q.45	Having access to enough money (e.g. savings/parent's help) is important in order to study a degree at university	Very unlikely	1	2	3	4	5	6	7	Very Likely
Q.46	My confidence in successfully passing university in the future is important in order to study a degree	Very unlikely	1	2	3	4	5	6	7	Very Likely

Q.47	Getting the final high school results needed for university entry is important in order to study a degree	Very unlikely	1	2	3	4	5	6	7	Very Likely
Q.48	My access to money (e.g. savings/parent's help) means that I am:	Less likely to study a degree at university	-3	-2	-1	0	1	2	3	More likely to study a degree at university
Q.49	My confidence in successfully passing university in the future means I am:	Less likely to study a degree	-3	-2	-1	0	1	2	3	More likely to study a degree
Q.50	The final high school results I expect to receive overall mean I am:	Less likely to study a degree at university	-3	-2	-1	0	1	2	3	More likely to study a degree at university
Section 9										
Please indicate your response to the following questions/statements:										
Q.51	I'm good at most school subjects	Strongly disagree	1	2	3	4	5	6	7	Strongly agree
Q.52	I learn things quickly in most school subjects	Strongly disagree	1	2	3	4	5	6	7	Strongly agree
Q.53	If I work really hard, I could be one of the best students in my school year	Strongly disagree	1	2	3	4	5	6	7	Strongly agree
Q.54	Work in English classes is easy for me	Strongly disagree	1	2	3	4	5	6	7	Strongly agree
Q.55	English is one of my best subjects	Strongly disagree	1	2	3	4	5	6	7	Strongly agree
Q.56	I get good marks in English	Strongly disagree	1	2	3	4	5	6	7	Strongly agree
Q.57	I have always done well in mathematics	Strongly agree	1	2	3	4	5	6	7	Strongly disagree
Q.58	Mathematics is one of my best subjects	Strongly disagree	1	2	3	4	5	6	7	Strongly agree
Q.59	I get good marks in mathematics	Strongly disagree	1	2	3	4	5	6	7	Strongly agree

Thank you for your time and participation. Your contribution is appreciated.

*Perceptions of Classroom Learning Environments and Computer Self-Efficacy
Beliefs of Computer Science Students*

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Abstract

Extensive studies have reported that students' computer self-efficacy beliefs are very important for students' academic achievement and outcomes. Students' levels of computer self-efficacy have been shaped by many factors such as perceptions of classroom learning environments, gender, and prior programming experience etc. which are consistent with these study findings. Our survey study collected from 549 undergraduate participants from 11 public and private universities in Thailand having computer science major. We discovered that there were relationships among perceptions of classroom learning environments, gender, high school programming experience, and computer self-efficacy beliefs (general computer and computer programming self-efficacy). In addition, hierarchical regression analysis demonstrated that perceptions of classroom environments were the best predictors to these beliefs and the other predicting factors were gender which males had higher in both beliefs than females, and previous programming experience which predicted to only computer programming self-efficacy. The results from this study suggested computer self-efficacy beliefs of computer science students were varied from perceptions of classroom environment dimensions, gender, and previous programming experience.

Keywords: computer self-efficacy beliefs; perceptions of classroom learning environment; computer science

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Introduction

From many years, there are numerous research papers which have studied about self-efficacy in various domains of learning. The results from these studies have revealed that there are the number of factors that affects on self-efficacy beliefs; for instance, sources of self-efficacy beliefs, social supports (e.g. peers, teachers, and parents), gender, ethnics, perceptions of classroom learning environments etc. All of these factors play a vital role to encourage students to have high/low self-efficacy beliefs which are directly influent toward students' performance, effort, choices of persistence, academic achievement, and outcomes (Britner & Pajares, 2006; Larose et al., 2006; Thanita et a.l, 2012; Usher & Pajares, 2009; Zeldin & Pajares, 2000). However, the above mentioned research has given that the studies of the relationships between perceptions of classroom learning factors and self-efficacy beliefs are not much appearance with evidence especially focusing on five dimensions of classroom learning environments (cooperation, competition, involvement, autonomy, and meaningfulness) and specific with computer science students in Thai context which can be a gap for this paper to investigate in this area.

Student's self-efficacy is defined as the beliefs of judgments on his/her capabilities in order to produce the amount of effort and the levels of performance or behaviors (Bandura, 1977) and it is a part of social cognitive theory (Bandura, 1986). The changing individual's levels of self-efficacy are depended on student's perceptions from information that he/she obtains from any factors such perceptions of classroom environments, sources of self-efficacy (Pajares & Schunk, 2001) which are influential to high or low performance (Johnson, 2005). Four sources of self-efficacy are mastery experience - one's past performance, vicarious experience - observing others to perform tasks, social persuasions - social encouragement from others such as feedback from peers and teachers, and psychological states - emotional states such as anxiety, stress, fatigue, and mood (Bandura, 1977; Usher & Pajares, 2009; Zeldin & Pajares, 2000).

In computer science courses, computer self-efficacy beliefs point to individual's perceptions of abilities to deal with computer tasks (Compeau & Higgins, 1995). There are some aspects of computer self-efficacy beliefs such as general computer, computer programming etc. (Galpin et al., 2003). General computer self-efficacy measured for non-specific computer use (Rosson et al., 2011) relates to students' judgment in their abilities to use computers, applications, internet etc. (Marsh, 2010; Johnson, 2005) but computer programming self-efficacy concerns with students' beliefs in their capabilities to perform computer programming tasks (Marsh, 2010). Much research has found these beliefs are very crucial factors on performing success in computer-related fields. For example, if students have higher computer self-efficacy beliefs, they will have more confidence in computer skills and information system, greater acceptance of new computer skills and technological changes, greater enrollment in computer and related courses, better learning performance (Hasan, 2003), higher persistence in computer science program (Sam et al., 2005), more accomplishment with computer assignments, and higher predicting of learning outcomes (Kinnunen & Simon, 2011; Hasan, 2003; Marsh, 2010).

As can be seen from the benefits of computer self-efficacy beliefs, it can assume that the higher computer self-efficacy beliefs students have, the more opportunities and

higher performance on achievement they will accomplish. Thus, the study of the influential factors (e.g. classroom learning environments, gender, and previous programming experience) is very important to explore because anticipated results can give evidence to support what are causing factors affecting students' levels of computer self-efficacy beliefs.

First, "Classroom is a social and learning environment" assists to form students' perceptions on their attitudes and feelings toward subject matter, adults and peers (Koul et al., 2012). There is much research studied for classroom learning environments in many subject areas such as mathematics, science, physics, and computer science etc. with some different dimensions of classroom learning environment measurement (e.g. student cohesiveness, teacher support, investigation, task orientation, equity, affiliation, teacher control, cooperation, involvement, competition, autonomy, meaningfulness etc.) (Aldridge & Fraser, 2000; Fisher & Fraser, 1985; Fraser, 1998; Ogbuehi & Fraser, 2007; Wolf & Fraser, 2008; Koul et al., 2012) but in this study focusing on only five factors according to Koul et al. (2012) recommended that classroom setting should be good with autonomy, meaningful learning, more cooperation, more involvement, and less competition (autonomy - chances to select and to control on learning (Lawless & Brown, 1997; Murray, 1999; Wang & Peeverly, 1986), meaningfulness - assimilation with new knowledge into the existing one in memory (Fraser, 2002; Mayer, 1981; Mayer & Moreno, 2002), cooperation - fulfilling effort with group commitment rather than individual to accomplish tasks (Blumenfeld, 1992; Wolf & Fraser, 2008; Yerion & Rinehart, 1995), involvement - participation with classroom learning activities (Byer, 1999), competition - preference to compete with others (Regueras et al., 2011) or social comparison (Schunk & Pajares, 2001).

Therefore, to set classroom with positive environment can shape students' perceptions with higher satisfaction gained from better experience in class (Fraser, 2002; Hester, 2002, Kerr & Nelson, 2002 cited in Khalil & Saar, 2009; Zandvliet & Fraser, 2005) and higher self-efficacy beliefs (Schunk & Pajares, 2001) which lead them to reach their academic achievement (Dart et al., 1999; Hoyle, 1985; Khalil & Saar, 2009), and to enhance their learning outcomes (Wolf & Fraser, 2008). Perceptions are personal meaning that influence on personal behaviors which originate from the interaction between individual and environments (Byer, 1999; Wolf & Fraser, 2008). From related studies have given evidence that there are positive associations between students' perceptions of classroom learning environments and learning outcomes (e.g. cognitive, affective, behavior) (Byer, 1999; Fraser, 1998; Fraser, 2002; Wolf & Fraser, 2008), and perceptions of classroom environments and self-efficacy beliefs (Dorman, 2001; Lorsbach & Jinks, 1999; Schunk & Pajares, 2001). For instance, Giannakos et al. (2012) have emphasized that positive learning environment is important to increase students' self-efficacy levels and students' confidence in computer science learning including computer programming. In addition, Schunk & Pajares (2001) have reported that learning environment with competitive focusing on grading, social comparison, and teacher behaviors brings students to have lower in their self-efficacy but involvement of learning depending on how much students perceive from environment of autonomy has higher influence on self-efficacy leading to academic achievement of students. Moreover, Hodges & Murphy (2009) have shown that students' perceptions of classroom learning environments influence on

self-efficacy which are vital to students' achievement as same as Dorman (2001) and Lorschach & Jinks (1999) have reported with the related theme.

Second, prior experience in computer programming is one of the factors which influences on computer self-efficacy beliefs (Johnson, 2005; Ramalingam et al., 2004; Venkatesh et al., 2000; Wilfong, 2006). Experience since high school can continue to affect student's abilities on their learning courses in university (Ramalingam et al., 2004) which means that unsuccessful experience may reduce personal beliefs of computer self-efficacy (Johnson, 2005).

Third, there are widely talking about gender differences and computer self-efficacy beliefs of students. Reports from previous research have demonstrated that in male-dominated subjects such computer science females have always rating themselves with lower computer self-efficacy than males (Schunk & Pajares, 2001; Sam et al., 2005; Volman, 2001) and they often feel intimidate into discussion and uncomfortable to have fun of work with others in class because of cultural image of this field (Wilson, 2003).

All of those factors are so crucial to clarify in order to in-depth understanding how many all of them have effect on computer self-efficacy beliefs and which one are the most effective factors. Data was collected from undergraduate students in public and private universities having computer science major. Research questions are following:

1. What is the relationship between students' perceptions of classroom learning environments and computer self-efficacy beliefs?
2. What is the relationship between gender and computer self-efficacy beliefs?
3. What is the relationship between prior computer programming experience and computer self-efficacy beliefs?
4. What are the influential factors as predictors of computer self-efficacy beliefs in general computer and computer programming self-efficacy?

Methodology

Participants

549 computer science undergraduate participants from first year to last year students (66.5% males, 33.5% females) in 8 public and 3 private universities having computer science major in Thailand were randomly selected. The percentage of participants in each year were 33% of first year, 21.3% of second year, 32.6% of third year, 12.8% of fourth year, and 0.4% more than fourth year.

Instrument

There were three parts of questionnaire in this study. The first part of survey asked for students' general information such as GPA, year of study, prior computer programming experience, gender etc. The second part of questionnaire measured about students' perceptions in computer science classroom learning environments related to learner autonomy, competitive learning, involvement, and meaningfulness having 24 items. For example, "In CS class, most students are expected to compete with one other", "In CS class what you learn has relevance for you" (Koul et.al, 2012). The last part questioned about computer self-efficacy beliefs in general

computer and computer programming self-efficacy. 10 items to ask about general computer self-efficacy belief such as “I enjoy working with computers”, “I am very confident in my ability to use computers” (Papastergiou, 2008) and 6 items from Marsh (2010) for computer programming self-efficacy belief; for instance, “I learn to use different programming language easily”, “I find it easy to organize and manage my computer programs”. All items in second and third part of this questionnaire were rated by using a five-point Likert scale.

Analysis

This study would investigate the relationships among students' perceptions of classroom learning environments, gender, prior computer programming experience, and both computer self-efficacy beliefs by using Pearson's correlation. Moreover, hierarchical regression analysis would be used to find the significant and influential predictors of the above mentioned factors toward general computer and computer programming self-efficacy beliefs.

Result

Results from this study showed in Table 1 and Table 2. Pearson's correlation was given in Table 1 that there were significant relationships between all factors of classroom learning environments and both of computer self-efficacy beliefs. Meaningful learning was highly positive association to general computer self-efficacy ($r = .37, \rho < 0.01$) and learner autonomy was the highest correlation to computer programming self-efficacy ($r = .30, \rho < 0.01$). In addition, this study also found that gender and prior programming experience significantly associated with computer self-efficacy in general computer ($r = -.20, \rho < 0.01$; $r = .09, \rho < 0.05$) and computer programming ($r = -.17, \rho < 0.01$; $r = .15, \rho < 0.01$).

Hierarchical regression analysis revealed in Table 2. There were two separate analyses for both computer self-efficacy beliefs and we used two steps of following procedure to enter factors: gender and prior programming experience were entered into the first step and then all dimensions of classroom learning environments (cooperation, competition, involvement, autonomy, and meaningfulness) were input into the second step. The findings from this method were support our second research questions that factors of classroom learning environments were significant variations to predict computer self-efficacy beliefs; meaningfulness and learning involvement positively related to general computer self-efficacy, whereas meaningful learning, learner autonomy, and competitive learning positively associated to computer programming self-efficacy. Moreover, gender and prior programming experience were additional variance. Gender was found to be significant predictor of all beliefs but prior programming experience predicted only computer programming self-efficacy.

The analysis of general computer self-efficacy in Table 2 was showed in the third step that meaningful learning environment was the most significant predictor ($\beta = .37, \rho < 0.001$) along with gender and prior experience and it's variance of outcome was 18%. After environment of learning involvement was loaded in the fourth step, the coefficient of meaningful learning dropped to $.27(\rho < 0.001)$ and additional variance of learning involvement was 3% ($R^2 = .21, \rho < 0.001, \Delta R^2 = .03, \rho < 0.001$). Another significant predictor of general self-efficacy was gender ($\beta = -.20, \rho < 0.001$).

In addition, computer programming self-efficacy analysis was resulted in the same table. In the third step, learner autonomy was found to be the most significant predictor ($\beta = .28, \rho = 0.001$) along with gender and prior experience and it's

variance in outcome was 13%. When meaningfulness and competition environments were added in the fifth step, the coefficient of autonomous dropped .16 ($\rho < 0.001$). Meaningful learning was 3% and competitive learning was 2% of additional variances ($R^2 = .18, \rho < 0.001, \Delta R^2 = .02, \rho < 0.001$). Other significant predictors of computer programming self-efficacy were gender ($\beta = -.14, \rho < 0.01$) and prior programming experience ($\beta = .10, \rho < 0.05$).

Table 1: *Interrelationships among perceptions of classroom learning environments, prior programming experience, gender, and computer self-efficacy beliefs (n=549)*

	1	2	3	4	5	6	7	8	9	M	SD
1. Gender		-.02	.01	-.14**	.01	-.02	-.01	-.20**	-.17**	1.34	.47
2. Prior programming experience			.04	.08	.04	.11*	.11**	.09*	.15**	2.33	1.01
3. Cooperative learning				.11*	.53**	.37**	.40**	.22**	.10*	3.91	.59
4. Competitive learning					.07	.25**	.03	.12**	.20**	3.05	.75
5. Learning involvement						.45**	.48**	.33**	.19**	3.88	.55
6. Learner autonomy							.40**	.25**	.30**	2.95	.51
7. Meaningful learning								.37**	.29**	3.99	.64
8. General computer self-efficacy									.42**	3.88	.72
9. Computer programming self-efficacy										3.17	.74

* $\rho < 0.05$, ** $\rho < 0.01$.

Table 2: *Hierarchical regression analysis for perceptions of classroom learning environments, prior programming experience, and gender predicting students' computer self-efficacy beliefs (n=549)*

Dependent Variables	Independent Variables	β Step 1	β Step 2	β Step 3	β Step 4	β Step 5
General computer self-efficacy	Gender	-.20***	-.20***	-.19***	-.20***	
	Prior programming experience		.09*	.05	.05	
	Meaningful learning			.37***	.27***	
	Learning involvement				.20***	
	R^2	.04***	.05*	.18***	.21***	
	Change in R^2		.01*	.13***	.03***	
Computer programming self-efficacy	Gender	-.17***	-.16***	-.16***	-.16***	-.14**
	Prior programming experience		.15***	.12**	.11**	.10*
	Learner autonomy			.28***	.20***	.16***
	Meaningful learning				.20***	.21***
	Competitive learning					.14**
	R^2	.03***	.05***	.13***	.16***	.18**
	Change in R^2		.02***	.08***	.03***	.02**

* $\rho < 0.05$, ** $\rho < 0.01$, *** $\rho < 0.001$.

Discussion

The results of this study contributed to understanding of the factors that affected to students' beliefs of computer self-efficacy from differential perceptions of classroom environment dimensions, gender, and prior programming experience. For computer self-efficacy beliefs, general computer self-efficacy was predicted by meaningfulness and learning involvement and computer programming self-efficacy was predicted by autonomy, meaningfulness, and competition. These findings can suggest how to arrange the proper classroom environments of each computer science course (e.g. general computer or computer programming). Moreover, these results were also supported by the findings from Schunk & Pajares (2001) that involvement and autonomy of classroom environments influence on students' level of self-efficacy and classroom with meaningful learning also helps students to maintain positive efficacy (Pajares & Urdan, 2006). Although, this study found that competitive environment predicted computer programming self-efficacy. In non-social science classrooms have had higher in competition and lower affiliation than social science classrooms (Koul et al., 2012). According to some previous studies, there were certain aspects of competitive advantages. For example, competitive with peer pressure was beneficial to develop programming skills by more practicing and peer interaction (e.g. promoting students' effort from programming contest, programming showcase). As a result, students well performed in computer programming such as deeper understanding in programming logic course (Ribeiro et al., 2009), more motivation of active learners (Regueras et al., 2011) leading to students' higher levels of self-efficacy beliefs (Law et al., 2010).

Moreover, the current study also found that there are gender differences in both of computer self-efficacy beliefs. Male students had higher levels of general computer self-efficacy ($x=3.98$) and computer programming self-efficacy beliefs ($x=3.25$) than females. These findings were consistent with prior studies that males have had higher in computer self-efficacy beliefs than females (Durndell et al., 2000; Durndell & Haag, 2002; Galpin et al., 2003; Lopez et al., 2006; Rosson et al., 2011) because females have still believed and rated themselves lower self-efficacy than males especially for male domains such a computer science (Schunk & Pajares, 2001; Volman, 2001). Although, females always completed their studies before males had done (Ilias & Kordaki, 2006). Some studies have suggested that computer science classroom environments are very difficult for females to success in this major than males (Howell, 1993). Therefore, setting computer science classroom environments with balance in gender are very importance for undergraduate students to success in this major (Marsh, 2010) and to lead students to have more class interaction, more opportunities for practice, more performance feedback (Fensham et al., 1986; Schunk & Lilly, 1984; Schunk & Pajares, 2001).

Furthermore, prior programming experience influenced on computer programming self-efficacy consistent with previous studies findings (Johnson, 2005; Ramalingam et al., 2004; Venkatesh et al., 2000). Programming experience helps students to have more opportunities to success in computer science program and do well in class; for instance, better in design and problem analysis, good practice and feedback, and problems solving and project management abilities etc. (Beaubouef & McDowell, 2008). Thus, encouraging students to have programming experience since high school

is beneficial to push students to have higher beliefs in their programming abilities. As a result, students have more confident to solve complex programming tasks which benefits for students to persist in computer science, to have higher in computer self-efficacy beliefs (Hasan, 2003; Ramalingam et al., 2004), and to reach for academic achievement and outcomes (Barbeite & Weiss, 2004; Durndell et al., 2000; Durndell & Haag, 2002; Kinnunen & Simon, 2011; Sam et al., 2005; Wilson & Shrock, 2001; Zingaro, 2014).

Conclusion and limitations

In conclusion, this study support previous research studies that classroom learning environments are crucial factors to determine students' self-efficacy beliefs (Koul et al., 2012) along with gender and prior programming experience (Durndell et al., 2000; Johnson, 2005). However, there are some limitations of this study. First, the sample only focused on undergraduate students in Thailand such that for future research should include high school students and cross-culture study. Second, career aspirations of computer science major did not mention in this paper. Third, qualitative research with interviewing method should be applied in order to get deeper understanding of students.

The logo for the International Association for Frontiers in Research (iafor) is centered on the page. It features the lowercase letters 'iafor' in a light blue, sans-serif font. The text is surrounded by a large, stylized circular graphic composed of several overlapping, curved lines in shades of blue and red, creating a sense of motion and interconnectedness.

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The Audit Commission of Local Government in the UK

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Abstract

This paper examines the Audit Commission for local administration in the United Kingdom. The function of the Audit Commission, established in 1983 and dissolved in 2015, is to audit measures of the local authorities. However, in fact the Audit Commission has been playing roles of the policymaker and influencing policy making process beyond the auditors. In this paper I clarify the role of the Audit Commission as policymaker for local administration. This paper consists of three parts. First, I scrutinize relation between the recommendation in the annual report of the Audit Commission and public policy codified in the statutes about the housing, health and education. The relation between the Audit Commission's recommendation and the policy is shown in (1) the sale of council housing under the 'Right to Buy' and the Housing Act 1985, (2) confusion on responsibility for the community health care and the fund holding practices in the National Health Service and Community Care Act 1990, (3) the body corporate for the further education and the Education Reform Act 1988, and (4) inspection of the local education authority and School Inspection Act 1996, respectively. Second, I analyze the role of the Audit Commission from viewpoints of extension of Layfield Committee, Value for Money strategy, limitation of the Circular, and requirement of integrated recommendations. Finally, I discuss the Audit Commission as the policymaker in the UK.

Keywords: Audit Commission, Local Government, Housing Policy, Health Policy, Education Policy

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Introduction

Although the Audit Commission looks sober, which was established under the Local Government Finance Act 1982, the role of the Audit Commission is very important. Because, though the Audit Commission looks just publishing audit results and recommendation for the local policies, the Audit Commission, in fact, has been playing the part of the central government as the policymaker for the local administration since starting time in the Thatcher Administration. In this paper I clarify the role of the Audit Commission as policymaker for local administration. Organization of this paper is threefold. First, I analyze relation between the recommendations by the Audit Commission and legislated policies in the social security fields of the local government. The social security fields which I treat in this paper are the housing policy, the health policy and the education policy. Second, I analyze the role of the Audit Commission from several viewpoints. Finally, I discuss the Audit Commission as the policymaker in the UK.

1 Relation between Audit Commission Report and Policy

Whenever I read the Annual report of the Audit Commission, I always find close relation between the legislated policies and the recommendation in the Annual Report. I will analyze the relation between them in detail. Especially I focus on the three fields in the local administration; the housing policy, the health policy and the educational policy.

1.1 Housing Policy

The housing policy made by the Thatcher Administration is nothing but the privatization like the Conservative's education policies. Though the housing policy is less ideological than the education policy, the Conservative's housing policy also aimed reduction of power conferred to the local authorities by the Parliament.

(1) Right to Buy

The Thatcher Administration, by raising a slogan 'Right to Buy', enabled sale of the council housing to the tenants. From 1979 to 1999 more than 1.6 million dwelling houses of the local authorities were sold to individuals, therefore, number of the housing stock decreased (DETR 2000), (Durden, p. 140).

The Housing Act 1985 established provisions about Right to Buy. The section 118 is codified that if the dwelling-house is a house and the landlord owns the freehold, a secure tenant has the right to acquire the freehold of the dwelling house. The section 118 is also codified that if the landlord does not own the freehold or if the dwelling-house is a flat (whether or not the landlord owns the freehold), the secure tenant has the right to be granted a lease of the dwelling-house.

Furthermore, the section 132 of the Housing Act 1985 is codified, under the Right to Buy, that secure tenant who has the right to buy has the right to leave the whole or part of the aggregate amount on the security of a first mortgage of the dwelling-house. The new owner who acquired dwelling house with the mortgage from the local authority enjoyed tax relief by the Mortgage Interest Relief at Source called MIRAS. The mortgage interest relief at source was introduced in 1969 to help the borrowers owing the mortgage who became home-owner and had to pay the interest. Durden

criticized that Finance Act 1983, and subsequent legislation eroded the tax privileges of those with mortgages. As the Income and Corporation Taxes Act 1988 introduced interest relief for those who acquired the estate (section 354), the tax of the estate decreased. The Finance Act 1999 set limitation of the interest relief £ 30,000 (section 37). The section 38 of this Act set the interest relief for the mortgage interest payment not eligible from April, 2000. The MIRAS was abolished under the Gordon Administration in 2000.

(2) Choice of Landlord by Tenant

The privatization in the housing policy extended to not only 'Right to Buy' in the Housing Act 1985 but also 'Tenant Choice' in the Housing Act 1988, that is, change of landlord. The Tenant Choice is one of the most important elements of the Conservative's housing policy. The measure of the Tenant Choice allows secure tenant to transfer from the landlord of the local authority to housing associations or private landlord (John, p. 40). The part IV of the Housing Act 1988 is codified about change of landlord. Especially, the section 93 is a core provision, where objective estate is the dwelling house of residents whom the landlord of the public sector registered as qualifying tenants. The landlord is the local housing authority in the section 1 of the Housing Act 1985, new-town corporation in the section 4 (b) of the Housing Act 1985 and housing action trust in Part III of the Housing Act 1988.

(3) Housing Action Trust

One of the purposes of the Housing Act 1988 is establishment of the housing action trust. The section 60 is a provision about area which the corporation called housing action trust manages. This corporation is the housing association. The section 62 is a provision about the designation order by the Secretary of State to establish the housing action trust. The section 63 is a provision about primary objects of the housing action trust; security of the repair or improvement of housing accommodation, security of the proper and effective management and use of that housing accommodation, and security of the improvement of living condition in the area. The section 65 prescribes the function of the housing action trust as the function conferred on a local housing authority by Housing Act 1985 and Chronically Sick and Disabled Persons Act 1970, and function conferred on a local authority by the Land Compensation Act 1973.

(4) Divergence of Responsibility

The Audit Commission Annual Report 1986 warned divergence of the responsibility in the community care. The Report indicated duplicated functions between government departments which cause conflicting policies and lacking of responsibility. The Report also recommended to change social service from such strategic divergence to convergence between departments. Especially, the Audit Commission indicated that it is impossible to stay long at the residential home under the local authority. The Audit Commission also reported that the district council housing department intended to comprehend community care, therefore, and made the housing department just house keeper. It is to be noticed that same indication is seen in DETR 2000.

(5) Fraud

The Audit Commission Annual Report 1984 never emphasized 'Right to Buy' housing policy. What the Commission emphasizes is the housing benefit fraud as the risk to the local authority. The Audit Commission indicated Tenant's Arrear as the fraud which is the side effect of the housing benefit scheme. It is reported that amount of the Tenant's Arrear is more than 495,000 £ in 1982-83 and exceeded 340,000 £ in 1983-84. The Audit Commission also indicated fraud by the claimant enjoying housing benefit which involves properties in multi-occupation in urban areas (The Audit Commission Annual Report 1984, p.12).

In the 1989 Audit Commission Annual Report, the Commission gave an advice to the local authorities not to introduce a severance scheme which exceeds or is not authorized by the powers conferred on them by the statute. The severance means the conversion of an equitable joint tenancy in land into a tenancy in common. The Audit Commission also concerned the ring-fencing of the Housing Revenue. The ring-fencing aims to assign a sum of money to a particular purpose not to become part of the general resource of the organization. The Audit Commission Annual Report 1989 gave an advice that the ring-fencing scheme is unlikely to achieve the desired effect.

1.2 Health Policy

The National Health Service (NHS) by the Thatcher Administration pursued the privatization alike in the housing and education policies, which is characterized by the NHS purchase-provider split. This idea of the purchase-provider split led to the general practitioner fundholding (GPFH) created in 1991. The Conservative Administration removed health care service from the health authorities, and regarded the health authorities including the GP fundholder as the purchaser and the hospital as the provider. In this subsection I analyzed the health policy by interleaving the critique and recommendation in the Annual Report of the Audit Commission.

As for finance of the health and social security policies, the budgets are determined by the Department of Environment (DOE) and two sections of the Department of Health and Social Security (DHSS). The DOE administrates local government policies and finance; the DHSS (health/social services) administrates health service and social services policies; and the DHSS (social security) co-ordinates income support and maintenance. (1986 Audit Commission, p.30)

(1) Griffith Report

In 1983 Griffiths Report published a recommendation about reorganization of the NHS, that the Secretary of State should set up, within DHSS and the existing statutory framework, a Health Supervisory Board and a full-time NHS management Board. As the recommendation, the roles of the Health Services Supervisory Board was especially emphasized, which are determination of purposes, administration of budget, strategic decisions and performance evaluation of the Health Service. Griffiths Report also recommended that the NHS Management Board should be set under the Supervisory Board as the one body; the Supervisory Board should include a chairman who can take general management in national level. Furthermore, in the recommendation on the health authority and district health authority, the Report emphasized that one local agency should be established to take responsibility for mix of services (Griffiths Report), (John, p.54).

(2) Divergence of Responsibility

Based on the Griffith Report, the Audit Commission Annual Report 1986 (Making a Reality of Community Care) indicated organizational fragmentation and confusion. This Annual Report warned that conflicting policies between sovereign departments result in distribution of the responsibility between the departments, where the sovereign departments are Department of Environment (DOE) and DHSS (health and social security). The Report also indicated that there exists similar organizational fragmentation in the local level. On the other hand, the community care for the individual person is implemented by the several agencies or voluntary organization. The Report indicated that the social service must converge against such organizational distribution (Audit Commission 1986, p. 49).

(3) GP Fundholding

The National Health Service and Community Care Act 1990 established bodies as National Health Service trusts to take responsibility for the ownership and management of hospitals which were previously managed by Regional, District or Special Authorities. Section 14 of this Act is codified for application of the medical doctor as the fund holding practitioner to the Regional Health Authority. The purpose of this institutional reform is to split medical work into buyer of care: purchasers who accept budget from general tax finance, and providers of the hospital. This means separation between management of the health care and medical service. The remarkable change of the reform is the point that allows family doctor to act as the purchaser (B. Croxson, C. Propper and A. Perkins, p.2).

(4) Audit Commission

The Audit Commission Annual Report 1993 recommended to bridge the gap between clinical staff and general management, because of poor communication between them. The Report indicated that the communication problems in the national health service are characterized by poor communication among clinical staffs, and communication based on subjective view of clinical staffs. The Report showed that reasons of the communication gap are separated works of the clinical service itself and information gap between professional staff and general management staff. This recommendation of the Audit Commission Annual Report 1993 is noteworthy in a sense that the Commission indirectly criticizes the GP fundholding established in the National Health Service and Community Care Act 1990.

Afterward North showed that how Conservative government tried to restrict the risk of the GP fundholding by restricting range of patient items to less expensive items (North, pp.139-144).

The Annual Summary of NHS Audits 1995 touched upon accountability of the GP fundholding. This Summary surveyed purchasing performance of the GP fundholders and reviewed arrangement by the authorities for monitoring of the GP fundholders. This Summary also mentioned coordinated role between District Health Authority (DHA) and increasing GP fundholders. The Annual Summary reported that number of the GP fundholders reached 2,040 and purchasing power reached £ 2.8 billion. Furthermore, the Summary announced that, if the breach occurred, the GP fundholders will be imposed sanction rather than removed from the status of the GP

fundholding.

The Annual Summary of NHS Audit 1995 mentioned current situation of the national health service: “District Health Authorities (DHAs), like Family Health Services Authorities (FHSAs), have been preparing for their formal merger on 1 April 1996. They have also had to face increasing complexity as the number of trusts has risen, along with a rapid increase in the numbers of GPFs as co-purchasers.” (Annual Summary of NHS Audit 1995, p. 14) Though this summary recognized coordination between DHA and GP fundholding, opinion of this summary was implicit: “The GPFH accountability framework represents a good starting point in developing a coordinated role between DHAs and GPFHs, but could be improved in a number of respects.” (Annual Summary of NHS Audit 1995, p. 15)

Abolition of GP fundholding

In 1997, the Department of Health made a report “The new NHS modern dependable”. This report indicated little strategic coordination between Health Authorities, GP fundholders and NHS trusts. This measure can be addressed as a preparation for abolishment of the GP fundholding (The Department of Health, *The new NHS modern dependable*, p.2).

The Audit Commission never directly criticized the GP fundholding. However, the critique about the GP fundholding occurred from medical doctors. They said as follows: “The essence of the problem is that fundholders were given budgets based on their activity before they became fundholders, and were subject to relatively little monitoring in how they used these funds.” (B. Croxson, C. Propper and A. Perkins, p.3)

In 1997 the GP fundholding was abolished. As the reasons of the abolishment, there are many opinions; pursuit of interest of the family doctor as the GP fundholder, two-tier health service resulted from less expensive patient items decided by the GP-fundholder, and poor coordination between GP fundholder and District Health Authority.

1.3 Education Policy

The principle of the education policy has been privatization alike the housing policy and the health policy since Thatcher Conservative Administration. I discuss by focusing the further education and the school inspection. Because establishment of the body corporate for the further education and the school inspection for the performance evaluation of the school are such policies that market-oriented privatization is remarkable.

1.3.1 Further Education

The Thatcher Administration regarded the establishment of the body corporate of the further education as necessary measure in order to remove the further education from the local education authority and weaken the labour controlled local authority. Though the body corporate began to function on a full scale under the Blair Administration, the 1984 Audit Commission Annual Report already paid attention to the further education. The Commission reported such a current situation that local authorities spend £1.5 billion on polytechnics and colleges of further education, and employ some 160,000 lecturers. The Commission focused on four main areas for

improving value for money: academic staffing, cost recovery, control of non-teaching costs and marketing (Audit Commission 1984, p.15). The 1985 Audit Commission Annual Report also mentioned expenditure for school maintenance. The Commission reported education costs about £12 billion a year account for around half of local authority, and audited non-teaching costs in secondary schools, over £1 billion a year (Audit Commission 1985, p.19).

One of the purposes of the 1984 and 1985 Audit Commission Annual Reports is value for money, in other words, rationalization for the further education. According to these recommendations, the Further Education Act 1985 was legislated, in which establishment of the public body is codified (Further Education Act 1985, Sections 1, 2). Furthermore, Section 132 of the Education Reform Act 1988 is written about establishment of a body corporate to be known as the Polytechnics and Colleges Funding Council (Education Reform Act 1988).

Based on the Further Education Act 1985, the Education Reform Act 1988, which is a huge consolidated education law, is characterized by the body corporate of the further education. Especially, section 132 of the Education Reform Act 1988 is stated about establishment of a body corporate to be known as the Polytechnics and Colleges Funding Council. The Further and Higher Education Act 1992 is codified that there shall be a body corporate to be known as the Further Education Funding Council for England to exercise in relation to England the functions conferred on them (Section 1). The body corporate to be known as the Further Education Funding Council for Wales is also established. Members of the Further Education Funding Council are appointed by the Secretary of State (Section 1). The council owes the duty for their area to provide full-time education for persons who have not attained the age of nineteen years (Section 2), part-time education for persons of any age over compulsory school age (Section 3), and full-time education for persons who have attained the age of nineteen years (Section 3). The council may give financial support to the governing body of any institution within the further education sector or the higher education sector (Section 5). The Secretary of State may make grant to each of the councils of amount and terms (Section 7).

For better or worse, the body corporate was obliged to manage school of the further education in a privatized manner. Kendall and Holloway pointed out several problems of the body corporate. One problem is anti-academism due to short of the budget, for example, many part-time staffs. The other problem is frauds concerning the financial probity (Kendall and Holloway, pp.164-165).

1.3.2 School Inspection

The Annual Report of the Audit Commission 1990 stressed the role of local education on authority inspectors and advisers, under the title of Structure for Monitoring Education and Colleges. In this report, the Commission mentioned that the local education authorities (LEAs) need independent assurance that satisfactory education is being provided, since control over teaching and learning is delegated to schools and colleges due to the Education Reform Act 1988. The Commission stressed that the assurance can be realized by the monitoring including school inspection. Furthermore, the Commission added that inspection and advice are key specific responsibilities of LEAs. The Commission criticized the LEA in the Occasional Paper in December 1989, "Losing an Empire, Finding Role: the LEA of the Future", in such a comment that the Commission does not share the view that the reduced responsibilities of the centre make LEAs redundant (Audit Commission 1990, p.21).

In response to the recommendation of the Audit Commission, two Acts are legislated, the School Inspection Act 1996 and the School Standard and Framework Act 1998. The School Inspection Act 1996 states the general duties of the Chief Inspector for England are to keep the Secretary of State informed about the quality of the education provided by schools in England, the educational standards achieved in those schools, efficient management of the financial resources and the spiritual, moral, social and cultural development of pupils at those schools. The Chief Inspector for England must also give advice to the Secretary of State on such matters as may be specified in the Secretary of State's request, and inspect and report on such schools or class of school in England as may be specified (Section 2).

The School Standard and Framework Act 1998 is applied to the maintained school. The school intervention stated in this Act is plain. The intervention is divided into two types; intervention by LEAs and intervention by Secretary of State. The LEA can exercise powers of intervention by giving the governing body a warning notice, when the standards of performance of pupils at the school are unacceptably low (Section 15). The LEA can appoint additional governors when the school falling occurs (Section 16). The LEA can also exercise power to suspend delegated budget to the maintained school when the school falling occurs (Section 17). The Secretary of State can intervene to the maintained school by appointing additional governors, when the LEA cannot exercise their power to suspend the governing body's right to a delegated budget (Section 18). The Secretary of State can also give a direction to the LEA requiring the school to be discontinued on a date specified in the direction (Section 19).

2 Role of the Audit Commission

I analyze the role of the Audit Commission from viewpoints of extension of Layfield Committee, Value for Money strategy, limitation of the Circular, and requirement of integrated recommendations.

Extension of Layfield Committee

The Audit Commission can be addressed as an extension of the Leyfield Committee which published the Leyfield Report in 1976, which evaluated the finance of the local government in comprehensive manner and gave advice to the central government. The Leyfield Committee raised a question whether the central government or local government should take responsibility for the local finance reform, In response to this question, the Green Paper 1977 concluded that the local government should take responsibility (Hepworth, p.293, Travers, pp.71-78).

Value for Money strategy

The Audit Commission inherits its strategy, Value for Money, from the rationalization strategy by Macfarlane Report in 1980. Based on the rationalization of the education in the 1970s, the Macfarlane Report (Education for 16-19 year Olds) emphasized rationalization and cost effectiveness of the education at the local authority (Ranson, p.188). Furthermore, the background of Value for Money strategy is increasing total spending, in addition to the increasing spending of the social security, which mainly consists of the welfare, health care and education. For example, the welfare spending increased from £ 6.6 billion (1975) to £ 17.9 billion (1981) and the total spending

increased from £ 51.5 billion (1975) to £ 116.1 billion (1981)

Table 1 UK public Spending

	Welfare (£ billion)	Health care (£ billion)	Education (£ billion)	Total Spending
1975	6.6	5.3	6.9	51.5
1981	17.9	13.4	13.9	116.1

This table was made by the author based on <http://www.ulpublicspending.co.uk/>

Limitation of the Circular

One of the reasons why the Audit Commission was established is considered due to the limitation of the Circular. The Circular is the control tool for the administration by the central government. The role of the Circular is the recommendation by the central government for the administration. However, it is clear that the Circular is not effective especially in the financial policy. In the 1980s, the Conservative Administration intended to take financial control using the block grant to reduce expenditure of the local government. Though this measure was exercised using the Circular and the legislation (Local Government, Planning and Land Act 1980, Section 48), the result was not effective. The rate-capping was newly legislated in the Local Government Finance Act 1982, but it was abolished in 1985 (John, p.11).

Requirement of Integrated Recommendations

Although the Audit Commission inherited its way from the Leyfield Committee, which was an integrated committee for the local government problems, there existed several factors of the organizational divergence about local governance matter. The compartmentalized government structure, as the Audit Commission Annual Report 1986 pointed out, was the problem to be dissolved for improvement of the community care. The Audit Commission was expected not only to give integrated recommendation but also dissolve divergent organizational problems in the local governance.

However the Audit Commission sometimes keeps distance from the center, and prompts change of central policy. It is to be noticed that the Commission indicated those who own properties in multi-occupation in urban areas (1984 Audit Commission). They bought dwelling houses from the local authority and enjoyed the mortgage interest relief at source (MIRAS), which was abolished in 2000. The influence of the Audit Commission to the abolition of MIRAS cannot be denied. The situation is the same in the abolition of the GP fundholders. Though the Audit Commission mentioned "The GPFH accountability framework represents a good starting point in developing a coordinated role between DHAs and GPFHs", the Commission also pointed out "but could be improved in a number of respects." in an implicit manner. In 1997 the GP fundholding was abolished. As the reason of abolishment of the GP fundholding, the influence of the Audit Commission is more visible than the case of the MIRAS abolishment.

3 Conclusion

As conclusion, I discuss the Audit Commission as the policymaker above the auditor in the UK. First, the Commission has strong power for audit and inspection about all

the local matters, which is supported by the manpower and budget. The provision of the Local Government Finance Act 1982 (Section 16) is written such that the auditor have a right of access to all such documents relating to a body whose accounts are required to be audited as appear to him necessary for the purposes of the audit. The auditor is entitled to require from any person holding or accountable for any such document, such information and explanation as he thinks necessary for those purposes. The auditor can require any such person to attend before him to give the information or explanation. The Audit Commission Act 1998 is also written about right of the auditor (Local Government Finance Act, Section 15).

Second, it is nothing to say that the Audit Commission has been at the side of the central government. The role of the Audit Commission is to induce and justify local policies of the central government under the Value for Money. The recommendation of the Audit Commission is provided along the strategy of the central government. The principle of the recommendation by the Audit Commission is the privatization strategy, which is seen in the housing policy, health policy and education policy. Typical example of this strategy is the further education, whose body corporate was established by removing power from the local education authority. The privatization strategy is the same in the Right to Buy and Tenant Choice of the housing policy, and NHS purchase-provider split of the health policy.

The logo for 'iafor' is centered on the page. It consists of the lowercase letters 'iafor' in a light blue, sans-serif font. The text is surrounded by several overlapping, semi-transparent circular arcs in shades of blue and red, creating a dynamic, circular graphic effect.

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A Smart Guiding Tours of Eco-tourism for Taiwan's Fairy Pitta: The Service Design Viewpoint

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Abstract

Fairy Pitta, is a special bird that could be found in Taiwan during the summer season. Currently, we can only find their appearance in Huben area in Taiwan. In each summer season, there are many backpackers and birdwatchers all around the world traveling to Huben area to watch this bird. However, the serious outward migration in Huben area is like other villages in Taiwan, causing the lack of human resource in Eco-tourism narrator for Huben area. In addition, a lack of favorable tour guiding map for Ecotourism, causing the tourist to be confuse in the area. Therefore the tourists couldn't have positive experience without information of the Fairy Pitta Eco-tourism. This study utilize Service Experience Engineering (S.E.E) approach, combining with the knowledge of mobile technology to generate service blueprint for Mobile App of smart guide. Researcher gathered information regarding the Fairy Pitta in Huben area through various means. After the information are gathered and organized, researchers analyze the Tourist's need and motivation, and deliver important findings to generate a concept for how the guide should be designed. Once concept development was done, researcher could shape the Service Blueprint that would fit the tourist's need for eco-tourism smart guide from the concept development.

This study focus on the service design approach of an eco-tourism smart guide. By observing the Service Blueprint, researchers accurately pin point the service Touch Point and understand the whole service experience. Furthermore, this study can serve as a reference for future development regarding eco-tourism and smart guide.

Keywords: Service Design · Eco-tourism · Smart Tour · Service Blueprint · Fairy Pitta

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Background

Fairy Pitta is Fairy Pitta family in Passerine order, and there are thirty two kinds in this family. We only can see them in the tropical and subtropical forests on Eastern Hemisphere, and some Fairy Pitta lives in Africa, Australia, New Guinea, India, China, Japan and Taiwan. This bird is currently classified as vulnerable by the BirdLife International Union. Because deforestation in breeding range of Fairy Pitta and trapping them for the cage bird trade, its population is suspected to be in rapid decline. (Syu, Pei-Shuang, Li, Pei-Fen, Lin, Ruei-Sing, 2013) Currently, we can only find their appearance in Huben area in Taiwan. Huben area is located in the Northeast corner of Yunlin County. Because Huben area is situated on the divide between plain and mountain, there are a lot of species in Huben area. Taiwan Council of Agriculture posted that Huben area became the important wild habitat for Fairy Pitta in 2008. Therefore Fairy Pitta is regarded as the important protected species in Huben area.

In each summer season, there are many backpackers and birdwatchers all around the world traveling to Huben area to watch this bird. However, the serious outward migration in Huben area is like other villages in Taiwan, causing the lack of human resource in Eco-tourism narrator for Huben area. There are an ecological cooperative and two narrators to provide birdwatching guiding experience service, and lack of enough narrators to provide birdwatching guiding experience service. In addition, a lack of favorable tour guiding map for Ecotourism, causing the tourist to be confuse in the area. Therefore the tourists couldn't have positive experience without information of the Fairy Pitta Eco-tourism.

Objectives

According to the deficiency of the guiding condition in Huben area, the study combine the viewpoint of Service Design with the concept of smart guide Information Design to raise the Eco-tourism experience. The study is contained Service Design, Information Design and Eco-tourism smart guide to apply the methodology of Service Design with Information Design concept to develop a Service Blueprint of an eco-tourism smart guide for Fairy Pitta. The study hopes to develop a good eco-tourism experience in the condition without disturbing natural environment.

The purpose of study:

1. To understand the guide information for birdwatching backpackers, and to investigate the element of Eco-tourism smart guide.
2. To investigate the guide condition in Huben area, and to find the service fault.
3. To develop a Service Blueprint for Fairy Pitta eco-tourism smart guide in Huben area.

Service Design

The concept of service design first originate from Shostack (1983) in his paper regarding designing service. The article mentions the competition between the firms and how the importance of service emerges over time. Service design could be broken down into service and design. Vargo & Lusch(2004) defines service as using specific skill, knowledge, and ability, to provide value and benefit through action or process. Su & Song (2014) purpose that service is an experience aided by the company or its

system, and is seen as a user-center perspective. Lindbeck (1963) describe design as a plan to create in order to satisfy the needs. Williams (2000) interpret design in an education point of view, as an important method to create tools in order to satisfy people's need, along with improve their ability. From the perspective of service as well as design, one can conclude that both fields emphasis on the user and the importance of satisfying people's need,

Service design is an Interdisciplinary study which consist of different area of expertise along with different methods and tools. It is not a new field of study, but a new way of thinking. Service design utilize visible and invisible medias, to design process or system, to provide a better and complete service experience (Schneider & Stickdorn, 2011). Service Design could use innovating methods to improve on existing service, and to create new service (Livework, 2012). Song(2014) defines Service Design as designing value through co-create network in a holistic point of view, to deliver effective value proposition to all the actors involve during the process, ultimately to achieve a greater gain in a long run. All in all, Service Design is an Interdisciplinary field of study that uses rigorous methodology while emphasis on the importance of value co-creation in a user-centric perspective, in order to deliver a better service for everyone.

An ordinary service processes and be broken down into sequences of related activity in a timeline fashion. A single service process can also unfold into multiple sub process or sequence (Ramaswamy, 1996). In contrast to typical service process, the process of service emphasis more on the service and the interaction between the provider and service consumer, as well as all the related actors in timeline fashion. Shostack (1982) purpose that service blueprint as an effective tool for service design, because it could visualize the different event and touch point of t a service and its related relationship. Service Design is not only a tool for academic research, but also an effective tool that has been tested on enterprises and companies as a method for developing new service. For example, British consult company Engine uses the double diamond (4Ds) to develop their service in 2000. In Taiwan, due to the Taiwanese market's demand, Institute for Information Industry develop a methodology for developing service that is suited for Taiwanese environment in 2007. The methodology is known as Service Experience Engineering (SEE). SEE involve 4 different stages of development, which are FIND, INNOnet, Design Lab, and Living Lab; in order to provide the service blueprint for company to develop further service on.

In conclusion, Service Design is an Interdisciplinary field of study, which utilize a user-centric perspective. With carefully crafted method and tools, service design has produce several effective methodologies, ultimately allowing researchers to design a better service.

Information Design and Mobile App for Smart Guide

The term Information Design comes from Information graphic. It is a method which combines of both graphic and text to explain evidence or data. The meaning now extended to developing a holistic information visualization for user's cognition.(Chen, yu, 2002). The core value of information visualization is communication, Wuman purpose that most data is non-useable by mankind (Jhang , 1989). However when

those data were being processed and designed through an organized means, it could potentially transform into information that has value. By using conceptualization, symbolization, and systematic approaches and methods, designers could communicate large and complicated information. Furthermore, those hard-to-describe pieces of information could be presented by visualization presented through lines, color, graphics, and symbols. Allowing users to absorb massive amounts of information in a short period of time, as well as understanding the design of the information in itself (Chen & Yang, 2008). Information design is a design principle that involves a user-centric perspective. It emphasizes the study of analysis, structuring, and representing the information content, in addition to allowing users to easily understand the information through a visualized means. (Chen & Liang, 2001) In conclusion, information design is a design that visualizes complex information; by using systematic methods and a user-centric approach, information could be processed and transformed into designs that users could easily understand.

Information is also important to the user, especially helping the users to find easily accessible information from a large set of complex information is critical. Below is the principle regarding information design purpose by Chen, Jyun-Wun & Liang, Chao-Yun in 2001:

- (1). Clear and understandable title, with descriptions that are grammatically correct and easy to read.
- (2). Short information, avoid long paragraphs.
- (3). Content organized well, graphics and text must be related to the information presented, to avoid information overload.
- (4). Attract tourists' attention, arouse their curiosity.
- (5). Reference some things that are related to tourists' daily life.
- (6). Describe the entire event's phenomenon, reorganize in a way to become a logical and decent story or concept.
- (7). Emphasize the theme and unify information.
- (8). Using a unique perspective to interpret and explain insight.

In conclusion, after surveying the rules and guidelines of information design, information design could be summarized by using a systematic, conceptualization, symbolization process, to create an appealing visualization that could arouse use and provide the user with better understanding of the information.

Molz stated that tourism is certainly emblematic of a new 'mobility nexus,' even more so now that tourists, travelers, and backpackers are increasingly bringing mobile devices on their journeys and toggling back and forth between mediated and corporeal co-presence with distant social networks (Molz, 2012). In fact a new term coined "flashpacking" is created by describing the behavior shift from packing everything in a backpack, known as backpacking, to simply packing with technology gadgets and basic essentials as they were able to connect instantly with multiple networks from virtually anywhere through an array of mobile technologies (Germann Molz & Paris, 2013). The change of mobile is developing the new tourism behavior, and affects the tourists' tourism experience. Therefore, mobile guiding is the best way to guide backpacking. Because mobile guiding is provided with no time, no space, low cost and easy to keep, tourists can learn information with mobile guiding in any time and location (Chabra, T. & Figueiredo, J., 2002). Mobile guiding replaces the traditional guiding map, and solves the manpower shortage or no reservation in

advance in ecological area (Wijesuriya et al., 2013).

Methods

This research uses Service Experience Engineering as main methodology for the study. It is a method which utilize various models, methods, and tools to design a proper systematic service. This methodology is widely use on designing new service step by step; it includes 4 steps, including FIND, Innovation Net, Design Lab, and Living Zone. Due to the fact the study only covers the service design portion, the study uses the FIND and Innovation Net as main study.

The study attempt to use S.E.E.'s method and tools to design and plan out a smart ecotourism Service Blueprint regarding Fairy Pitta. The study follows the guideline and methodology of designing service, and design the service blueprint for Fairy Pitta. The study divide the 2 phases into 2 stages, the research stage and design stage. Those 2 stages were then divided into 5 subsets, including contextual inquiry, analyzing data, concept development, context design, and nevertheless, service expansion. During the first step, the researcher mainly focus on the touring experience regarding Huban area and fairy pitta to analysis the needs and the status quo. Later using models to analysis the service pain point and user's need. The second step uses the data gathered in first step, using service design tools to design user's experience design. Using the design guideline previously reference in the literature review, ultimately produce a service blueprint regarding smart guiding tour of ecotourism for Fairy Pitta. The methodology is shown in Figure 5-1.

During the research stage, the study use interviewing and focus group. This study uses these two methods on a pair of married couple and a male backpacker who love ecotourism. We let the participant describe their experience and their need on ecotourism. By using interviewing and observation, the researcher can understand more about user's behavior and contextual inquiry. During the research stage, the researcher uses story sharing and Behavior Model to organize previous data, Story Sharing is a method to create a story for under researcher to get a more in depth understanding of the whole situation. Behavior Model is a model which researcher can understand the relationship between the participant and the whole related service touch point, for the researcher to easily identify the critical touch point regarding the service experience. One can understand the relationship between different actors in a service using Behavior Model, to mark for an important finding for the design stage.

During the design stage, the study use Persona and Brainstorming to develop the concept. By Persona to display the tourist target and behavior of the service in future. The tool display the tourist's identity, personality in final. Researcher can objectively understand the user's need and requirement by Persona. Brainstorming is an open design method to produce many creative ideas by many researchers thinking together for the guiding of Huben area. During the last design stage, the environment design of study use Customer Journey Map to collect the tourist's mood in the Huben area. The Customer Journey Map is a method to display the tourist touching each service touch point in full service process. By the Customer Journey Map, researcher can certainly understand the mood turning in the link of service process, and can understand the factor influencing tourist's mood to certainly improve the step in the process.

The last design stage is service expansion, and use the Service Blueprint method. Service Blueprint is a method which specifically explains each service level, and systematically displays the service process to effectively help servicer to understand the service content. Service Blueprint need to display user, service provider and other related characters. The content show the process from customer to supporter.

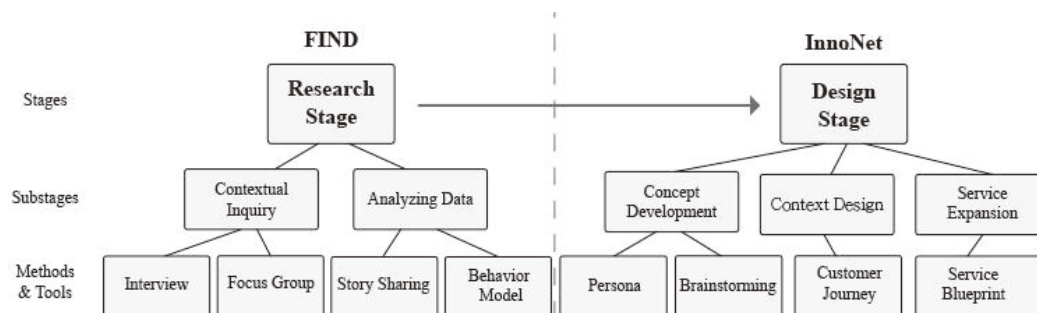


Figure 5-1 : methodology

Results

During the research stage, researcher uses Interviewing to a couple who like eco-tourism and a male backpacker to describe their need and experience. Researcher understands the user's behavior and context more by observing the content of Interviewing. The study generalizes five points: (1) Participants usually go alone to ecological area, and they seldom participate the group touring. (2) Participants use web searching to know the related information of Fairy Pitta to the Huben area. (3) Participants bring cell phone and camera to record the natural ecosystems, and web searching the information by the photo. (4) Participants hope that there are the target of toilet and visitor center to seek them faster. (5) Participants hope that there are the explanatory signs to understand the local natural ecosystems.

According to the interviewing, researcher finds some points: (1) Most of tourists come alone to watch Fairy Pitta in Huben area, because they read some information about Fairy Pitta on website. (2) A lack of favorable tour guiding map for Ecotourism, causing the tourist have to ask information in ecological cooperative, before they start their ecological tourisms. (3) The purposes of the tourists is enjoying and understanding Fairy Pitta, therefore they take pictures and collect information. According to observing environment and tourist's behavior, researcher generalizes some points: (1) Because the ecological cooperative is under private management, tourists sometimes can't get the guide information on official holiday. (2) A lack of favorable tour guiding targets for Ecotourism, causing the tourist disappointed to watch Fairy Pitta. (3) There are many foreign tourists visiting Huben area in each bird season, however there isn't guide information for foreign tourists. Therefore they always need the narrators to provide Fairy Pitta guide service, they can't bird watch by themselves. After the information of interviewing collection, the research progress to the analysis stage.

On this stage, the study uses Story Sharing and Behavior Model to collect the prophase information. The study uses Story Sharing to other researchers to understand the research topic, and use Behavior Mode to analysis the tourist's behavior in Huben area. The research is applied the Interactive Model in Behavior Model to analysis the tourist's behavior model in Huben area. The data become an important reference

blueprint in each character position and interactive objects. Finally, researcher learns tourists' behavior in tourism that will encounter many problem. For example, they don't know whether see the narrator, can't find the restroom, and there aren't good target to ecological area. Researcher can know the fault from the tourist's Interactive Model.

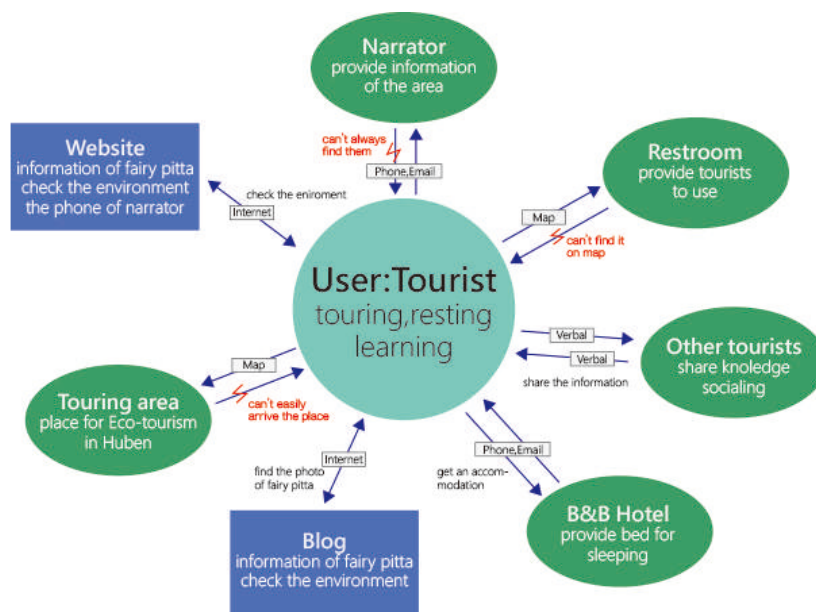


Figure 6-1 : Interactive Model

Time Series Model is one model among Behavior Model. Time Series Model is show time sequence in interactive behavior. According to tourist's behavior process, researcher knows the touch point, communication, interactive objects in full event, then redesigns and adjusts from the process. Researcher can understand the fault and sequence in the process of tourism by Time Series Model. First, they maybe can't get the guide information from ecological cooperative, then can't find the target to birdwatching area. Finally, there aren't explanatory signs in the birdwatching area. The tourists encounter many inconvenience points in the full tourism.

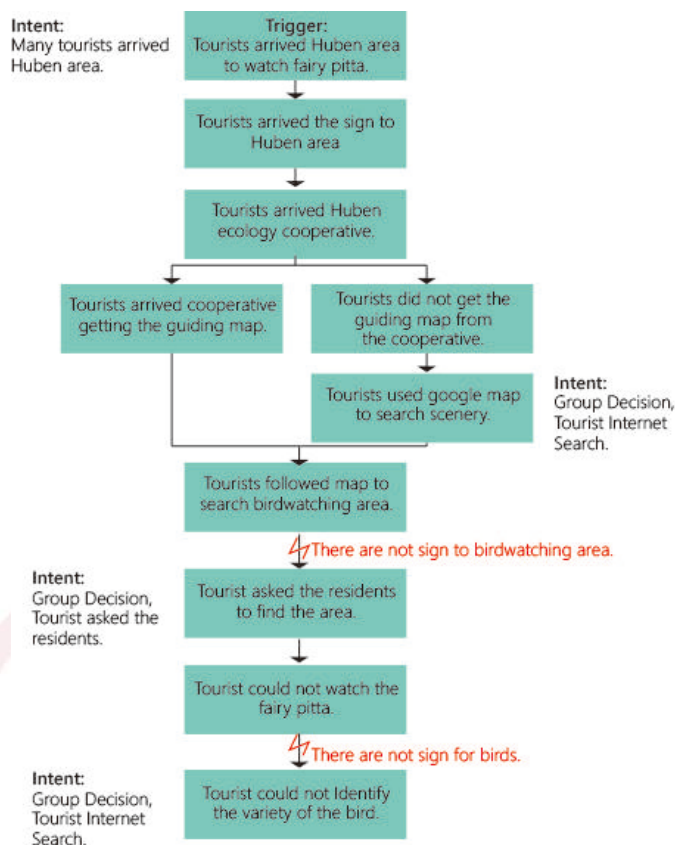


Figure 6-2 : Time Series Model

During design stage, the study uses persona to be the front work for Service Blueprint. Persona is analysis from tourist behaviors with intersect induction, and uses true tourist's information to be the model. The study is applied the college students who likes eco-tourism to be the model. The character's habit is observing animal and plant in normal, and love the nature. He usually travels with family or travels alone in the weekend. Before he start a trip, he will gather information by web searching and discuss trip stroke with friends or family. He uses cell phone or camera to record the scenery, and he also uploads the photo on community platform to share with public. The character is a tourist who like planning, searching and recording by using network.



Figure 6-3 : Persona

During this design stage, the research is applied the brainstorming to arouse the imaginative power to make a lot of creative method for the guiding process in Huben area. The research lists the condition and problem in the tourism, like tourists worrying the weather condition and food before departure, and they ask the service center to get some guiding map. The tourists look for the toilet, the target of birdwatching area, and they hope getting some bird information. Against the problems, the research proposes some method to solve the problems, and selects the item to future develop.

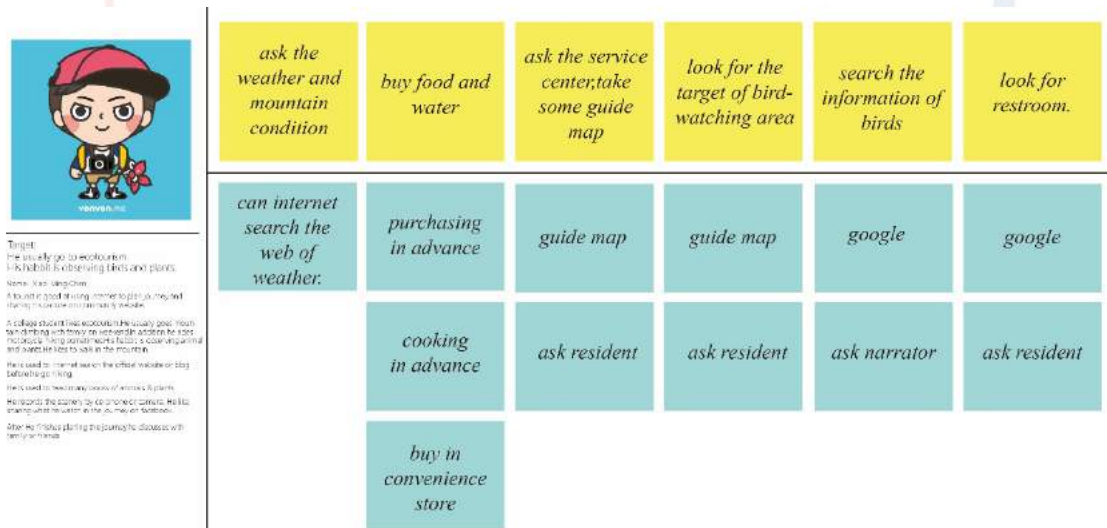


Figure 6-4 : Brainstorming

During the environment design stage, the research is applied the Customer Journey Map to collect the tourist’s mood in Huben area. The research can understand the fluctuation of emotion in tourism by the Customer Journey Map. The research collects the point of failure that is not easy finding the target to birdwatching area, restroom and watching the Fairy Pitta in the tourism. According to the Customer Journey Map, the research find the most failed point which is not easy find the target in the eco-tourism of Fairy Pitta.

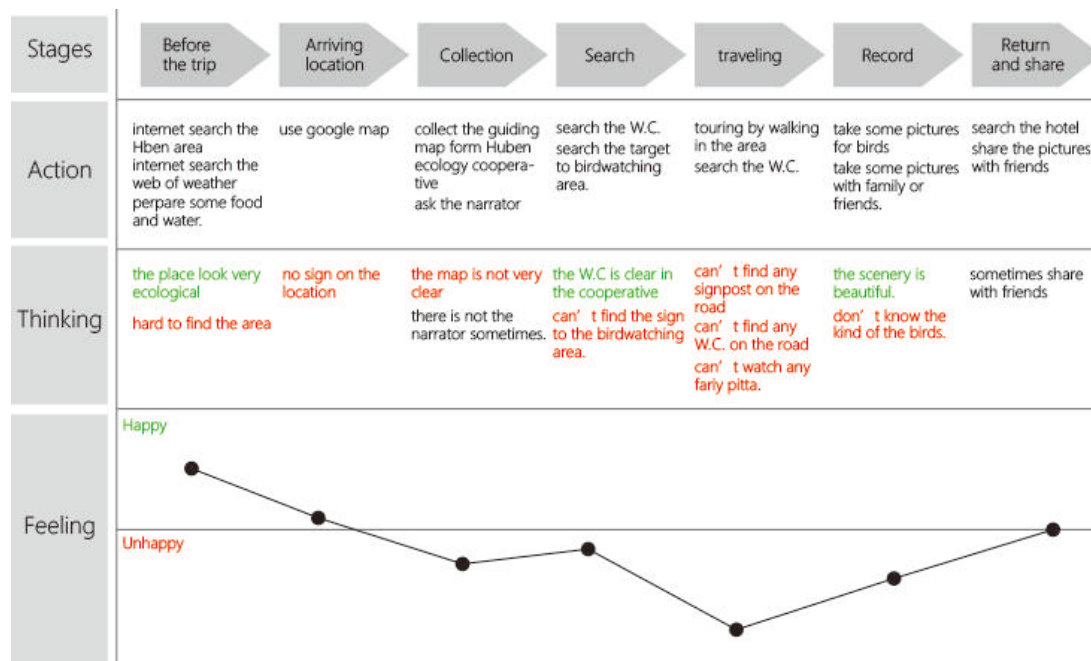


Figure 6-5 : Customer Journey Map

According to the analysis of Customer Journey Map and Behavior Model, the research find the most failed point which is not easy find the target in the eco-tourism of Fairy Pitta. Therefore, the research design the Service Blueprint of mobile guiding with tourist’s navigating problem in last stage.

The expansion of Service Blueprint is tourists entering the Huben ecological cooperative, and the tourists will see the explanatory sign of the App download teaching and introduce. The tourist can see the menu after they download the app. The menu display three language selections as Chinese, English and Japanese. They can select a language to next stage. Next stage display the map menu. After they select the map, the screen displays their position by GPS system. The map display the attractions, toilet, rest space and the distance to the attractions. Tourists proceed to the birdwatching area by the guiding map. After tourist arrive the birdwatching area, they can point the bird diagram that shows the birds kind and information in Huben area. By the design of Service Blueprint, the researcher can easily understand the process of tourist behavior and the service process in the tourism. In addition to the Service Blueprint display the service of front stage and back stage, and show the full service process clearer.

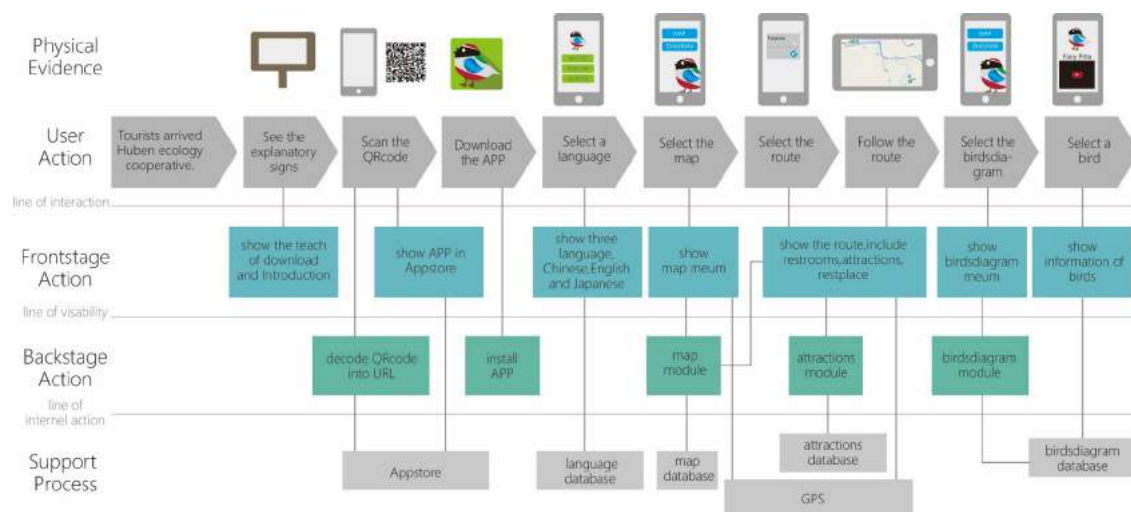


Figure 6-6 : Service Blueprint

Conclusion

The study uses the method and process in Service Design to analysis the Fairy Pitta's eco-tourism experience in Huben area. By observing the Service Blueprint, researchers accurately pin point the service Touch Point and understand the whole service experience. Therefore, the study infers these below conclusions.

- 1. the study find the most failed point which is not easy to find the target in the eco-tourism of Fairy Pitta.**

Because a lack of good guiding map and targets, tourists usually extra use Google map to navigate in the eco-tourism. Therefore, they can't enjoy and experience their eco-tourism.

- 2. Tourists in Fairy Pitta eco-tourism almost use cell phone as their guiding tool.**

The research find the tourists who like Fairy Pitta eco-tourism most is family or backpacker. The research investigate the backpackers' service experience to find that backpackers most use cell phone to be their guiding tool. Therefore, the research focus on the mobile guiding content to investigate for backpackers. The research find that they hope a clear guiding map, and there are attractions, WC, rest space and service center. At the same time, most tourists want to learn information to experience eco-tourism. Therefore, they hope that there are some bird explanatory signs or narrator service. The serious outward migration in Huben area is like other villages in Taiwan, causing the lack of human resource in Eco-tourism narrator for Huben area. The research combine the smart guiding and diagram for tourists getting the bird information, and solve the problem of a lack of manpower.

3. The Fairy Pitta ecological guiding is lack of multilingual service.

In each summer season, there are many backpackers and birdwatchers all around the world traveling to Huben area to watch this bird causing the tourist to be confuse in the area. Therefore the tourists couldn't have positive experience without information of the Fairy Pitta Eco-tourism. Therefore, the smart guiding App add three languages letting foreign backpackers to watch Fairy Pitta by themselves.

This study focus on the service design approach of an eco-tourism smart guide. By observing the Service Blueprint, researchers accurately pin point the service Touch Point and understand the whole service experience. Furthermore, this study can serve as a reference for future development regarding eco-tourism and smart guide.



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***Students' First Language in the English as a Foreign Language (EFL) Classroom
in Ubon Ratchathani University "The students' perspective"***

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Abstract

This study tries to investigate the students' perspective on the use of their L1 (Thai) in the acquisition of the L2 (English) in Ubon Ratchathani University. The study adapts questions used in previous studies to capture whether students think Thai should be used in the English classroom and in what situations students use their L1 in English class. Convenience sampling method was applied. An online questionnaire was created and distributed through social media and the REG system of the university. 75 respondents took the survey.

Going by the finding 100% of students believe that Thai should be used in the classroom. This is consistent with (WILLIAMS, 1999) whose finding revealed that 88.7% of students and 100% of teachers believed that the L1 should be used in the L2 classroom in the University of Puerto Rico. It is also consistent with other studies (e.g., Kovacic&Kirinic, 2011; Sharma, 2006) who concluded students would prefer having their first languages used a Little in the English classrooms. The situations in which students use and will prefer the teachers to use their L1 in the L2 classroom are consistent with those outlined by (Cook, Using the first language in the classroom, 2001). Therefore, students in Ubon Ratchathani University will find it difficult to adapt to an all-English classroom. In other to avoid or limit such difficulties, students L1 should be systematically used as a classroom resource (Cook, 2001). Failure to do so may create a negative learning environment resulting in ineffective learning outcomes.

Keywords: First-Language (L1), Second-Language (L2), Language learners

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Introduction

As Thailand strives to become proficient in the use of English language, the country's educational sector has resorted to hiring foreign professionals to train their students in The English language. These teachers have different backgrounds and, therefore, apply different teaching methods in the classroom. Using the first language (L1) as a means to facilitate the learning of English, (L2) remains an area that has brought substantial debate amongst educators and students alike. While some still argue that an English-only classroom policy creates the best environment for students to learn the L2 (Chaudron, 1988), others argue that such environment considers L2 learners as part of a group they can never belong to (Cook, 1997) he sees this as Monolingual bias. A situation where L2 learners are taught and evaluated in the same standards as if they were studying their L1. Irrespective of which stand one takes, students' first language (L1) most clearly influence not only their acquisition but also their use of any second language (L2).

However, there is still a lot of controversies as to whether it is appropriate for students to use their first language in other to facilitate their acquisition of a second language. Though there exist a lot of objections to an English-only approach in the field of English Language teaching (ELT), most researchers and teachers alike still see English as the most appropriate language that should be exclusively used in the teaching and learning of ESL or EFL (e.g., Auerbach, 1993; Ianziti & Brownlie, 2002). Though a number of schools in Thailand have begun to apply the English-only teaching approach in their ESL classrooms, a majority of the schools still prefer to employ teachers who understand the Thai language as a means of facilitating the teaching-learning process. This paper explores students' opinions and habits in the English classroom. Ideally, English should be the only language used in the ESL classroom, however, it will be important for practitioners and researchers alike to have a students' perspective on the use of their L2 in the acquisition of the L1 (Al Sharaeai, 2012)

Research objectives

The main objective of this study is to find out reasons why students in Ubon Ratchathani University (UBU) use their first language in the English classroom. This paper will try to answer the following questions:

- For what reasons do Thai students in UBU use Thai in their English classroom?
- How often do they use Thai in the English classroom?
- What do students think about the use of Thai by their English teachers in the teaching of English?

Literature review

As the debate of which approach is better, an English all classroom or an incorporation of the first language in the teaching of English continue to grow, many researchers and practitioners are taking sites and providing argument either in support for or against the use of the first language in the teaching and learning of English. In support of the English-only classroom Chaudron (1988) argue that in the acquisition of any second language, the teaching, and learning environment should provide the

maximum use of the language not just for instruction and drilling but also for class management and discipline. Similarly, a group of other researchers also suggest that exclusive English only inputs in the classroom provides the necessary and sufficient conditions for the acquisition of English as a second or foreign language (Krashen, 1981, 2003; Krashen & Teller 1983; Duff & Polio 1990).

On the other hand (Cook, Using the first language in the classroom, 2001) in his article presents a number of arguments in support for the use of the first language in second language acquisition. To start with, Crook argues that language learners differ in the way they learn and some develop a unique way to make connections and analyze language use. To this effect, the techniques they use is different from that use in the acquisitions of their first language. One of this technique is inevitably the use of their first language. He also argues that though teachers try to stamp out the use of students' first language in the class by using drawings, photographs, and flashcards to helps students make meaning without using their first language, learners will always make connections between vocabulary, syntax, and phonology of their first and second language in their own minds. Based on this, Crook suggest that instead of trying to completely stop the use of the first language in second language classrooms, teachers could use the first language as a positive way to improve students learning and understanding of the second language. In his conclusion, he pointed out a number of ways in which the first language could be positively used in the English classroom this included;

- Explaining and checking the meaning.
- Explaining and teaching grammar,
- Class management,
- Explaining class task and activities,
- Maintaining contacts with students.

These suggestions were consistent with earlier finding by Charlene Polio and Patricia Duff (1994) who had a similar suggestion with the addition of using the first language to build rapport between teachers and students.

The use of English only though seen as an approach that can be justified on pedagogical grounds, is however inconsistent with existing research findings which show that this practice is neither conclusive nor pedagogically sound as there is enough evidence to suggest that students' L1 if used as a linguistic resource can be beneficial at all levels of ESL. (Auerbach, 1993).

This is consistent with (Atkinson, 1987) who points out that, students translate newly thought language items into their native language as a means to reinforce the structure and find the difference between the native and target language. He argues that though this activity is not communicative, it is directed at improving the accuracy of newly learned target language structure.

Furthermore, (Giroux, 2001; Hartman, 2003) presented an argument that the English-only policy in English classrooms was first introduced in the United States, not because of the effect it had or could have on the acquisition of English as a second language but as a means to minimize the threat posed by the increasing number of non-English speaking immigrants coming from outside. Both minority and majority linguist groups in the US felt threaten by each other. Thus, an English-only classroom was seen as a way to minimize this threat.

Most teaching methods since the 1880s have adopted this Direct Method avoidance of the L1. However it is only in circumstances where the teacher does not speak the students' L1 and the students have different L1s that this could be achieved. (Cook, Using the first language in the classroom, 2001). According to (Tamara Lucas, 1994) 'the use of the native language is so compelling that it emerges even when policies and assumptions mitigate against it. Yet the avoidance of L1 in the L2 classroom is so much so that some teachers feel that by admitting to the use of L1 in their classroom is an admission of professional misconduct (Mitchell, 1988).

The desire to avoid L1 as a teaching resource may lead one to question why there is continues advocacy for its avoidance despite existing empirical evidence of its benefits as a classroom resource. The most convincing argument lies in the fact that learners of L1 do not have another language to help them acquire the L1 therefore teaching should be based on the characteristic of the acquisition of the L1 as, for example just as children acquire their L1 (Asher, 1986) as argued by (Cook, 1997) in his article, "Monolingual bias in second language acquisition", trying to impose this idea will be treating L2 learners as part of a group they can never belong to. To him Whether L2 learners are successful or not has to be measured against the standards of L2 users not those of native speakers and so L1 'success' in becoming native speakers is different from L2 'success' in becoming L2 users.

Methodology

The research was design as an online survey with questions selected from the review of the literature as used by other researchers in this area of study. This study tries to capture UBU students' perspective on the use of their mother tough in the English language classroom.

The sample for this study constituted students studying in UBU. The questionnaire was distributed online using social media and the REG system of the university and student were encourage to answer on a voluntary basis. Convenience sampling method was applied so as to ensure the reliability of the results obtained.

The data is collected using questionnaires structured in three different sections. Section one covers demographic (gender, program of study, year of study and age). Section two starts with the questions should Thai be used in the English glass room? And also covers the situations in which students use their L1 in class with six questions, while section three covers the degree to which students prefer the teacher to use the L1 in the English class with 10 questions

Results

The findings of this study can be summarized as follows.

Respondent profile.

Of the 75 students who took the survey, 45 were students in the International business management program representing 60% of the total sample size. 9.3% of the students were from the Accounting program, 8%, of the respondents, were from General Management, Hotel Management and Banking and Finance respectively. The rest of the respondents were made up of 4% from Marketing and 2.7 % from the English and Communication Program. This shows an uneven distribution of the respondents profile which was mainly because the fact that the questionnaires were in English and could not be understood by a majority of the students. Also taking the questionnaire was voluntary on convenient bases. As far as the study year is concern, 36% were first-year students while 32%, 25.3%, and 6.7% were from the third, second and final year respectively.

Should Thai be used in the English classroom?

The first question asked students if they think their first language (Thai) should be used in teaching their second language (English). All the 75 respondent to the survey answered yes. This is consistent with (WILLIAMS, 1999) whose finding revealed that 88.7% of students and 100% of teachers believed that the L2 should be used in the L1 classroom in the University of Puerto Rico. It is also consistent with other studies (e.g., Kovacic & Kirinic, 2011; Sharma, 2006) who concluded students would prefer having their first languages used a Little in the English classrooms. This results, therefore, indicates that the question should not be if or not to use Thai in the English classroom in Ubon Ratchathani but how it should and can be used. Instructors at the university must, therefore, take this students' view into consideration when designing their lesson in order to ensure a comfortable learning environment for their students.

Reliability of the scale used.

In order to examine the reliability of the scale dimensions used, the Chronbach's Alpha which is considered as the most widely acceptable reliability measure was calculated. Table 1 provides the Chronbach's Alpha (α) of the two dimensions. As there is no value below 0.7 it can be concluded that the measures used here are consistent enough for the study.

Table 1.

Dimension	item	Cronbach's Alpha
Frequency of the first language used in English classes	1. I speak my 1 st language in class when I want to chat with my classmates about topics that are not connected to class.	.78
	2. I speak my 1 st language in class when I need to ask my classmate to explain a point in the lesson for me.	
	3. I speak my 1 st language in class when I can't think of the correct word in English when talking to my classmates.	
	4. I speak my 1 st language in class when my classmate starts talking to me in my 1 st language while we are working on a task.	
	5. I speak my 1 st language in class when I talk about personal things with my classmate.	
	6. I speak my 1 st language with other members of my group in an English class because we want to finish the group activity faster.	
opinion in the use of 1st language in class	7. In English class, it is best to have a teacher who can understand my 1 st language.	.73
	8. I would prefer to sit next to a classmate who speaks my 1 st language in English class	
	9. I think English class should have an English-only policy (only English is allowed in the English classroom)	
	10. As my English improves, I become more comfortable speaking only English in English class.	
	11. I want to be able to speak my 1 st language In English class when I feel I need to.	
	12. It's important to speak only English in class as long as I am completing the course task.	
	13. Using dictionaries and resources in the 1 st language should be allowed in English class.	
	14. Speaking my first language with my classmates during and between class activities should be okay as long as the course is not a speaking course.	
	15. Speaking my 1 st language in English class helps me understand the lesson better.	
	16. I feel uncomfortable if I can't use my 1 st language in an English class.	

The frequency of using the first language in English class.

As the result shows on table 1.1, students usually speak their first language in class in all the situations mention in the survey however worthy of note is the fact that the highest mean score of 3.00 is linked to item four suggesting that the greatest trigger of the first language in the English class is actually being spoken to in the first language by another student. One can, therefore, imply that if students are spoken to by their peers only in English while in class, it will go a long way to reducing the amount of the first language used in and English classroom.

Table 1. 1 Frequency of using the first language in English class. Descriptive Statistics

	N	Mean	Std. Deviation
I speak my 1st language in class when I want to chat with my classmates about topics that are not connected to class.	75	2.80	.885
I speak my 1st language in class when I need to ask my classmate to explain a point in the lesson for me.	75	2.97	.805
I speak my 1st language in class when I can't think of the correct word in English when talking to my classmates.	75	2.85	.911
I speak my 1st language in class when my classmate starts talking to me in my 1st language while we are working on a task.	75	3.00	.885
I speak my 1st language in class when I talk about personal things with my classmate.	75	2.80	.915
I speak my 1st language with other members of my group in an English class because we want to finish the group activity faster.	75	2.85	.996
Valid N (listwise)	75		

Opinion in the use of 1st language in class

When asked about their opinion as to how the first language should be used in the English classroom, the result as seen in table 1.2 below suggest that students agree that it is important for their first language not to be used in a number of situations in class. To start with, a mean score of 4.03 for Item 11 suggest that students will prefer an English-only policy to be applied in class gradually as their English improves. What is more is that item 12 has a mean score of 4.08 indicating the fact that students will prefer not to use their first language any time an English task is being done in class. Students were, however, indifferent to item 16 this, therefore, suggest that using the first language or not using it will not affect students comfort in an English classroom. The results equally suggest that students will prefer to have a teacher who has some knowledge of their first language rather than a teacher who has no knowledge of their first language at all. It is also important to note that the item with the least mean score is item 16. Indicating that in will not greatly affect students comfort if they don't use their first language in class.

**Table 1.2 Opinion in the use of 1st language in class
Descriptive Statistics**

	N	Mean	Std. Deviation
In English class, it is best to have a teacher who can understand my 1st language.	75	3.53	1.298
I would prefer to sit next to a classmate who speaks my 1st language in English class	75	3.01	1.168
I want to be able to speak my 1st language In English class when I feel I need to	75	3.09	1.153
I think English class should have an English-only policy (only English is allowed in the English classroom)	75	3.64	1.204
As my English improves, I become more comfortable speaking only English in English class.	75	4.03	.986
It's important to speak only English in class as long as I am completing the course task.	75	4.08	.941
Using dictionaries and resources in the 1st language should be allowed in English class.	75	3.72	.994
Speaking my first language with my classmates during and between class activities should be okay as long as the course is not a speaking course.	75	3.29	1.024
Speaking my 1st language in English class helps me understand the lesson better.	75	3.65	1.072
I feel uncomfortable if I can't use my 1st language in an English class.	75	2.93	1.212
Valid N (listwise)	75		

The frequency of using the first language in English class. According to the study program.

In trying to see if different results could emerge if the students were grouped following their program of study, the following results were obtained. Isolated cases of International Business students were analyzed. The result shows that though they all use their first language in the English class, the frequency of use is much lower with no mean score of 3 or above. Interestingly enough the highest mean score of 2.96 is associated with item 1 suggesting that the international business management students mostly use their first language in class for things that are not connected to the lesson being taught.

In contrast to this, students from the accounting program will always use their first language in class in situations that are related to the lesson being taught and will hardly use it when talking to their friend on topics that are not related to the lesson. No other significant difference occurred when data from other programs was isolated and studied independently.

Applying the same method using study year as the independent variable, the study discovered that students turn to use more of their first language in class as their study year increases. This is a country to the general results which suggest that students will prefer to use less of their first language as their level of English improves. One would have expected that students in the 4th year should use less of their first language in all of the situations but a look at table 1.3 suggest the contrary. However this may not be a complete representation as the number of sampled students is unevenly distributed across years of study with 27, 19, 24 and 5 in ascending order from 1st to 4th year respectively.

Item	1 st year mean	2 nd year mean	3 rd year mean	4 th year mean
I speak my 1st language in class when I want to chat with my classmates about topics that are not connected to class.	2.70	2.63	3.00	3.00
I speak my 1st language in class when I need to ask my classmate to explain a point in the lesson for me.	2.67	3.16	3.12	3.20
I speak my 1st language in class when I can't think of the correct word in English when talking to my classmates.	2.48	3.32	2.92	3.80
I speak my 1st language in class when my classmate starts talking to me in my 1st language while we are working on a task.	2.78	3.16	2.96	3.80
I speak my 1st language in class when I talk about personal things with my classmate.	2.70	2.84	2.79	3.20
I speak my 1st language with other members of my group in an English class because we want to finish the group activity faster.	2.70	3.32	2.58	3.20
Number of cases	27	19	24	5

Opinion in the use of 1st language in the class by year of study.

Furthermore, to find out if the opinion on the use of students' first language in acquiring English vary across study year, the following results was obtained as shown in table 1.4. Based on the results, the second year students will be generally more comfortable if more of their first language is being used in the English classroom. While 1st and 3rd-year students are neutral to the idea that using their first language in English class could help them understand the lesson better, 2nd and 4th-year students agree that this could help them to better understand the lesson. However, note should be taken on the fact that the second year students agree that it is important to have an English-only classroom policy but will be comfortable speaking only when their English level improves.

Item	1st year mean	2nd year mean	3rd year mean	4th year mean
In English class, it is best to have a teacher who can understand my 1st language.	3.41	4.21	3.17	3.40
I would prefer to sit next to a classmate who speaks my 1st language in English class	2.70	3.53	2.88	3.40
I want to be able to speak my 1st language In English class when I feel I need to	2.96	3.11	3.13	3.60
I think English class should have an English-only policy (only English is allowed in the English classroom)	3.63	3.42	3.79	3.80
As my English improves, I become more comfortable speaking only English in English class.	3.96	4.32	3.96	3.60
It's important to speak only English in class as long as I am completing the course task.	3.89	4.32	4.21	3.60
Using dictionaries and resources in the 1st language should be allowed in English class.	3.44	4.00	3.79	3.80
Speaking my first language with my classmates during and between class activities should be okay as long as the course is not a speaking course.	3.04	3.68	3.17	3.80
Speaking my 1st language in English class helps me understand the lesson better.	3.22	4.21	3.63	4
I feel uncomfortable if I can't use my 1st language in an English class.	2.67	3.37	2.75	3.60
Numbers of cases	27	19	24	5

The implication of the study.

The primary focus of this study was to examine the student's perspective on the use of their first language in the English classroom. Though similar studies have been carried out elsewhere, this is the first study in the north-east of Thailand. The results indicate that students, in general, will feel more comfortable if their first language is used in class. These results go a long way to support (Cook, Using the first language in the classroom, 2001). In this article, Cook suggested that instead of trying unsuccessfully to eliminate the use of the first language in the second language classroom, teachers and educators should strategically use it as a classroom resource. This results will be of great help to English teachers in Ubon Ratchathani University and other institutions along the region as it will help them to more effectively manage their English language as well as other second language classrooms.

Following the results, it can be recommended that teachers and educators of second languages, should consider the first language as a classroom resource and try to effectively and efficiently find means of strategically using it in the classroom so as to help ease the pressure on their students and make the second language class more comfortable and enjoyable for them. However if not effectively and efficiently used, the first language could interfere with the teaching and learning of the second language. Using it is, therefore, a mix blessings and to be able to rip the benefits, educators most systematically design their lessons so as to make the most out of this resource.

Conclusion

To conclude though the debate as to whether there should be a place for the first language in a second language class continues to go on, this study found out that students believe that their first language if use in the learning of a second language, will help them to better understand the lessons. However if not used probably the first language could totally take over the second language class thereby making the teaching and learning process ineffective.



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Problems That E-book Learners in Taiwan Encounter When Producing E-books

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Abstract

As digital devices become a necessity in modern life, digital reading has become more and more popular in people's daily lives, and digital publishing has also become a very important form of publication in the publishing industry. Therefore, this study reviewed the current status of e-book production and curriculum design in Taiwan, compiled the "Analytic Hierarchy Process Questionnaire on Common Problems with E-book Production" based on past literature and experts' opinions, and conducted a questionnaire survey. Analytic Hierarchy Process (AHP) was then conducted on the collected data with Expert Choice 11 software to sort out and conclude the most commonly seen problems of e-book production. By exploring the most commonly seen problems that e-book learners encounter when engaged in e-book production, this study looks to provide a reference for e-book producers' competence training.

Keywords: digital publishing, e-book production, analytic hierarchy process (AHP)

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1. Research Motivation and Objective

Since e-book production relates to ease of reading and readability, correctness and reading comfort of an e-book's content typesetting is one of the key factors that determine an e-book reader's success. In the future, the hardware for e-book readers will focus on color screens, soft materials, touch-screens, and UI design (Lam, Paul, et al. 2009; Sung-Ming Song, 2010). In particular, the arrangements of images and text, amount of content, and layout of electronic publications have significant influence on readers' comprehension (Exiu-Ping Ye etc., 2011).

How can a txt e-book convert from its original Adobe Indesign typesetting to the ePub typesetting that is suitable for mobile devices such as mobile phones, PC, tablets, etc.? Would the layout and relevant metadata be correct? Does the typesetting conform to the industrial standard? For students who are first exposed to e-book production technology and operating workflow, many production-related problems can be avoided through accumulation and dissemination of knowledge. Therefore, this study expects to find out the most commonly seen problems that e-book learners encounter when producing an e-book.

Due to the diversified types of e-books, generalized e-book types are included in this study discussion of "pan e-book" production. In terms of software operation, discussion focuses mainly on e-book production with Adobe InDesign, and the formats discussed include PDF, ePub, HTML5, FLASH, so that the study may fulfill the situation and needs of Taiwan industries and school education nowadays.

2. Literature Review

2.1. Current status of e-book production curriculum design in design-related departments of Taiwan technological and vocational colleges

According to the information on Taiwan's technological and vocational education course website (Ministry of Education, 2014), private colleges offer more varieties of courses than public colleges. Digital publishing courses are offered for both four-year degree programs and two-year vocational programs, but more courses are offered for four-year degree programs. The number of colleges offering digital publishing courses increased from 36 in the 2010 Academic Year to 53 in the 2014 Academic Year; the number of departments offering digital publishing courses increased from 46 in the 2010 Academic Year to 84 in the 2014 Academic Year; the number of courses offered also increased from 114 in the 2010 Academic Year to 154 in the 2014 Academic Year. The number of digital publishing-related courses offered has been increasing exponentially year by year, showing that all types of colleges in Taiwan have begun to emphasize the training of talent in digital publishing. In five years, over 20,000 students have studied digital publishing-related courses, and the relevant statistics are shown in Table 1.

Table 1: Statistics of digital publishing courses offered

Academic year	2010		2011		2012		2013		2014	
	Vocational college	University	Vocational college	University	Vocational college	University	Vocational college	University	Vocational college	University
No. of schools	12	24	17	23	24	23	18	27	25	28
No. of departments	12	34	20	41	29	35	22	46	34	50
No. of courses	25	89	35	90	53	83	55	100	58	96
No. of students	611	2234	944	2897	1641	2705	1742	3635	2091	3570

Source: Compiled for this study based on data from the Ministry of Education's (2014) technological and vocational education course website

By analyzing the type of departments offering the courses, the study has found that departments offering digital publishing courses are mainly in the digital design fields, such as design, communication, and multimedia. The percentages of courses offered as compulsory and elective are around the same, indicating that the training of digital publishing ability has become an inevitable trend in the field of digital design.

2.2. Workflow of e-book production

E-books mainly provide text-based reading service, which are distinguished as black and white illustrated books (E-ink as carrier) and colored illustrated books (LCD as carrier). For value-added e-books, digital devices provide multimedia-assisted functions for reading (Bon-Yao Ju, 2011). According to the British National Qualifications Framework published in 2012, book publishing practitioners' digital publishing ability should include distribution strategy planning for digital publications, management of metadata, and familiarization with the operation of digital software. It is also stressed that the digital publications produced need to fulfill the requirement of making readability a priority (Creative Skillet Organization, 2012).

Analyzing e-books from the perspective of professional abilities, the study found that art design, printing and digital publishing project management, typesetting, editing, and production are among the skills mentioned by research institutions in past studies (Hong Kong Printers Association, 2008; The Publishing Training Centre, 2009). Liao & Pan (2010) compiled the 16 indicative professional skills for digital publishing practitioners engaged in e-book production by means of questionnaire survey; among these skills, the important ones are display design (e.g., tool bar, buttons), understanding the principle of "user interface" design, understanding production methods for print media, understanding different e-reader interfaces, design content integration, and understanding how to convert digital files into different formats.

2.3. E-book specifications and content configuration

The Innovative DigiTech-Enabled Applications & Services Institute (IDEAS) of the Institute for Information Industry distinguished e-book specifications into character set, font, word form, row spacing, line break rules, sound and image, arrangement and quantity of picture elements, paging and columns, vertical and horizontal display, mandarin phonic symbols and sidenote text, multi-device link, e-book import and export, etc. in the "Proposed Specifications of Software for Digital Publications" (Institute for Information Industry, 2011).

In the user guide of Adobe InDesign (Adobe, 2014), the most commonly used software by publishing professionals, it can be found that functions of Adobe

InDesign are divided into “work area”, “layout”, “font style”, “print style”, “form”, “long document function”, “drawing”, “shape”, “border and object”, “transparency effect”, “colors”, “interactive document”, etc., and these operational items can be seen as the most important functions when producing publications. Overall speaking, digital publishing tasks require more diversified professional abilities than traditional publishing, and therefore represents a more suitable medium of information for modern life (Heilmann & Linna, 2001).

From the above literature review, it can be seen that during e-book production, text typesetting and configuration are the most important parts in the process of e-book production. The characteristics of digital media have to be accounted for, e-book script and screen arrangement must be considered, and there is also the additional task of the production of audio/visual materials; only the printing workflow such as proof making and proofreading in traditional publishing work can be skipped. The workflow of digital publishing, in proper order, should be: manuscript production, layout design, and final draft export. For the content, the work includes: compilation of text and image data, file creation, type and sequence arrangement, creation of master edition, creation of style, development of layout structure, text and image input, text and image grouping, setting interactive effects, and finally export preview and uploading for publication, etc.

3. Research Method and Implementation

3.1. Research method

This study was conducted via questionnaire survey. Based on the results of literature review and experts' opinions, the “Hierarchical Structure Questionnaire on Common Problems with E-book Production” was developed as the data collection tool for this study.

3.2. Research subjects

Seasoned digital publishing professionals with “practical experience in the production of digital publications” are the targets for distributing the questionnaire. A total of 17 questionnaires were sent, with 12 valid responses received after deducting 5 invalid questionnaires. 100% of the respondents are female; college-educated and university-educated respondents each account for 50% of respondents; 66% of the respondents have 3-5 years of publishing experience and 33% have 10 or more years of experience.

3.3. Research tool

The questionnaire on common problems with e-book production was developed on the basis of literature review and collection of relevant data. The structural hierarchical content of “questionnaire on common problems with e-book production” includes “file storage and management”, “page setting”, “text and form setting”, “image setting”, “color highlight”, “interactive setting”, and “tool palette setting”. Selected items of the hierarchies were then compared to see the frequency that common problems occurred. As an answering design, the selected items were arranged in pairs and compared on a 9-point scale.

3.4. Data processing

For data processing, Expert Choice 11 was used to conduct hierarchical analysis. In order to test the consistency of ratings given by decision-makers when doing paired comparison, the “consistency index” (C.I.) may be used. When $C.I. = 0$, it means the judgments are consistent; when $C.I. > 0.1$, it means the judgments are erroneous and inconsistent; when $C.I. \leq 0.1$, it means that though the judgments are not consistent, the bias is acceptable. However, when the question becomes complex, meaning when there are more judgments to be made for the paired comparison, the orders of the pairwise comparison matrix will increase, making it more difficult to maintain the consistency of judgments. Therefore, Saaty (1990) proposed the so-called “random index” (R.I.) to get the “consistency ratio” (C.R.) by adjusting the different degrees of C.I. changes under different orders. Under matrices of different orders, the consistency ratio can be obtained after adjusting C.I. with R.I. The matrix consistency is considered satisfactory only when $C.R. \leq 0.1$, and the formula is $C.R. = C.I. / R.I.$ Table 2 shows the R.I. values when $n = 1 \sim 15$.

Table 2: R.I Values

n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
R.I.	N. A	N. A	0.58	0.9	1.12	1.24	1.32	1.41	1.45	1.49	1.51	1.48	1.56	1.57	1.58

Source: Tai-Sheng Rong (2011).

4. Data Analysis

Regarding the most commonly seen problems when learning e-book production, hierarchical content of “common problems with e-book production” was identified through the hierarchical analysis questionnaire and literature review, including 7 items – “file storage and management”, “page setting”, “text and form setting”, “image setting”, “color highlight”, “interactive setting”, and “tool palette setting”. The questionnaire is presented as 9-point scale evaluation, and the 9-point scale includes 5 rating values which are 1, 3, 5, 7, and 9, representing “equally prone to error”, “fairly prone to error”, “relatively prone to error”, “often prone to error”, and “very often prone to error”. Questionnaire analysis was conducted with Expert Choice 11. Meanwhile, consistency ratio is tested; if CR is smaller than 0.1, considerable level of consistency is achieved; on the contrary, if CR is smaller than 0.1, it means significant consistency is achieved. Finally, weighting of abilities at each hierarchy was found out, which represents the frequency of occurrence for the most commonly seen problems with e-book production, and the overall weighting of the commonly seen problems with e-book production was generated, as shown in Table 3.

Table 3: Weight analysis of the most commonly seen problems with e-book production

Common problems	Weight	Weight percentage	Priority
Interactive setting	.219	21.9%	1
Color highlight	.155	15.5%	2
Image setting	.150	15%	3
Tool palette setting	.133	13.3%	4
Text and form setting	.122	12.2%	5
Page setting	.115	11.5%	6
File storage and management	.105	10.5%	7

C.I = 0.010 R.I = 1.32 C.R = 0.007 < 0.1

The results of this study found the following order of weighting for the most commonly seen problems that digital publishing professionals encounter when producing e-books: first, “interactive setting” with a weight percentage of 21.9%; second, “color highlight” with a weight percentage of 15.5%; third, “image setting” with a weight percentage of 15%; followed by “tool palette setting” (13.3%), “text and form setting” (12.2%), “page setting” (11.5%), and finally “file storage and management” with a weight percentage of 10.5%.

Consequently, for the professional that participated in this study, the most frequently occurring problem among the seven common problems of e-book production was the “interactive setting” of e-books, followed by “color management” and “image setting”.

5. Conclusion

5.1. Current status of e-book production curriculum design in Taiwan

As more and more diversified e-book editors have been introduced to the market, users are able to produce their digital publications more rapidly, but some editors are use an independent system , while others are based on InDesign. Therefore, learning InDesign is the foundation of e-book production, but educational institutions should still encourage learners to learn about more digital publishing techniques and formats, such as XML webpage language training, for boosting competitiveness.

In recent years, the digital publishing industry has seen more and more art editors or editors from the traditional publishing industry become digital editors. However, the industry not only requires technological enhancement, but also lacks talent in planning and marketing, and these publishing talents need to have broader vision so as keep up with user and market demands. Thus, instructors are advised to introduce and analyze the functions and characteristics of e-books from a broader perspective, instilling in learners the concepts and production techniques required for pan-e book production, so that learners may engage in self-study in the future; they can design

digital publications in different formats for different types of e-books and content, and eventually become professional digital publishing workers.

5.2. Most commonly seen problems when learning e-book production

Seven of the most commonly seen problems when learning e-book production were found in this study, and after prioritizing through hierarchical analysis, “interactive setting” was found to be the production problem with greatest frequency weighting, making it the most frequently occurring problem; “color highlight” is the second most common problem; “image setting” is the third most common problem; and these are followed by “tool palette setting”, “text and form setting”, “page setting”, and finally “file storage and management”.

Acknowledgements

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The logo for the International Association of Agricultural and Food Researchers (iafor) is centered on the page. It features the lowercase letters "iafor" in a light blue, sans-serif font. The text is surrounded by several overlapping, semi-transparent circular arcs in shades of red and blue, creating a dynamic, swirling effect.

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Developing a 3D Interactive Tool for Learning OOP Concepts

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Abstract

Object Oriented Programming (OOP) recently became the most influential programming paradigm. Several studies indicated deficiencies in learning introductory OOP courses. In King Abdulaziz University (KAU), Jeddah-Saudi Arabia, during the second semester of the year 2014-2015, a survey that had been designed and distributed to female students of introductory OOP course. The result of the survey showed that students faced difficulties in understanding OOP, specifically 47% of students faced difficulties in understating Polymorphism concept while 59% faced difficulties in implementing Polymorphism. Some of the visualization tools visualize the execution of programs, using visual hints, and interactivity to increase motivational aspects and to improve the students' understanding of programming concepts. This paper showed the development of "OOPVisual". It is a 3D interactive visualization tool that simulates OOP concepts to help students with their understanding.

Keywords: Object Oriented Programming; Polymorphism; Visualization; 3D Interactive Tool; Animation; Drag-and-Drop Method.

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Introduction

Programming is the heart of computer science. Therefore, often CS programs start with introductory programming courses. Almost every university teaches OOP somewhere in its CS curriculum (Lahtinen, et al., 2005). Studies (Biju, 2013; Goosen & Pieterse, 2005; Sheetz, Irwin, Tegarden, Nelson & Monarchi, 1997) have emerged in recent years to prove that some novice programmers have difficulties in learning OOP concepts. In King Abdulaziz University (KAU), Jeddah-Saudi Arabia, during the spring of 2015, it has been analyzed through a statistical study conducted on female students of introductory OOP course that students faced difficulties in understanding and implementing OOP concepts, specifically with Polymorphism. On the other hand, some of the visualization tools visualize the execution of programs which they often used to increase the motivational aspects of programming courses. Such tools introduce animation, visual hints, sounds, and interactivity to employ several different learning styles which support the student activity.

Learning programming concepts with the engagement of visualization tools would help the students focus on the actual programming task instead of wasting time in syntax errors. In addition, these tools will enrich the programming courses to be actively motivated courses to students (Nevalainen, Seppo, & Sajaniemi, 2006).

In this paper, section 2 addresses some universal OOP difficulties faced by students. It also introduces some of the available visualization tools and provides a brief comparison between the proposed OOPVisual tool and the other tools. Section 3 discusses the difficulties of OOP concepts for female students of King Abdulaziz University. Section 4 focuses on the proposed OOPVisual tool, a 3D interactive visualization tool, that simulates OOP concepts using drag and drop technique and selecting from menus. This tool will allow students to be more comfortable with programming without dealing with syntax errors and complex design techniques. Furthermore, allows students to focus on programming concepts rather than the tedium of debugging code. Finally, the paper summarizes the survey results and illustrates the future work of the OOPVisual team.

Literature Review

I. OOP Difficulties

In the programming field, understanding OOP concepts is a difficult task for students. Some researches (Biju, 2013; Goosen & Pieterse, 2005; Sheetz, Irwin, Tegarden, Nelson & Monarchi, 1997) claim that many novice programmers lack understanding some of OOP concepts like Classes, Constructor invocation, Encapsulation, Overloading, Object creation, Inheritance relationships between classes, Polymorphism, and other OOP concepts.

Some of the reasons that led to the lack of understanding OOP concepts as Biju (2013) suggested, is having a previous experience in procedural programming which makes it more difficult to learn and understand OOP.

Another study (Oliveira, 1998) shows some of the theories of OOP are based on the representation of the real world, abstraction, re-usability, and inheritance are as

difficult for some students to comprehend. Moreover, Bashiru and Joseph (2015) suggested other reasons such as when executing a program, the student may not understand what exactly happens inside the computer. Some students face difficulties in understanding how the OOP program can solve a given problem. Furthermore, some of the available tools for learning and teaching OOP are difficult to use.

II. Visualization Learning Tools

Nowadays, the traditional techniques of teaching and learning programming must be redesigned to be more suitable for the new generation of students. Animations and computer games innovative are increasingly popular in becoming teaching tools that make education more enjoyable.

Visualization tools such as Alice (Cooper, et al., 2003; Dann, et al., 2003), Scratch (Maloney, Resnick, Rusk, Silverman, & Eastmond, 2010), and Greenfoot (Kölling, 2010). are often used to increase motivational aspects of the courses and to support the student activity by employing several different learning styles. It is also used to supplement programming courses and enable the easier transition to actual programming tasks. Often, these tools contain animation, visual hints, sounds, and interactivity. The main objective for these tools is to improve the student understanding in programming concepts by reducing the amount of physical programming required to complete the tasks. Program visualization may offer important insights into the learning and teaching of programming. The following subsections present three of the well-known dynamic visualization tools for learning programming (Kasurinen, Purmonen, & Nikula, 2008).

i. Alice

Alice is an approach to teaching introductory courses in computer science. It is a 3D interactive animation program with visualization environment. Novice programmers build animated 3D movies and game's characters as they learn introductory OOP (Cooper, et al., 2003; Dann, et al., 2003). It supports creating animations and building virtual worlds through a graphical user interface (Figure 1), where the student can drag and drop basic programming blocks to create programs. Alice tool supports the main OOP concepts such as arrays, inheritance, and recursion but it doesn't support the Polymorphism concept (Kelleher & Pausch, 2007).

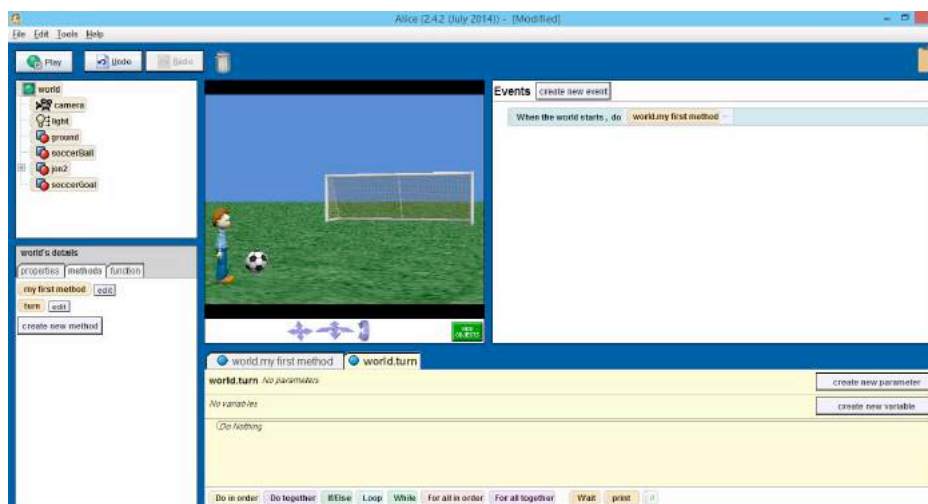


Figure 1: Alice's graphical user interface.

ii. Scratch

Scratch is a 2D visual programming environment that lets students create interactive and media-rich projects (Maloney, Resnick, Rusk, Silverman, & Eastmond, 2010). Students can create a wide range of projects with Scratch, including animated stories, games, book reports, music videos, science projects, tutorials, simulations, and music projects. The Scratch application is used to create projects containing media and scripts. Programming is done by snapping together colorful command blocks to control 2D graphical objects called sprites which move on a background called the stage (Figure 2) to help students make their projects personally engaging, motivating, and meaningful. Scratch makes it easy to import many kinds of media (images, sounds, music) while supporting around forty languages (Maloney, Resnick, Rusk, Silverman, & Eastmond, 2010).

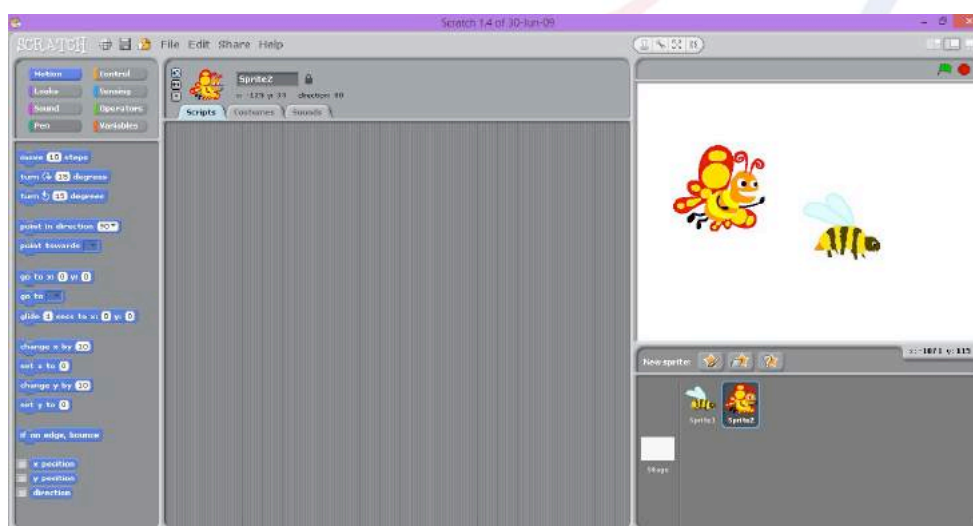


Figure 2: Scratch's graphical user interface.

iii. Greenfoot

Greenfoot is an educational development environment highly specialized for the development of interactive, graphical applications, based on the Java programming language Greenfoot (Kölling, 2010).

Using Greenfoot, students can develop engaging and interesting programs, such as games and simulations, quickly and easily while learning fundamental programming concepts. Greenfoot (Figure 3) is designed as a 2D system. Creating 3D scenario is hard work, and Greenfoot offers little support for making this easier than it is in standard Java. However, many argue that this tool may not be well suited for novice programmers because of its advanced syntax complexity. Nevertheless, Greenfoot can still be a valuable tool for facilitating the transmission from a non-textual micro-world to a real programming language (Papadopoulos & Tegos, 2012). Both Alice and Scratch can be used with novice students while Greenfoot scales better for proficient users Greenfoot (Kölling, 2010).



Figure 3: Greenfoot's graphical user interface (Kölling, 2010).

III. OOP Difficulties In KAU

According to the statistical study conducted during the spring of 2015 on students of introductory OOP course (CPCS-203), with a total of 186 respondents. The results showed that students faced difficulties in understanding OOP concepts, particularly the Polymorphism. 47% of the respondents faced difficulties in understanding the concept of Polymorphism (Figure 4) while 59% of them faced difficulties in implementing it (Figure 5).

Another survey had been designed and distributed during the fall of 2015 to different academic levels of female students of Faculty of Computing and Information Technology in KAU. The data was gathered from 150 respondents. The main

objective of this survey is to help us as developers to design OOPVisual tool interfaces. Although the respondents have never used any visualization tool before, they were extremely motivated and interested in using the proposed OOPVisual tool.

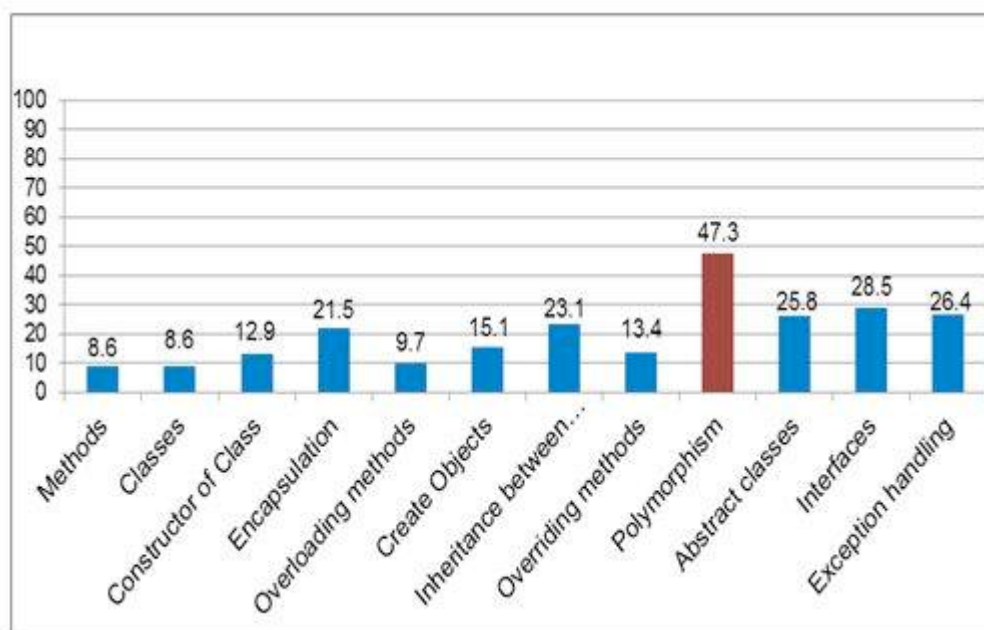


Figure 4: The number of students who have difficulties in understanding each of OOP concepts.

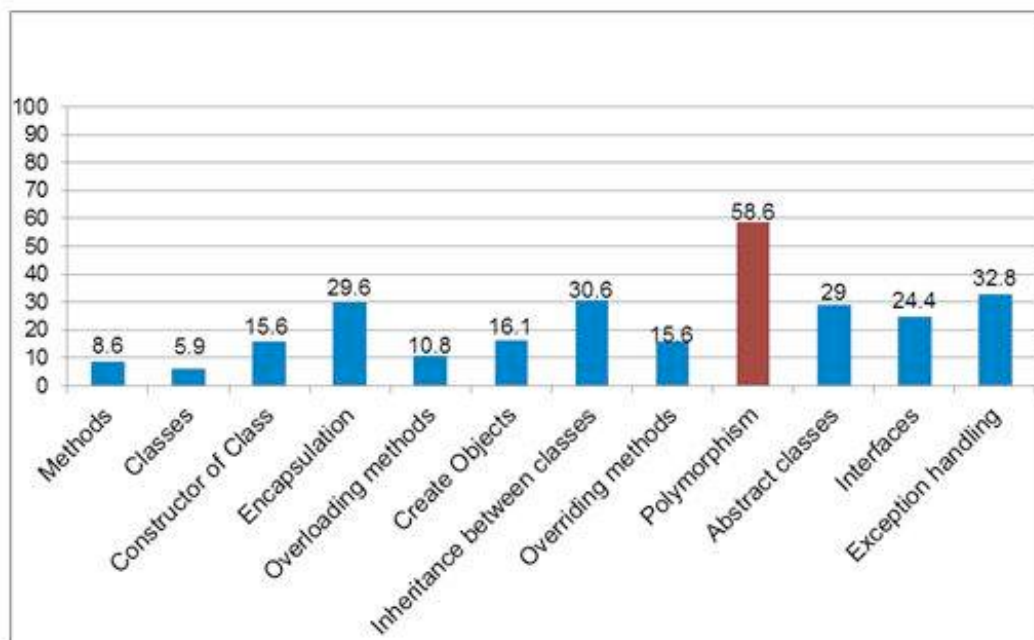


Figure 5: The number of students who have difficulties in implementing each of OOP concepts.

What is Polymorphism?

Polymorphism is one of OOP concepts that allows programmers to create versatile software design. The benefit of this concept is to enable the programmer to write a program in the general rather than in the specific (Lewis & Loftus, 2009).

A Polymorphism reference is a variable that can refer to different types of objects which can be established using inheritance or using interfaces (Deitel & Deitel, 2011). Lewis and Loftus defined the interface as “A set of abstract methods that will be implemented by particular classes” (Lewis & Loftus, 2009).

OOPVisual

The main objective of this project is to develop a 3D learning interactive visualization tool to help students in learning OOP concepts, especially in Polymorphism.

OOPVisual Design

OOPVisual design based on selecting from menus and drag and drop techniques with elimination burdens of writing texts. It consists of eight concepts' tutorials that explain the polymorphism via four levels by following the given tasks and instructions. In addition, five exercises and eight quizzes to let the student practice on polymorphism.

In addition, 'create your own scene' to create any scene without any instructions and tasks to follow. Finally, a help video about OOPVisual interface to guide the students how to use the tool. The following subsections explain the main interfaces of OOPVisual tool.

Home interface (Figure 6) contains five buttons as the following:

- a) Concepts Tutorial button.
- b) Exercises button.
- c) Quizzes button.
- d) Create your own scene button.
- e) Help video.



Figure 6: OOPVisual home interface

Figure 7 shows the user interface for a tutorial of concepts' tutorials. Concepts tutorials divided into four levels, each level concern with a specific part of Polymorphism concept. Each tutorial has tasks with some instructions to be followed by the student in order to complete it and move to next tutorial. There is some restriction on tutorials, the student cannot do anything else the instruction, means cannot create an array if she/he has to create an object and so on.

At the end of each tutorial, there is a confirmation message whether to repeat the tutorial, move to next one or back to home.

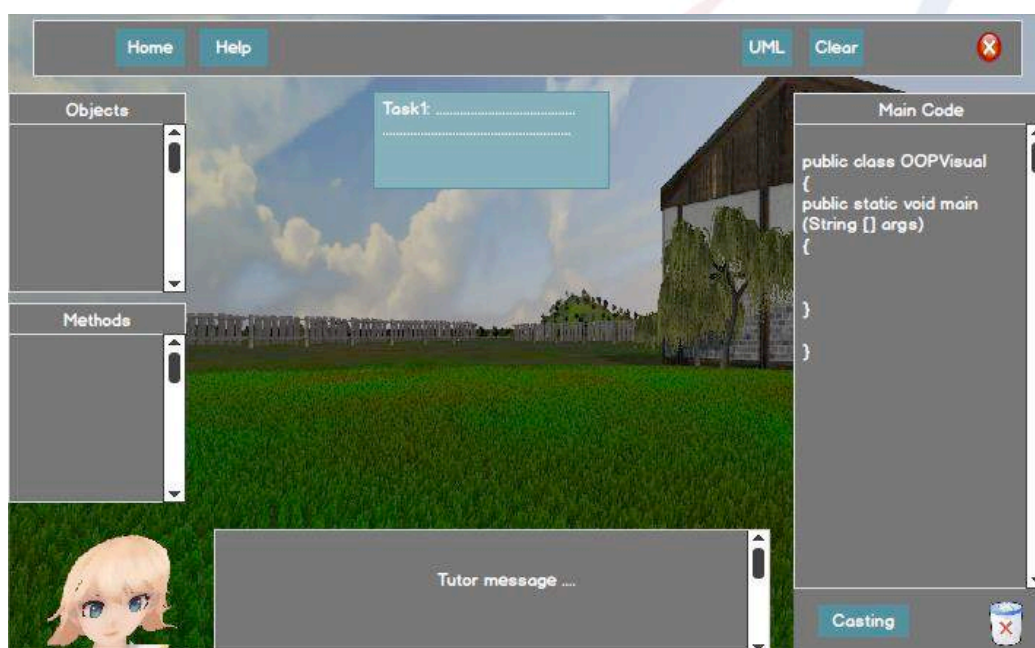


Figure 7: OOPVisual Tutorial interface

Figure 8 shows OOPVisual exercise interface, which its main objective is to encourage students to learn by mistakes, where everything like buttons, menus or reference types will be available in the scene without any restriction. A scenario for each exercise will be given. After each action made by the student trying to accomplish the given scenario, a message with (ü) or (x) sign in addition to sounds will be displayed as a feedback.

To prevent the frustration of trying to achieve the required scenario, there is a hint button beside the scenario. Once Hint button clicked it will guide him/her for the correct action.

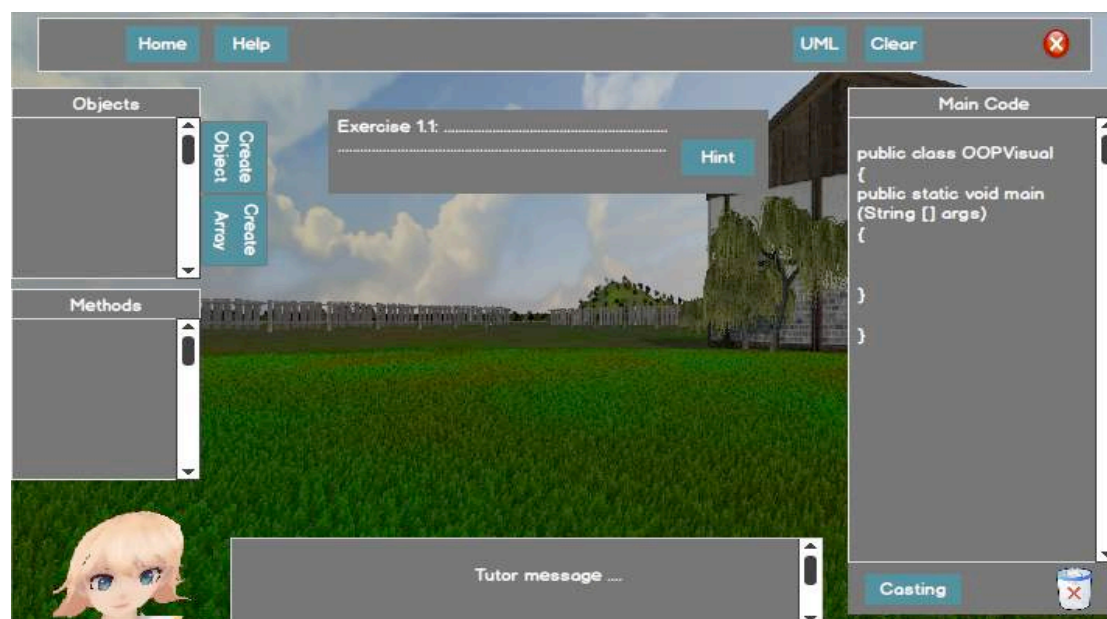


Figure 8: OOPVisual exercise interface

Figure 9 shows the OOPVisual quiz interface. In order to let the student test his/her understanding of the polymorphism concept, we will provide him/her by some quizzes. In each quiz, a scenario will be displayed as a video with multiple choice answer for some questions regards the displayed video. After each selection for an answer, a message will be displayed as a feedback of the selected answer whether it is correct or not.

At the end of each quiz, a dialog box displayed to ask the student whether to back to the related tutorial, moving to next one or back to home

Quiz interface consists of nine parts explained as the following:

- Home button: to back to home interface at any time.
- Help button: that explains the quiz interface as a video.
- Play button: to play and pause the video.
- Repeat button: to repeat the video many times.
- Exit button: to exit from the program.
- The displayed video window.
- Questions panel.

- h. Next button: to move to next question. The student must answer the question in order to move to next one.
- i. At the end of the quiz, 'Done' button to complete the quiz.

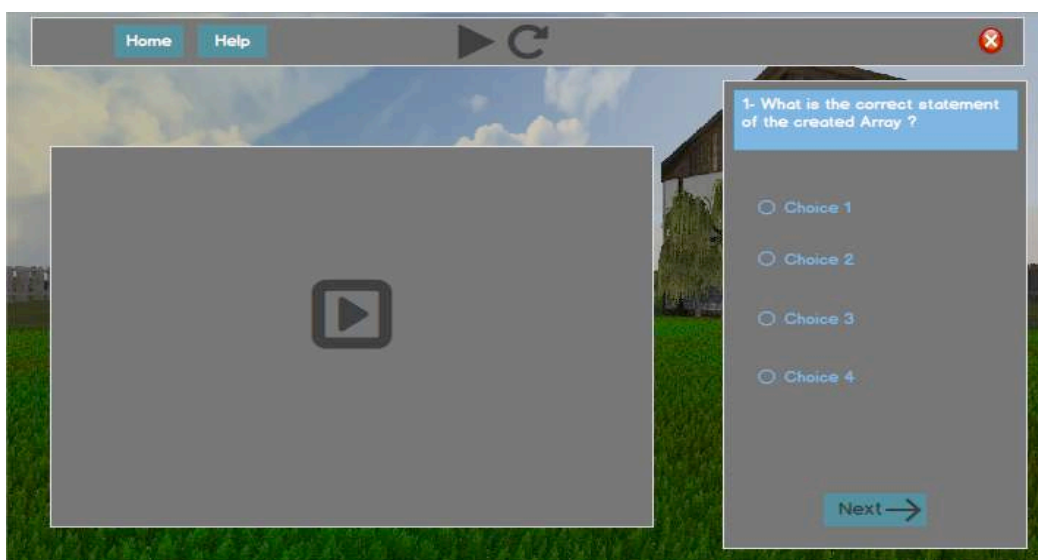


Figure 9: OOPVisual quiz interface

Figure 10 shows 'Create your own Scene' interface, to let the student create her own scene while learning polymorphism without any tasks or instructions to follow.

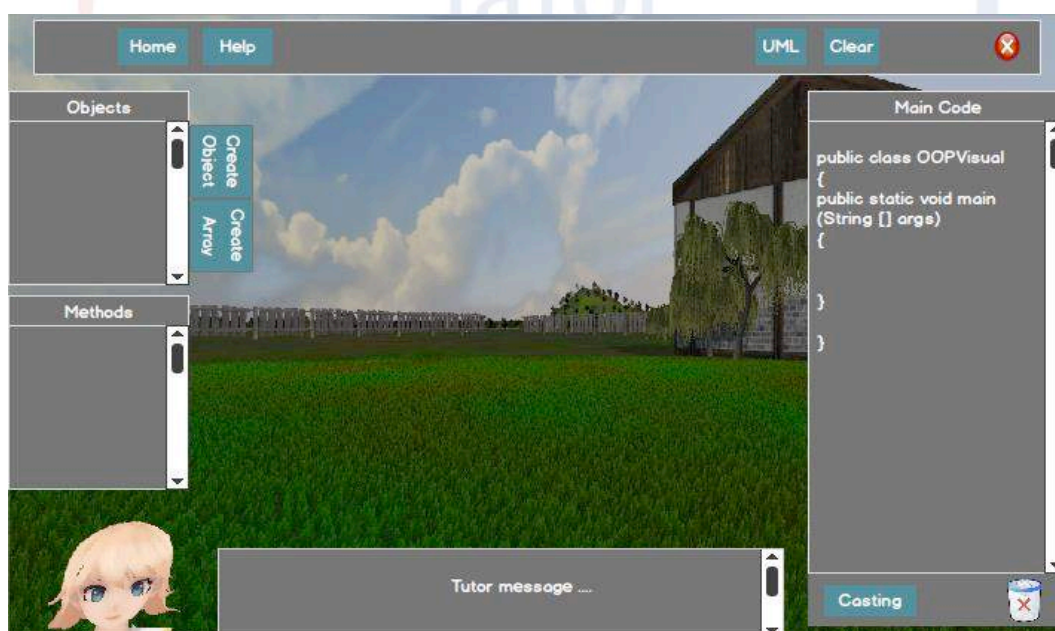


Figure 10: OOPVisual Create your own Scene interface

In the following subsections, we will explain the shared parts between all interfaces.

1. Top bar

- a. Home button: to back to home interface.
- b. Help icon: to open the tutorial video that guides the student how to use OOPVisual.
- c. Clear button: to clear the environment of all objects and methods.
- d. UML button: in order to understand the relationships between the classes in OOPVisual, UML button used to display the UML class diagram.
- e. Exit button: to exit from the program.

2. List of Objects and Methods

Each interface has panel displays all the objects added to the scene. In addition, another panel displays a list of all methods of the selected Objects. This list contains two buttons (Figure 11):

2.a. **Create Object button.**

2.b. **Create Array button.**

Once "Create Object" or "Create Array" is clicked, it will open the Gallery (Figure 12) that contains all the animals in the Farm grouped together based on their characteristics.

3. Tutor

In this part of the interface, the tutor guides the student and warning him/her for any mistakes. For example, if the student dragged and dropped Abstract class such as "Mammal", the tutor will warn her with a message via the tutor panel. As known in Object Oriented Programming, we cannot instantiate an object of Abstract Class.

4. Main code

Home interface has another panel for Main Code. Once the student dragged and dropped any object in the gallery and gives it a name, for example, Horse with name "myHorse", the statement will be added into the main code as `Horse myHorse =new Horse ();`

This panel has two buttons, one for changing the reference type of object after creation "casting", and the other one "Recycle bin" is for deleting an object.



Figure 11: Shared part of interface

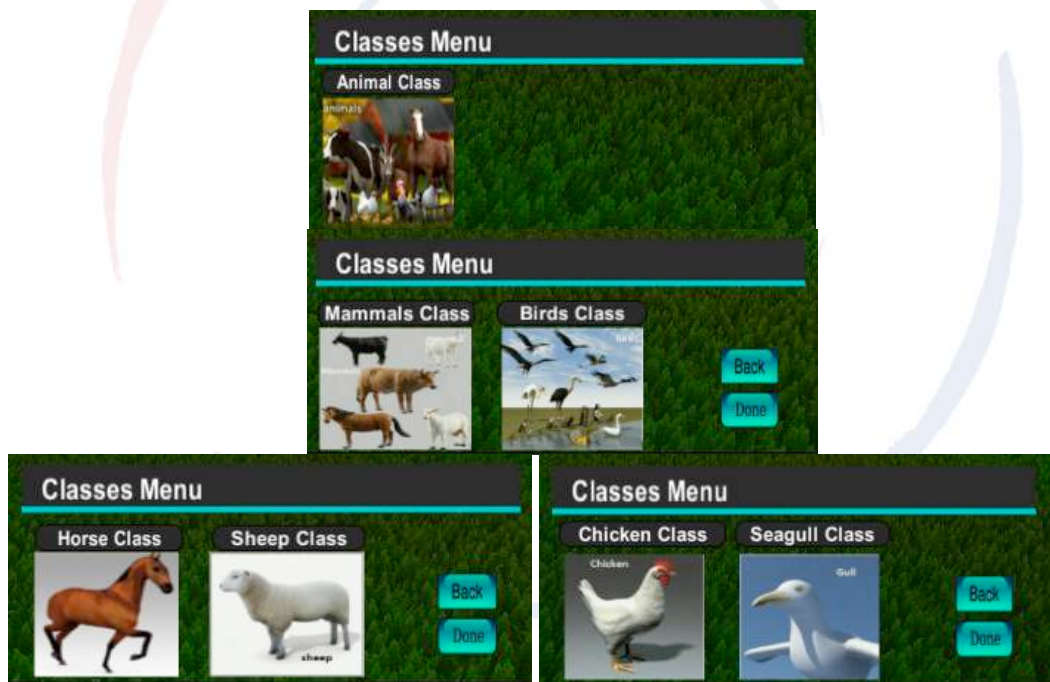


Figure 12: Gallery of Animals.

OOPVisual VS. Alice, Greenfoot, Scratch

Table 1 shows a comparison between OOPVisual, Alice, Scratch and Greenfoot to declare the main features supported by OOPVisual.

Table 1: Comparison between Different Visualization Tools with OOPVisual Tool.

Criteria		Alice	Scratch	Greenfoot	OOPVisual	
Graphical User Interface	Visual Representation	Primitive	ü	ü	ü	
		UML Modeling	X	X	X	ü
	User Interface	ü	ü	ü	ü	
Pedagogy	OOP Scope		ü	X	ü	ü
	Paradigm	Procedural	X	ü	X	X
		OOP	ü	X	ü	ü
Visualization	Dynamic		ü	ü	ü	ü
	Multimedia		ü	ü	X	ü
	3D		ü	X	X	ü
Supported Concepts	Classes		ü	X	ü	ü
	Inheritance		ü	X	ü	ü
	Polymorphism		X	X	ü	ü
Error Message		ü	X	ü	ü	

Some of the terminologies used in the comparison:

- Visual Representation:
 - Primitive: tools that could be grouped into simple or composite objects, and worlds.
 - UML modeling: universally acceptable visual representations, such as UML diagrams or flow charts.
- Paradigm: programming pattern, that has two types procedural and OOP.

As shown in the table and based on the literature review, Alice and scratch do not support the polymorphism concept at all, while Scratch only works in a 2D.

Although Greenfoot supports the Polymorphism concept, it's not suitable for novice programmers according to its advanced syntax complexity. OOPVisual is a 3D dynamic, multimedia tool that explains the Polymorphism in a friendly user interface.

Conclusion

Many novice programmers lack in understanding some of OOP concepts. According to the discussed statistical study in KAU, female students faced difficulties in understanding Polymorphism. Visualization offers a technique for seeing the unseen. Recently, visualization entered in many areas, including the use of visualization tools to help illustrates programming to novice students. However, all these tools do not have a specific objective such as illustrating the Polymorphism concept in a 3D.

OOPVisual is a 3D interactive visualization tool for learning OOP concepts, particularly the Polymorphism concept. The tool acts as an interactive and animated environment. It consists of concepts tutorials, exercise, quizzes, create your own scene and help video.

Future Work

OOPVisual team future plan is to add more classes in the tool like fruits & vegetables, and people. Also, to add button "play" to play the whole scene in create your own scene interface, "Do together" button to play some methods together, add attributes for each object. In addition, implementing new exercises and quizzes to enhance the learning of polymorphism concept.

Furthermore, pre and post survey will be distributed to determine whether the proposed tool has helped the students with their OOP understanding.

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Send Kids to the World: A Study on Using Postcards to Improve Students' Writing Skills

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Abstract

This research was conducted to improve the skill of the eightgraders in writing recount texts through the use of postcards portraying tourism objects in Malang and other places in East Java and Central Java. The postcards were used as media to write recount texts using Tompkins' process approach(2010). This research employed a Classroom Action Research (CAR) with four steps, i.e., planning, implementing, observing, and reflecting. The findings of this research show that postcards improved the skill in writing recount texts. These media also added fun to the class atmosphere, so the students were encouraged to write.

Keywords: writing, *postcards*, writing ability, recount texts

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English Learning and Teaching (ELT) deals with four language skills, i.e., reading, writing, listening, and speaking. Of all these skills, writing is often considered as the most difficult one (Widiati & Cahyono, 2006). Mukminatien (2003) finds that many problems arise with regard to the development of productive skills, especially in the area of writing as it involves the process of composing message, thinking of the language to use, taking care of the diction, managing textual organization, and using mechanics. She states further that teaching writing in English needs careful preparation as this skill is not automatically or naturally acquired by second language (L2) learners, and therefore should be learned.

Regardless of the fact that writing is a difficult skill, it is important as it is a tool to communicate across time and places. Written messages offer several advantages. They can be delivered without the presence of the writer. In addition, they last longer than the spoken ones as they are recorded on paper or other media. They also spread widely once they are published in mass media. In school, writing is taught because the School-Based Curriculum (*Kurikulum Tingkat Satuan Pendidikan=KTSP 2006*) requires that students be able to express and understand meaning either in functional, recount, narrative, descriptive, procedural or report texts. They are required not only to understand texts, but also to produce the texts to express their understanding.

Although the skill to write a recount text is required by the curriculum, the students' skill in writing is not very satisfactory. A preliminary study conducted in VIII G at SMPN 18 Malang showed that most of the students (82%) did not achieve the minimum passing grade of 75. Other results showed that the students got difficulties in getting the idea. When asked to write a recount text, they needed more than 10 minutes to come to a topic. Even when they had already decided on the topic, they did not know how to put it in writing. They had no ideas of how to arrange their sentences into a good text. They seldom used time connectives. Furthermore, in terms of grammar, they did not use the simple past tense. They also forgot to use 'were' and 'was' in a nominal sentences. In terms of vocabulary, they used some inappropriate terms in their writing, making it difficult to understand.

The interview with the English teacher reveals several facts. First, writing was taught once in two weeks. Second, she sometimes used drilling in teaching vocabulary and question and answer technique. Third, she seldom used media in teaching English. Fourth, she got some difficulties in implementing the teaching technique as the students had very limited vocabulary. Fifth, the students had low motivation in writing. Sixth, the students also had low ability in writing. Seventh, when teaching writing, she usually asked the students to write a recount text and submit it to be checked.

Meanwhile, the results of the observation showed that in the writing session, the teacher explained the generic structure and the language features of recount texts and asked the students to listen to the explanation, read the workbook by themselves, answer some questions related to the texts, and create a recount text based on the material they had just learned.

From the results of the observation, it can be concluded that the students' low ability and motivation were quite probably the results of learning which was neither enjoyable nor meaningful for them. As the teacher did not create enjoyable learning,

the students gave up the writing task easily. Students also did not find writing meaningful as the teacher did not present the real use of writing in English. The students had low motivation to write, and were confused about the audience, and the steps to produce a good writing.

Regarding the complexities of writing, teachers need to engage the students in activities that are easy and enjoyable to take part in, so that writing activities not only become a normal part of classroom life, but also present opportunities for the students to achieve success (Harmer, 2007). Harmer (2007) says that in the teaching of writing, teacher can focus on either product of writing or the process itself. Many educators, however advocate a process approach to writing (Muniroh, 2013). A process approach enables teachers and students to interact more meaningfully with a purpose in mind. Moreover, it is important to make students aware of how to get started by encouraging them to start thinking and produce ideas as well as feedback. Students can discover new ideas, sentences, and words as they work through the initial draft. Process approach proposed by Tompkins (2010) consists of five stages, namely pre-writing, drafting, revising, editing, and publishing.

Besides, ELT needs a meaningful context, in which students know not only the language, but also how to use it in real life contexts. To create both enjoyable and meaningful process of learning, teachers can use authentic materials. Peacock (1997) states that authentic materials have a positive effect on learner motivation. They also provide exposure to real language and relate more closely to learners' needs.

Real postcards are examples of authentic materials which can be used as media to teach students how to construct real messages to others. Through postcards, people write their experience, express their feeling, and send the postcards to others from whom they can get replies. Instead of letting the students write without knowing the real use of their writing, the researcher offered postcards in which students had real audience and a purpose for writing.

Postcards also provide pictures portraying tourism places, annual events, and sometimes people's activities. These pictures provide another reason to use it as learning media. Pictures in postcards as visual media can increase interest in a lesson (Smaldino et al., 2012). They can motivate learners by attracting and holding their attention while generating engagement in the learning process. Motivation helps students solve problems and respond to challenges raised in the learning process (Muniroh, 2013).

Besides, pictures can help students to recall their memories. Students can look at the pictures, identify every detail in the pictures, and build a framework based on the details. Therefore, the postcards used had to portray pictures of tourism objects which had been visited by the students, such as the tourism objects around Malang, Batu, East and Central Java. The postcards also had to portray the whole landscape to help the students recall their memories of a particular place. Their memories would provide something to start writing recount texts.

In the study, students used the picture in their postcards as a basis to construct their composition. The researcher gave a model of a recount text using postcards as the media and let the students identify the generic structure of recount text. Then, the

teacher guides the students in the pre-writing, drafting, revising, editing, and publishing stages.

The studies conducted by Mareitha (2004) and Appriyanto (2009) prove that the use of pictures can improve students' writing skill. More specifically, Arief (2011) proves that the use of pictures in a contextual teaching and learning can help students in writing recount texts. Since pictures proved to be effective in the previous studies, they are used in the present study to improve the ability in writing recount texts for the eighth graders of SMPN 18 Malang in combination with Tompkins' process approach.

Method

This research employed a Classroom Action Research (CAR) design with four steps, i.e. planning, implementing, observing, and reflecting. The study started with planning the action. The next stage was implementing the action according to the lesson plans and observing the action using the research instruments. Then, in the reflection stage, the data collected in the observation stage were analyzed, interpreted, and compared with the criteria of success to decide whether or not it was necessary to conduct the second cycle. The criteria of success in this study refer to the product and process. The criteria of success for the writing product was that 70% of the students reached the minimum passing standard (*SKM*) of 75 in writing recount texts by using postcards. The criteria of success of the process refers to the students' positive attitude and feedback after the implementation of the action. If the students could achieve the criteria of success through the use of postcards, the cycle ended. Otherwise, the next cycle had to be conducted.

In this study, the researcher and the English teacher planned the action. Then, the researcher implemented the action, analyzed the data, and wrote the report. She also evaluated the students' works. The English teacher acted as a class observer. The subjects of the study were 38 students of class VIII G at SMPN 18 Malang in the second semester of the 2013/2014 academic year. The school is located at Jl. Soekarno Hatta No. 394, Malang. The school used the School-based Curriculum. English was taught twice a week, while the writing skill once in two weeks.

The data of the study concerned two issues: the students' writing ability in writing recount texts and the use of postcards in the teaching of writing. The data of the students' writing ability were collected by calculating the individual scores of the writing product based on the scoring rubric in terms of content, organization, grammar, vocabulary, and mechanics by using the scoring rubric adapted from Hartfiel et.al. (1988). The data of the implementation of the postcards were gathered through questionnaire, field notes, and observation guides. The observation guide and field notes were used in Cycle 1 and Cycle 2. The questionnaire was only used in Cycle 2. The result of the field notes and observation guides were used to monitor whether the steps of implementation were done as planned and to see if there were any problems in the implementation of the media. The questionnaire was used to see the students' responses towards the use of media and towards their writing ability. The field notes, observation guides, and questionnaire were analyzed by seeing whether the implementation of the postcards were done as planned.

FINDINGS AND DISCUSSIONS

The findings of this study are presented in two sections, i.e., findings in cycle 1 and those in cycle 2.

Cycle 1

The first cycle of this study consisted of two meetings, each of which lasted for 80 minutes. The first meeting was conducted on Monday, January 13, 2014, in the first and second periods. It consisted of three main activities: pre-, whilst-, and post-writing.

In the prewriting, the researcher greeted the students and checked their attendance. One student was absent. After a short introduction, the researcher showed some slides portraying pictures of tourism objects in Indonesia which were taken from www.visitindonesia.com. Next, the researcher asked the students how they shared their experiences with their friends. The researcher offered postcards as the tools to share their experiences. The researcher introduced parts of postcards to write messages and the address, and to stick the stamp. The researcher also told the students the functions of the postcards and how to get them. Then, the researcher asked the students what kind of text should be written on postcards. Most of them said it was a text telling experience and only a few knew the name of the text, which was recount text.

The next step was distributing blank paper for the draft. Then, the researcher distributed the handout which consisted of a sample text, the language feature and generic structure of recount text, and also the tips how to write recount text. The researcher also distributed the real postcards to the students, one for two students. The researcher, then, showed the sample recount text, entitled “Wonderful Bromo” through the power point slides and a real postcard in front of the class and discussed the language features and the generic structure of recount texts of the sample text.

The researcher introduced the first step in writing a recount text, namely pre-writing stage. In this stage, the researcher let the students make clustering based on the postcards they got by answering *what*, *where*, *why*, *who*, *when*, and *why* questions. The students carefully observed the picture and found things that were related to their experience. After completing the clustering, the students were guided into the drafting stage, where the students created sentences based on the ideas they got in clustering phase. The researcher asked the students to submit their draft and dismissed the class. The second meeting was conducted on Thursday, January 16, 2014, in the first and second periods. The researcher began the lesson by checking the attendance. Then, the teacher showed some slides containing questions about the previous lesson. The students enthusiastically answered the researchers’ questions. Next, the researcher distributed their first draft with her feedback on it. The researcher also distributed the postcard on which the students write their final version. Students’ task was to revise these draft based on the researcher’s feedback. After revising this draft, the researcher asked the student to edit their draft in terms of mechanics, including capitalization, punctuation, and spelling. The researcher guided the students during the editing stage by explaining the use of punctuation and capitalization as well as the importance of

using correct spelling. The researcher dismissed the class when the students finished their final version and submitted their works.

The students' writing product at the end of Cycle1 was good in terms of content and organization. Yet, in terms of grammar, vocabulary and mechanics, the students' works were unsatisfactory. More specifically, none of them got 'very good' and almost all of them were 'fair' category (See Table 1). The results of the observation guide showed that the students were very interested in the use of postcards as a medium to write recount texts. The students' enthusiasm appeared when the researcher showed them the postcards. Most of them knew postcards, but none of them had ever written on them.

Some of the students did not know where to put the stamps, the address, and the message. They were more excited when the pictures portrayed in the postcards were familiar to them as they had visited those places before. When the researcher distributed the postcards, they quarreled over which picture they should take. The field notes show that postcards were interesting media as only very few of them had ever used them. Second, power point slides which contained many pictures were interesting for them. Then, students were guided throughout the process. This made it easier for them to create the text.

The result of the Cycle 1 had not yet achieved the criteria of success because only 26 students (68%) out of 38 students passed the *SKM*. Most of the students belonged to "fair" dan "good" category. More specifically, they got difficulties in mechanics as indicated by the fact that only a few of the students belonged to 'very good' and 'good' categories. Most of them belonged to the 'fair' category (See Table 2).

Table 1 The Students' Score Distribution in Terms of Content, Organization, Vocabulary, Grammar, and Mechanics in Cycle I

Score Category	Writing Aspect									
	Content		Organizational		Vocabulary		Grammar		Mechanics	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Very Good	13	34	15	39	10	26	10	26	0	0
Good	22	58	20	53	6	16	24	61	5	13
Fair	3	8	3	8	19	50	2	5	27	71
Poor	0	0	0	0	3	8	2	5	6	16

Note:

Freq= Frequency

Many problems occurred during the implementation of the media. First, the students were a bit bored during the researcher's confirmation. Second, the researcher paid attention mostly on the right side and the center of the class. The students on the left side did not get researcher's attention. Third, the handouts and the slides which contained the sample text were merely copied and modified by some of the students

and the researcher spoke too fast so that it was hard for the students to understand the instruction and the explanation. Fourth, the time provided was not enough for some of the students to finish the task. The students' writing product at the end of Cycle 1 was good in terms of content and organization. Yet, in terms of grammar and vocabulary, the students' work were unsatisfactory. The students' works also medicated problems in mechanics. More specifically, none of them was 'very good' and almost all of them were the 'fair' category.

Therefore, it can be concluded that the process in Cycle 1 had to be re-implemented in Cycle 2 to get a better result.

Cycle 2

Cycle 2 was implemented in two meetings, each lasted for 80 minutes. Meeting one was held on Monday, January 20, 2014. It was in the first and second periods. This meeting, like those in Cycle 1, consisted of three main activities, pre-, whilst-, and post-writing. In the pre-writing, the researcher greeted the students and checked the attendance list. The researcher showed some slides containing the generic structure and language features of recount texts which were presented in the form of 'Who Wants to be A Millionaire' game. Then, the researcher announced the result of their works from the previous meeting. The researcher gave positive feedback to their composition and announced name of the students who wrote the best text.

The researcher showed some slides about the common mistakes they made in Cycle 1. The researcher explained how to make correct grammatical structure in their works. The researcher also introduced some vocabulary to replace the inappropriate vocabulary they used in Cycle 1. Then, the researcher explained the correct spelling, punctuation and capitalization as students made several mistakes in mechanics in Cycle 1. Next, the researcher distributed blank paper for their draft. The researcher also distributed the real postcards to the students, one for every two students. In this meeting, the researcher no longer allowed the students to look at the sample text in the hand out to prevent them from copying and modifying the sample text. The students wrote their own ideas by using clustering technique. The drafting stage began by arranging those ideas into good sentences. The teacher let the students check the meaning of the words they used in the dictionary. The researcher dismissed the class after the students submitted their draft.

The second meeting was conducted on Thursday, January 24, 2014 in the first and second periods. The researcher began the lesson by checking the attendance. No one was absent. The teacher showed some slides containing questions about the previous lesson. The students enthusiastically answered the researchers' questions. Next, the researcher distributed their first draft with feedback from the researcher. The researcher also distributed the artificial postcards to write their final version. Students' task was to revise these draft based on the researcher's feedback.

After the students revised this draft, the researcher asked the students to edit their draft in terms of mechanics, including spelling, capitalization and punctuation. The researcher guided the students during the revising and editing stages. The researcher dismissed the class when the students finished their final version and submitted their works. However, some students could not finish their works perfectly due to the event

held by the school committee which required them to end the lesson 15 minutes earlier.

Some problems that occurred in Cycle 1 could be solved. The researcher used “Who Wants to be A Millionaire” quiz containing questions related to the recount text to gain students’ interest. The researcher paid attention to the students in the class by moving around the class. The researcher did not show the slides and did not distribute the handouts, so the students could not copy the sample text. The researcher also provided a longer time for the students to write their draft, so the students had enough time to create their draft.

The results of the students’ writing in Cycle 2 reached the criteria of success. Most of them belonged to the “very good and good” categories in terms of content, organization, and language use (vocabulary and grammar). Out of 38 students, 31 (81%) passed the *SKM* of 75. However, they still got difficulties in mechanics as indicated by the fact that only a few of the students belonged to ‘very good’ and ‘good’ categories. Most of them belonged to the ‘fair’ category in terms of mechanics (See Table 2).

Table 2 The Students’ Score Distribution in Terms of Content, Organization, Vocabulary, Grammar, and Mechanics in Cycle 2

Score Category	Writing Aspects									
	Content		Organization		Vocabulary		Grammar		Mechanics	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Very Good	18	47	22	57	16	42	15	39	4	11
Good	19	50	10	27	17	45	7	19	9	23
Fair	1	3	6	16	5	13	15	39	21	55
Poor	0	0	0	0	0	0	1	3	4	11

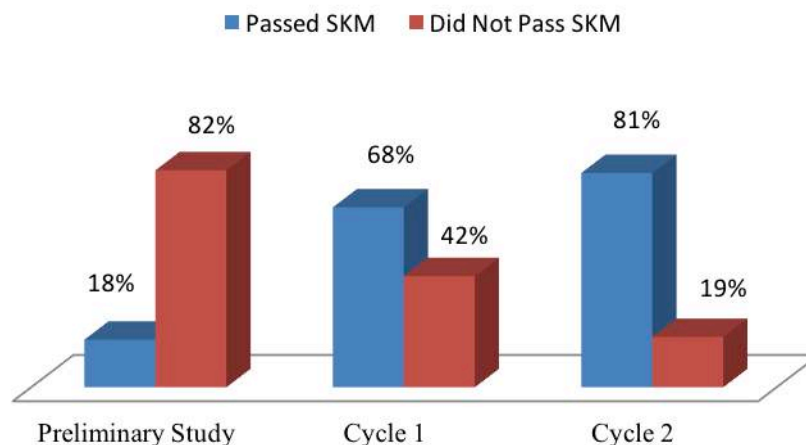
Note:

Freq= Frequency

The results of the observation guide show that the students’ attitude during the teaching and learning process was good and cooperative which were shown by their enthusiasm in writing and asking about recount texts. The field notes show that students could write creatively when they were not allowed to see the sample text. They could write in more details and their writing were different from their friends. The students were not afraid of making any mistakes as they believed it was part of making a creative product. The students also learned a lot from the researcher’s explanation about the use of correct grammar, appropriate vocabulary, correct punctuation, and capitalization.

The implementation of postcards from Cycle 1 to Cycle 2 had shown improvement although Cycle 1 had not yet achieved the criteria of success because only 26 students (68%) out of 38 students passed the *SKM*. However, the criteria of success was finally achieved in Cycle 2. It was shown by the fact that 31 students (81%) passed the *SKM*. In terms of students’ response, they had already shown good response toward the use of postcards in Cycle 1 and Cycle 2. Postcards could motivate them and become the source of ideas. It was proven by the results of observation, questionnaire, and field

notes in Cycle 1 and Cycle 2. Figure 1 below presents the students' improvement in their ability in writing recount texts starting from preliminary study, Cycle 1 and



Cycle 2.

Figure 1 The Students' Writing Improvement from Preliminary Study, Cycle 1, and Cycle 2

Conclusions

The results of the study show that using postcards can improve the writing skill of the students of class VIII G at SMPN 18 Malang. The use of postcards can solve students' problem in writing recount texts as the pictures in the postcards helped them to recall their memories as a basis of idea to write a recount text.

The students' attitude towards the writing activities also improved. In the preliminary study, they were not eager to write. Many of them did not pay attention and were busy with their own when they were asked to write recount texts. In Cycle 1 and Cycle 2, they paid more attention and were involved in the five stages of writing, i.e., prewriting, drafting, revising, editing, and publishing. Therefore, it can be concluded that the use of postcards in combination with the implementation process approach can improve the students' ability in writing recount texts.

Suggestions

Based on the findings of this research and the discussion, the researcher would like to offer some suggestions concerning the use of postcards in the teaching of writing to English teachers and future researchers.

In order to improve the students' ability in writing good recount texts, English teachers are suggested to use postcards to improve students' writing ability because postcards can help them to get ideas by recalling their memories and arouse interest in writing. This medium is better to be applied in combination with the process approach proposed by Tompkins (2010), which lead the students through the five stages i.e. the prewriting, drafting, revising, editing, and publishing stages. It is suggested that teacher gives a checklist to make sure students do the writing stage correctly. The teacher is suggested to use postcards containing pictures of tourism objects which the students have visited. Next, the postcards must portray the whole

scenery from the object, which can help the students to generate ideas by recalling their memories of the place in the pictures.

The researcher suggests that the future researchers who use the same media and approach to provide longer period of time for the students to write. Future researchers are also suggested to use more various postcards. In Cycle 1 and Cycle 2, the students were eager to get more various postcards to provide more choices for their ideas. The researcher also suggests that further researchers can investigate how postcards can improve students' skill in writing other types of texts, such as descriptive texts. Future researcher are also recommended to encourage students to write by combining this medium with games.



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*Practice of 21st Century Skills-Oriented Project-Based Learning:
A Case for Developing Application Software*

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Abstract

Rapid technological advances and globalization of the 21st century have caused a large change in people's way of life and how to think and learn. On the other hand, modern society has various complicated problems such as terrorism, conflict, refugee problems, poverty, and environmental issues. In the near future, children must face these problems. However, their educational system is employed the 20th system. Under the circumstances, MEXT which is Japanese ministry of education advocates the 21st century skills.

This study presents the 21st century skills-oriented project-based learning (PBL). We report the PBL design, educational practice, and the assessment. We gave 13 undergraduate students in their 20s a practical challenge that is to develop application software for checking the electricity usage in our university for half a year. All team members belonged to a faculty of social science and the same seminar. Through their self-assessment of the 21st century skills at the end of this project, we found that the learning environment of this project enabled all members to acquire "Critical Thinking, Problem Solving and Decision-making" and "Learning to learn/metacognition" in the 21st century skills. In addition, we confirmed that the experience of a role as a leader developed higher level 21st century skills with the comparison of the other members. On the other hand, we found that this PBL project was unsuitable to acquire "life and career skills" and some 21st century skills.

Keywords: 21st century skills, project-based learning, developing application software

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Introduction

With the recent remarkable advance in technology, the technology is universal in our lives. Thereby, our lives have been changed greatly. People use technology for getting information, their communications, businesses, and the others. Technology makes progress day by day, and changes the impossible things to the possible ones. At the same time, globalization is also proceeding at a rapid pace. Rapid technological advances and globalization in the 21st century have made some significant changes in the way of our lives, our minds and our learnings. However, the current educational system has adopted a 20th century system.

On the other hand, modern society has various problems such as terrorism, conflict, refugee problems, poverty, and environmental issues. These are very complicated and international problems. It is necessary for children who deal with these problems to acquire skills such as flexibly corresponding, efficient communication, decent information handling, good collaboration, creativity, and all that.

Under the circumstances, the 21st century skills have been proposed. In this study, we did practice and assessment of the 21st century skills-oriented project-based learning. As a result, we found that the learning environment of this study enabled the project team to acquire some of the 21st century skills.

21st Century Skills

The 21st century skills is the concept that proposed by ATC21s (The Assessment and Teaching of 21st Century Skills). ATC21s is the international organization which was established by the educator of the world.

The 21st century skills are 10 skills, which are divided into 4 broad categories. The first category is “WAYS OF THINKING”. “Creativity and Innovation”, “Critical Thinking, Problem Solving and Decision-making”, and “Learning to learn/metacognition” are belong to the “WAYS OF THINKING”. The second category is “TOOLS FOR WORKING”. “Information Literacy/Research” and “Information and Communication Literacy” are belong to the “TOOLS FOR WORKING”. The third category is “WAYS OF WORKING”. “Communication” and “Collaboration/Teamwork” are belong to the “WAYS OF WORKING”. The fourth category is “WAYS OF LIVING IN THE WORLD”. “Citizenship—local and global”, “Life and career skills”, and “Personal and social responsibility—incl. cultural competence” are belong to “WAYS OF LIVING IN THE WORLD”.

These skills are recognized common skills to get through life in a world of ever-intensifying globalization. Currently, national governments have begun some efforts to shift to the education in order to foster the 21st century skills from the traditional old-century education.

Related Studies

Effectiveness of Project-Based Learning (PBL)

Project-Based Learning or Problem-Based Learning (PBL) is one of team learning methods which intended to resolve immediate problems.

According to S. Bell (2011), he said that “The outcome of PBL is greater understanding of a topic, deeper learning, higher-level reading, and increased motivation to learn.” Additionally, as stated by B. Pearlman (2010), he said that “The New Tech network’s experience is that students best work, produce, and construct knowledge through project-based learning (PBL).” These previous studies revealed that Project-Based Learning or Problem-Based Learning is effective for learning the 21st century skills.

Learning Environment

The learning environment has to be reconsidered because this is an important factor. Most of practical studies seeking to learn the 21st century skills for students are done in the part of the lectures or associated with acquisition of academic credits (Matsuzaki (2016), Nagamachi(2015)). In other words, most of the practical studies’ learning environments are in the context of compulsory participation. There is room for research of learning environment which is not a part of the lectures or not associated with acquisition of academic credits, and seeking to learn the 21st century skills for like-minded student.

Difference from Related Studies

This study is a practical study seeking to learn the 21st century skills by Project-Based Learning. In addition, it is predicated on the ideas of previous studies. The different point from previous studies is that the learning environment is not a part of a lecture or not acquisition of academic credits, and not in the context of compulsory participation.

Overview of the Project in this Study

Backgrounds

The backgrounds of the project are the Great East Japan Earthquake on March 11, 2011. This is a seismic disaster caused by magnitude 9 quake and following tsunami. This seismic disaster caused a nuclear power station accident. In the result, the Japanese government at that time had no choice but to stop all nuclear power stations for providing assurance of safety. This causes rolling blackouts of some areas because it cannot supply the electricity.

From then on, there is increasing interest in electricity in Japan, and people became willing to conserve energy. The government enacted an ordinance to restrict the electricity usage for large-lot electricity users such as universities. Under this

circumstance, there are more universities to carry out visualization of their electricity usage as a part of saving on energy.

Goal

In this study, the goal of the project is to develop two smartphone applications (iOS for and Android OS) and a web application to visualize electricity usage of the university campus.

Project Duration

The project started in January 2014, and the applications for smartphones and website were released in July of that year. So that means the project implementation period was 6 months.

Members and Roles

The team was composed of 13 like-minded members. They were sophomores and juniors, whose majors are social science, in the same seminar. The project members were divided into 3 teams.

The first one is “Smartphone Team” which consisting of “iOS Section” and “Android OS Section”. The iOS version was written in Objective-C programming language and Android OS version were written in the Java programming language. “iOS Section” has 3 juniors and “Android OS Section” has a junior and 2 sophomores. So, “Smartphone Team” has 6 members in total.

The next one is “Web Team”. The web application was written in the PHP, Action Script 3.0, and other programming languages. “Web Team” has 2 juniors and a sophomore.

The last one is “Design Team”. “Design Team” designed all materials which were used in the application with Adobe Photoshop and Adobe Illustrator. “Design Team” has 2 junior and 2 sophomores.

In addition, each team has a leader in order to promote the project smoothly.

Flow of the Electricity Usage Data

Displayed data of smartphone and web applications is retrieved from the server of the university. Figure 1 shows the flow of the electricity usage data from measurement of the data to displaying the data in the application.

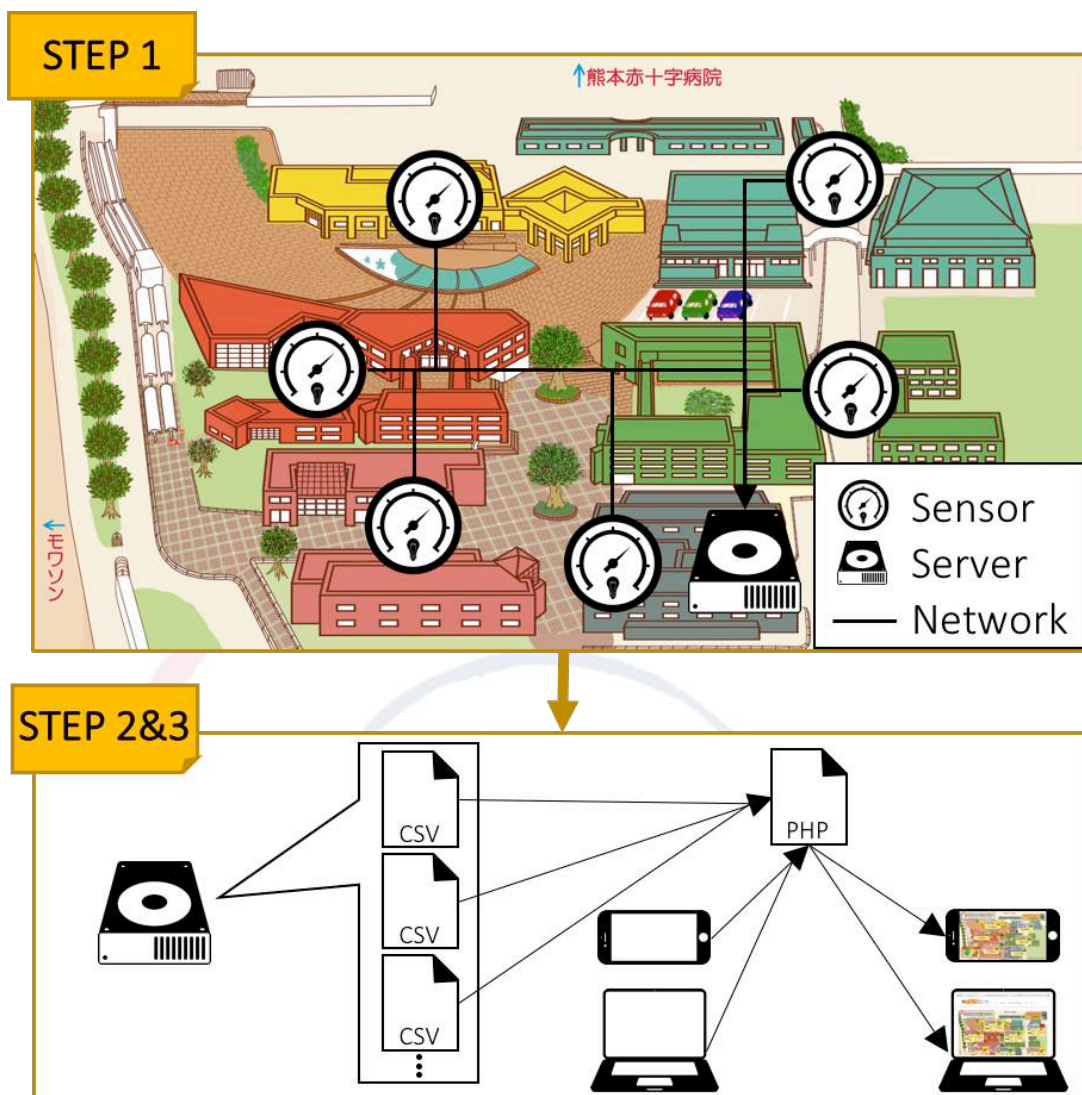


Figure 1: Flow of the electricity usage data

The flow of the data comprises 3 steps. The first step is measurement and accumulation. The data of electricity usage is measured by sensors attached to the distribution board in each building of the campus. The measured data stored in the server as a CSV format file via the campus network every half hour. The second step is processing. The CSV format file in the server is processed by the PHP program files on the same server. These PHP program files read the all of CSV data, and after that, tally up the electricity usage with each building. The last step is display. The smartphone and web applications access to the PHP program file to get the data for displaying. After that, applications show the data on the display screen.

Meanwhile, this data flow of was decided by the part of the project members, supervisor, staff of the university, and business operator for installing sensors and all that.

Process of the Project

Figure 2 shows relationship of people who get involved in the project. Basically, the project was carried out by the university students only. The supervisor only provides

advices to deliverables and give counsel when problems are caused, and he does not interfere as much as possible.

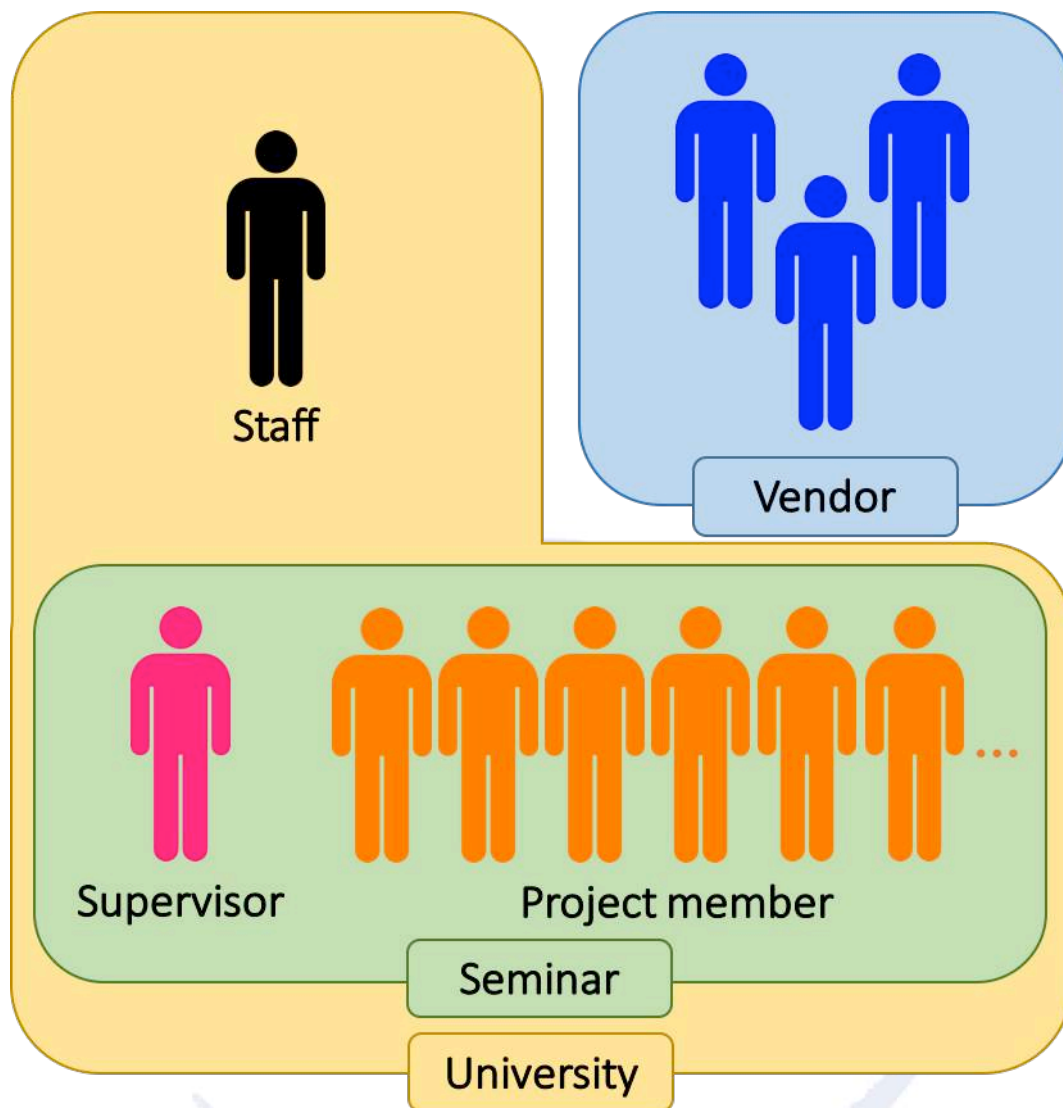


Figure 2: Relationship of people who involved in the project

The project was processed by the cycle of "regular meeting" and "team activities". The regular meeting is all-hands, 60 minutes, and it holds every week. The purposes of the regular meeting are decision-making and activity report. In the decision-making, members decided detailed specifications of the applications, interface design and all that. In the activity report, the leader of each team reported what they have done after last regular meeting, and what will they do by next meeting. In addition, other members give an opinion and ask a question for the report. The team activity was processed by each leader. The activity style was free, thus each team adopted their suitable styles, for example face to face meeting, using instant messaging and others. In addition, if the need comes, another small meeting was held by some teams.

Project Name

The project was called “e-PUK”. This name is a combination of “e” of “electricity” and “PUK” standing for “Prefectural University of Kumamoto”. This project name was also used for smartphone and web application name.

Outcomes of the Project

Developed Smartphone Application



Figure 3: Screenshot of developed smartphone application

The developed application supported both iOS and Android OS, and these can be downloaded for free from each application store.

When the application user launches the application, the splash screen is displayed. After that, the total amount of electricity usage and the acquisition date and time of the data are displayed on the university map. In addition, the name, electricity usage, and character in each area are also displayed. There are 3 variations of the character, but details will be described below. When the user taps the character, the user can check more in-depth electricity usage of the area. Furthermore, when user taps “info” icon on the bottom-left corner of the screen, user can check electric power charge of each department and monthly conversion of electric power charge per student.

Developed Web Application



Figure 4: Screenshot of developed web application

The developed web application is embedded with the top page of "e-PUK Web" that is the website of the project. When the application user accesses the web site, the webpage and the application are loaded. After that, the total amount of electricity usage and the acquisition date and time of the data are displayed on the university map in a similar way as the smartphone application. The name, electricity usage and character in each area are also displayed. The difference from the smartphone application is that the web application shows each area's electric power charge and the ratio of electricity usage compared to the same day of the previous year.



Figure 5: One of digital signage in the university

In addition, the web application is displayed on the digital signage in the university.

Design of Applications

The logo mark of the website, the icon of the smartphone application, a character, and campus map images which used in the applications were produced by the design team.



Figure 6: Original character "Denryokun"

The name of the character is "Denryokun", and this is original. This character has 3 type sign of emotion, and these are joyous, normal, and angry. These signs of emotion change depending on the ratio of electricity usage compared to the same day of the previous year. Specifically, the character's expression is smile if the ratio is less than 100%, and the character's expression is angry if the ratio is over 120% or over.

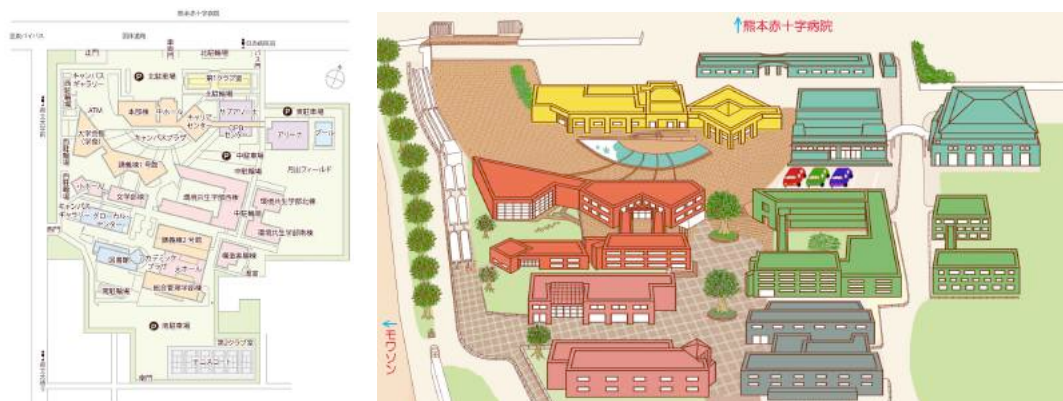


Figure 7: Existing map image (left) and new map image (right)

The map image which produced by design team is based on the existing map. It is optimized for the applications.

Media Coverage

Through this project, the project members had received media coverage. The total of 6 articles appeared in newspapers, web sites, and economic magazines.

Assessments and Considerations

Assessments Procedure

The assessment of the learning require multi-directional considerations. Yamada (2009) said that self-awareness is one of the educational outcomes. So that, it means that the self-awareness of the project members is the educational outcomes which are brought by the learning environment of this project.

In this study, "Knowledge building analytic framework" by M. Scadamalia et al. (2012) was adopted as the assessments. The project members performed self-assessments on each skills of the 21st century skills. Self-assessments were conducted based on the standard behavior or attitude regarding each skill's score. If a skill's score is closer to 1 point, this means the member learned the previous type skills. In reverse, if a skill's score is closer to 10 points, this means the member learned the 21st century type skills. The assessments were conducted in Japanese, and it was cited from "Assessment and teaching of 21st century skills (Japanese edition)".

The results of members' self-assessment evaluated from two different perspectives. First is the comparison results of the average scores of all members. Second is the comparison results of the average scores of leader group and non-leader group, and derive the result of statistical processing between leader group's score and non-leader group's score.

Results of the Assessments

Table 1: Average score of leader group and non-leader group

21st Century Skills	All members (N = 13)				(a) Leaders (N = 4)				(b) Non-Leaders (N = 9)				p-value
	Average	SD	Max	Min	Average	SD	Max	Min	Average	SD	Max	Min	
Creativity and Innovation	5.31	2.75	9	1	7.00	2.71	9	3	4.66	2.55	8	1	n. s.
Communication	5.85	2.88	10	1	8.50	1.29	10	7	4.67	2.60	9	1	*
Collaboration / Teamwork	5.85	2.91	10	1	7.75	0.96	9	7	5.00	3.12	10	1	***
Information Literacy / Research	5.15	2.41	9	1	6.75	2.63	9	3	4.44	2.07	7	1	***
Critical Thinking, Problem Solving and Decision-making	7.23	1.64	10	3	7.50	1.00	8	6	7.11	1.90	10	3	n. s.
Citizenship — local and global	5.15	2.23	9	1	6.75	1.71	9	5	4.44	2.13	8	1	**
ICT literacy	5.85	2.54	10	2	7.50	0.58	8	7	5.11	2.76	10	2	***
Life and career skills	4.38	1.89	8	2	4.25	1.26	6	3	4.44	2.19	8	2	n. s.
Learning to learn/meta-cognition	8.23	1.69	10	5	8.00	1.15	9	7	8.33	1.94	10	5	n. s.
Personal and social responsibility — incl. cultural competence	6.46	2.15	10	3	7.75	0.50	8	7	5.89	2.37	10	3	***
Total	5.95	2.51	10	1	7.18	1.77	10	3	5.40	2.60	10	1	**

*, p<0.01, **, p<0.05, ***, p<0.1, n. s.: not significant

Table 1 shows all members', leader group' s and non-leader group' s average score, standard deviation (SD), max score, minimum score, and p-value provided by t-test. In the column of p-value, the asterisks *, ** and *** indicate that the coefficients are statistically different from zero at the 1 (p < 0.01), 5 (p < 0.05), and 10 (p < 0.1) percent level, respectively. "n. s." means that there is no statistical significant.

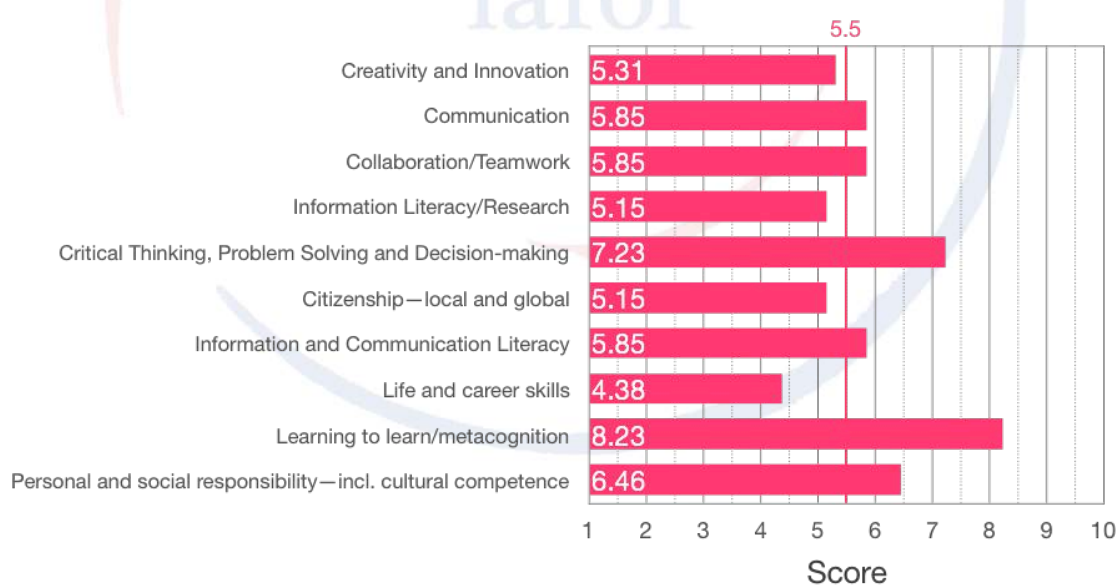


Figure 8: Average score of all members

Figure 8 shows the average score of all members. In the vertical axis of the graph, there are listed 10 skills of 21st century skills. In the horizontal axis of the graph, there are ten score values of 1 to 10. These numbers mean average scores of self assessments of each 21st century skills. In Addition, the score "1" means the type of skill is previous century type. In reverse, the score "10" means the type of skill is the 21st century type. According to this graph, the score of "Critical Thinking, Problem Solving and Decision-making" and "Learning to learn/metacognition" are higher than

that of other skills. On the other hand, the score of “Life and career skills” is lower than that of other skills.

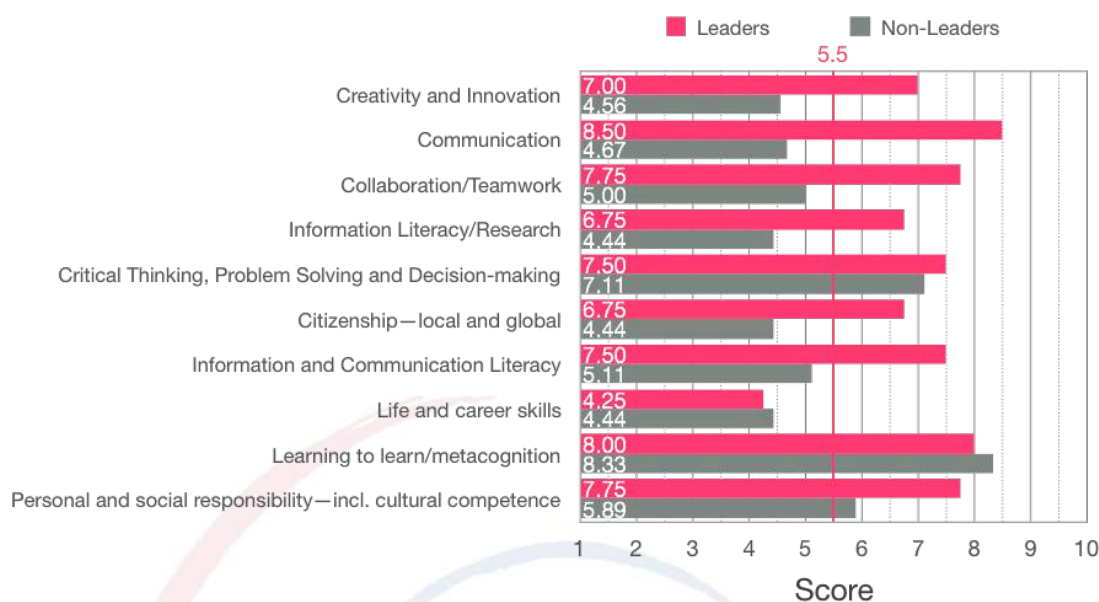


Figure 9: Average score of leader group and non-leader group

Figure 9 shows the average score of leader group and non-leader group. Leader group’s average scores are pink bars, and non-leader group’s average scores are gray bars. First, we focus on leader group’s scores. The 7 skills, starting with “Communication” and “Learning to learn/metacognition” mark over 8 points, and “Creativity and Innovation”, “Collaboration/Teamwork”, “Critical Thinking, Problem Solving and Decision-making”, “Information and Communication Literacy” and “Personal and social responsibility—incl. cultural competence” mark over 7 points. Next, we focus on non-leader group’s scores. “Learning to learn/metacognition” mark over 8 points. In addition, “Critical Thinking, Problem Solving and Decision-making” is high score in both the groups, it marks over 7 points. However, other skills’ scores mark under 5.5 points except for “Personal and social responsibility—incl. cultural competence”.

When we focus on the column of p-value in table 1, there is statistical significant ($p < 0.01$) on “Communication” between leader group and non-leader group. On “Collaboration/Teamwork”, there is statistical significant ($p < 0.05$). In addition, there are statistical significant ($p < 0.1$) on “Collaboration/Teamwork”, “Information Literacy/Research”, “Information and Communication Literacy” and “Personal and social responsibility—incl. cultural competence”. On the other hand, there are no statistical significant on “Creativity and Innovation”, “Critical Thinking, Problem Solving and Decision-making”, “Life and career skills” and “Learning to learn/metacognition”.

When we focus on row of all member’s SD in table 1, the scores of “Critical Thinking, Problem Solving and Decision-making”, “Life and career skills” and “Learning to learn/metacognition” are lower than other skills. When we compare SD scores of leader group and non-leader group, on the whole, leader’s scores are lower than non-leader’s scores.

Considerations

From all things considered, the project can be an opportunity to learn some of the 21st century skills for the members.

First, as to “Critical Thinking, Problem Solving and Decision-making” and “Learning to learn/metacognition”, there are no statistical significant between leader group and non-leader group, and mark high average score. Therefore, the member learns these 2 skills through the project.

Second, the 6 skills differ significantly between leader group and non-leader group. In addition, when we focus on the average scores of leader and non-leader, the average scores of leader’s 8 skills are higher than non-leader’s that, and most of the leader’s skills mark lower SD score than non-leaders. Therefore, it suggests a potential that the experiment of leader has a stable and good effect to learn the 21st century skills.

Third, as to “Creativity and Innovation”, there is no statistical significant between leader group and non-leader group. In addition, when we focus on the SD score, there is variability among the member. Therefore, as to this skill, it would appear that the learning level depends on the member’s role in the group.

Finally, as to “Life and career skills”, there is no statistical significant between leader group and non-leader group, and both groups mark low score. This means that the activity or theme of the project don’t have or less factor affecting for developing this skill.

Conclusions

In this study, we practiced the project-based learning in which the members developed the smartphone and the web application under the unenforceable learning environment, in order to let member learn the 21st century skills. In the result, the members learn the 21st century skills under the learning environment as an unenforceable project-based learning. Especially, as to “Critical Thinking, Problem Solving and Decision-making” and “Learning to learn/metacognition”, all member mark high score. In addition, compare the scores of leader group and non-leader group, it suggests a potential that experiment of leader have a good effect to learn the 21st century skills.

This study was conducted under the variety of restrictions. Therefore, there is room for additional studies when something of the project is changed. For example, the members were like-minded students in the same seminar in this study, it can’t be denied that the members started out with the right motivation. Moreover, it is believed that the results are related to the assignment of the project, the numbers of the project members and others. In the future, we will continue a practical study of learning the 21st century skills.

Acknowledgement

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***iPads and Autism:
Using iPads for Autism and the Effects of that on Learning Methods***

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Abstract

The purpose of this study is to grasp the opportunity of utilizing technology like iPads for autistic students. This is a study to prove that technology is not an optional tool in learning but that it becomes an essential tool to teach and provide information and enhance academic skills for students. In 2012, the research at the Centers for Disease Control and Prevention (CDC) estimated that 1 in 88 children in the United States has been identified with Autism Spectrum Disorder (ASD). In 2014, the number of diagnosed children increased by 30 percent to 1 in 68 children. So, because of the increasing number we have to find new learning methods. Technology has allowed us to have different ways of learning for people with disabilities. Also, it is a gateway to improve their skills, especially in academic, social and communication skills. The study applied to 33 students at the Jeddah Autism Center to enhance academic skills. The first phase of this study started by distributing a survey for the families of autistic people to know if they use technology at home with their children or not. Next, teachers made a technical file for each student and started using iPads in a computer lab by giving them tasks according to the educational plan for each student. The results were divided into two groups: 27 students accepted iPads, they performed given tasks, and six students were not interested and refused to use it.

Keywords: Autism, Technology, Learning methods, Disabilities.

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Introduction

Autism spectrum disorder (ASD) is defined as a complex developmental disability. This disorder is characterized in varying degrees of difficulties in social skills, linguistics, behavior and sensory impairment, including difficulties with social and emotional responsiveness. In 2012, the research at the Centers for Disease Control and Prevention (CDC) estimated that 1 in 88 children in the United States has been identified with Autism Spectrum Disorder (ASD). In 2014, the number of diagnosed children increased by 30 percent to 1 in 68 children. So, because of the increasing number we have to find new learning methods. Technology has allowed us to have different ways of learning for people with disabilities. Also, it is a gateway to improve their skills, especially in academic, social and communication skills. Interactive technology such as iPads are considered to be assistive technology for students with ASD. Autistic people can use technology to enhance many aspects like academic, communication, and transitioning skills. Only a few researchers are talking about technology and autism. Autistic children like any other healthy students need to use technology to improve the educational process (Brown, 2016). Interactive technology such as iPads play a role in increasing participation of students with disabilities (Rodríguez et al., 2013). Malley et al. (2014) found that iPads improved math skills for six students to 100 percent in performance. Also, a systematic review illustrated positive results with an iPad for teaching two students to use a spell checker in a word processor (Kagohara et al., 2012). Moreover, the study showed the effects of using an iPad were not only to increase academic skills but also to decrease behaviors such as aggression or screaming (Neely et al., 2012). iPads can be a helpful tool to enhance many areas like communication, leisure time and social skills. This study expands on current research. Most of the current studies had small case studies. Also, technical issues that faced teachers and students during class were one of the most challenging in using any technology with a student (Malley et al., 2014). The anxiety of using an iPad is one of the biggest problems that teachers found (Hennessy, Ruthven & Brindly, 2005). Lack of appropriate experience or training for teachers could be the reasons for not using iPads (Clark et al., 2014).

This study had enough samples with 33 students from both genders with different ages and educational levels. Also, to cover technical issues, there were two qualified teachers who had enough experience to deal with technology such as iPads. This study illustrates how interactive technologies like iPads are going to affect learning methods.

Methods

Participants

Participants included 33 students from both genders with different ages and educational levels. The students ages were between 5 and 16 years old. Moreover, 27 healthy students and six with health issues like epilepsy and hearing impairment. All were assigned to a different task according to their educational plan. Two qualified employees participated in the study. They were involved as computer teachers to give tasks to students. Both of them had a Bachelor degree either in information technology or information system management. Also, they had training courses in how to deal with ASD.

Materials

In 2014 & 2015, two surveys were distributed to collect technical information for students either at home or the center. The first survey distributed to 33 families to gather technical information about pupils at home. The technical information included questions such as: does he or she have an electronic device, types of device, any required tasks, daily hours spent and who is with the student when the device is used. The survey was completed by parents or the person responsible for the student. The total number of participants were 24 families. There were nine families who did not give feedback. The second survey was filled in by computer teachers to illustrate how students interacted with iPads in the educational environment. The total number of participants were 33 students.

Apparatus

In the study, we used a desktop to put a device on it and visual timer to calculate time. There are many tablet devices available but for this study we used iPad minis with the following specifications:

- 1024 x 768 Native Resolution
- Dual-Core Apple A5 Processor
- Up to 10 hours of battery life
- Mobile connectivity: WiFi
- Storage: 16 GB

Additionally, various applications were used with different languages and purposes, for instance: matching colors, matching shapes, puzzles, learning numbers or the alphabet.

Procedure

In order to apply using iPads for autistic students, we started sessions in the computer lab. The reasons behind using computer classes are: both computer teachers had a technical background so they could deal with any technical issues in a session and the duration of the session was short enough to find results. Duration for the computer class is 25 minutes, divided according to the educational plan and requirements for each student. In the computer lab, each student had one to two computer sessions a week. At the beginning of the term, computer teachers followed an assessment to measure student skills. The evaluation covered different aspects of ability to hold and interact with the device, matching, classification, learning letters or numbers. It measured how much time was needed to achieve tasks or goals. As mentioned before, 33 students participated in the study. Participants were given many tasks according to their educational plans. Table 1 shows five students with their information, tasks, and progress during sessions.

Student name	Age	Gender	Does he or she have an iPad	Health issues	Tasks	Progress
AB	6 years	M	Yes	No	Classify according to color or shapes like: <ul style="list-style-type: none"> • choose the red color with the same shape color • match rectangle shapes with multiple forms on board. 	4/10 6/10 8/10
WQ	10 years	F	Yes	hearing impairment	Classify according to color or shapes like: <ul style="list-style-type: none"> • choose a red color with the same shape color • match rectangle shapes with multiple forms on board. 	4/10 6/10 8/10
AK	11 years	M	N/A	No	1- Classify according to shape sizes like small, medium or large. 2- Match between letters and words that start with the same letter.	4/10 6/10 8/10
AH	13 years	M	No	No	Conceptually matching: match between animals and their living area such as: where a lion lives: <ul style="list-style-type: none"> • sea • jungle 	4/10 6/10 8/10
KA	13 years	M	N/A	Epilepsy	Match numbers with the shapes	4/10 6/10 8/10

Table 1. Five students with their information, tasks, and progress during sessions.

Results

The results found that 20 of the students had electronic devices at home (See Figure 1). Electronic devices including computers (9), iPads (17), iPods (0), Xboxes (1), PlayStations (2) and mobile phones (4). In using iPads at home, eight of the students spend 1-2 hours a day, six of them spend 3-5 hours, and two students who spend 6-8 hours and two for more than nine hours. Children who used iPads at home either with their mother (7), father (1), sister (8), nanny (2) or alone (10). In using iPads at the Center, there were two groups. The first group included 27 students who responded

and they performed tasks successfully (See Figure 2). All participants achieved four out of ten on their first attempt of the given task. Then the percentage increased to a score of six out of ten. Finally, all participants were successful with a result of eight out of ten. (See Figure 3). Eight of them had a high academic level, so it was used as a reinforcer when he or she completed the work. The second group which included six students, did not use it for many reasons: lack of interest, exhibited panic related to the device and one of the students has Symbrachydactyly (Short or Missing Fingers).



Figure 1. Does the student have an electronic device at home.

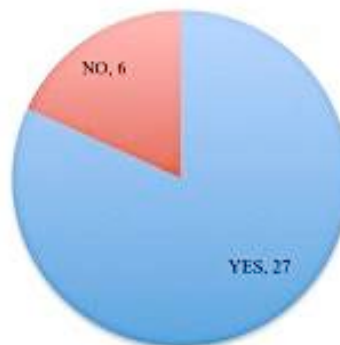


Figure 2. Does the student interact with iPads during sessions.

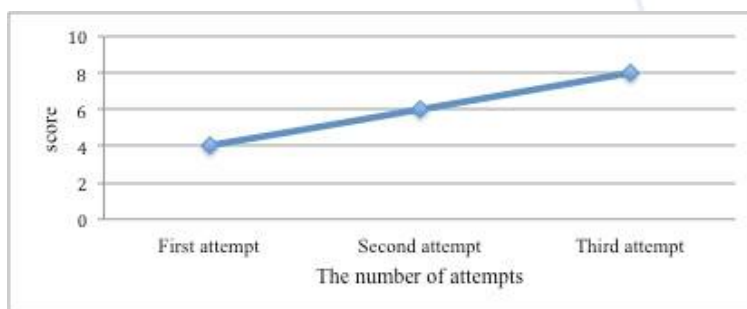


Figure 3. Students' progress during sessions.

Conclusion

In conclusion, technology has a positive impact on learning methods for students with ASD. Students accepted using iPads; they performed given tasks according to their educational plans. Some of them had a high academic level, so it was used as a reinforcer when he or she completed an activity. However, around 18 percent of students were not interested and, refused to use iPads. Also, the study showed that the well-trained teachers could have an effect on the learning experience. They solved any technical issues immediately without stopping the session. Teachers mentioned that using iPads helped them to have a variety of effective strategies for students. Moreover, families already had sophisticated technology at home with their children, but not all of them were used for educational purposes.

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Building Opportunities for Children to Exercise Their Rights at School

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Abstract

There is inconsistency in the relationship children have with regards to their rights at the school setting. Few teachers know about these rights, families do not apply them, and children ignore them. One of the most important social justice problem at schools is talking about such rights without creating any opportunities to exercise them. Improving social justice for school-aged children requires fostering a setting in which student participation is encouraged. In this paper, I outline the required factors to promote student rights at the school setting.

This research specifically looks at three groups of 25-30 students between the ages of 10 and 12 who attend marginalized primary schools in Mexico. Researched activities in which children had the opportunity to exercise their rights, included children's participation in actions that were socially beneficial. For example, they took care of younger children and were sensitized about their environment, which can be interpreted as promoting social justice. One of the main findings of this research is that children are the ones that look down upon the points of view of other children, and that actions to promote social justice can be considered as learning and teaching distractions. Nonetheless, student's participation claims a new organization of schools, and a new visualization of school-aged children by their families, classmates, and teachers.

Keywords: Social justice, Children's participation, agency.

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Introduction

Children's participation is a substantial element for the construction of social justice at school. This affirmation is not new, but remains to be seen, even though it is a right, hardly there are opportunities and conditions for its exercise. Nevertheless, the participation is not only a right, if it is understood this way it can favor the exclusion from the participation practices in various settings, unlike the approach based on the participation as a system of action and the focus on children's agency. This is a starting point of the factors involved in children's participation.

This research develops the comprehension of the participation and agency concepts associated with fair schools. It was done with three groups of poor children between the ages of 10-12 in Mexico. The results provide an understanding of the complexity to generate opportunities and conditions at schools with traditional approaches and what is needed to create them, by contrasting the perspective of the studied groups with the theoretical framework for social justice and participation.

This article is structured in two parts: the first one presents the arguments and key concepts underlying the work plan and the second one describes the Mexican community, the work plan of the research and the applied methods and instruments for the interventions with children.

Children's participation at school.

Fair schools are related to the Convention on the Rights of the Child (CRC) in which it is stated child's protection on the basis of required conditions for a decent life, and it generates the adult's responsibilities with children. In article 12 it is mentioned the right of children to be heard and taken into account in all processes that affect them, that is, children exercise of their right to participate when the views of children are heard. "The child's right to express her views and being taken seriously in the school environment represents one of the most profound transformations in moving towards a culture of respect for children's rights, dignity and citizenship and their ability to contribute significantly towards their own welfare" (Lansdown, Jimerson , & Shahroozi, 2014, pág. 4). However, the exercise of her right to participate involves thinking about the meaning of childhood and participation from an intercultural perspective because people understand and interpret the world in accordance with the structures of their environment. Thus, apparently a similar phenomenon can be seen and valued very differently, according to the language and experiences of the people (Saandi & Liebel , 2012).

Participation refers to the process of decision making and to the way of being, relating, deciding and acting that characterizes the practice of everyday life. For that reason, it is considered that there is a value in understanding broader participation as a manifestation of individual action in a social context (Percy- Smith and Thomas, 2010).

Highlight the importance of taking into account the actual participation as practices for and with children which provide a contribution to the family and the community. They include involvement in activities identifying and responding to community problems in social relations. In this sense, participation is understood as a possibility

or opportunity to escape from a marginal position and to achieve social recognition (Saandi & Liebel, 2012).

Above mentioned authors conceive children's participation as an opportunity for action that allows to live and function in their environment as social actors, and therefore to have an influence on its transformation. Participation becomes a process of social transformation that recognizes childhood as a sector of society that contributes and influences the educational environment through their actions.

The speech of children's participation should be careful to mention rights without responsibilities and to mention rights to participation without taking into consideration the prospects of what it means to participate for children and adults in the community. The reason is that when a child is not allowed to exercise her rights and responsibilities, including the right to participate, it generates disinterest to get involved as actor of change in daily living problems, given that normally teachers, parents and mothers and/or authorities are those who resolve the problem.

In fact, many children drop out of school due to a learning environment that ignores their views and denies them opportunities for participation. They are excluded from important decisions ignoring a key fact: children are co-builders of the school environment and therefore of the social life of the environment. This argument is related to two important aspects of this work: 1) the need to promote children's participation in improving the school environment, to return childhood as a contingent category that affects their environment as social actors and 2) change the way they are perceived by teachers and other adults, to dignify their role in school and thus bring together social justice in it. These two aspects are taken up from the exercise of participation contained in the CRC and the childhood's agency.

The agency and the participation of children at school.

This document states that the participation of children allows the transformation of schools, promotes social justice and dignifies its role in society, however, as the framework for action is determined by adults, it is necessary to identify the dominant visions about childhood. Adults usually see childhood as a time of fulfillment and joy, where there are few concerns and people meet their needs, this view minimizes the experience of children and therefore their opinions, triggering a trend to protection. Another perspective is the being-coming, in which childhood is a stage in which they are prepared for the future, although both views are correct, it ignores the involvement and decisions in the present. Other one, focus on childhood protectionism in which vulnerability and victimization of children stands out, beyond the possibility of facing a problem as actors in society. Finally, the last perspective sees children as active participants in society who modify and transform the environment.

The being-coming and protectionism are related to paternalism, the victimization and an incisive child's protection, (Danso, 2010). Children are reduced to nothing because its value in terms of contributions to their environment are not important in the present but in the future. This creates a vicious poverty circle in their capabilities, because they do not have the opportunity to exercise their agency. Therefore, they are children who want to become adults given de chance to be visible in the community.

When children are considered as social actors capable of transforming their environment, it is determined that children exercise their agency. Children are responsible and able to decide on their action and inaction. It is controversial to discuss the agency of children, since some authors argue that they do not have the maturity to decide and act for a good, whereas others state that childhood has proven to be able to dignify their role in society from exercising their agency.

Nussbaum holds that the capabilities of children are immature and free choice are likely to succumb to parental pressure to work or leave school for their economic dependence, then the State has the commitment to ensure the future capabilities (Nussbaum, 2012: 185).

Within this framework, it is justified to restrict the rights of children in particular the Article 12 about children's participation, because adults have better judgement in deciding about children's welfare. This position is also very debatable, because age does not determine a better judgement, adults are also vulnerable and need protection under certain circumstances such as children do.

A fact that determines that children decide and act assertively is the experience they gain from the opportunity to act, that is, the exercising of their agency. Therefore, denying the exercise of rights and spaces for action is limiting opportunities for children to be able to decide, act and to contribute to improving their environment. In consequence, inequality is increased in areas such as schools, given unequal relationships between teachers and children in which paternalistic schemes often prevail.

As children grow up, the relationship with their parents changes according to the responsibilities and rights that they are allowed to exercise. However, in the educational structure, children keep more rigid relationships with school actors. There are not only factors related to the age and evolving capacities, but the prevailing inequality among teachers as having knowledge and children having less. In this unequal relations the spaces for expressions and participation are reduced, even though the children show a strong interest in doing so. In fact, children resent being excluded or marginalized from participation and responsibility. In consequence, children might not be incentivized to participate if they are not allowed to take responsibility for tasks and activities

In spaces of sociability such as school, children can learn different cultural aspects such as gender, they are also taught the meanings of being children and their boundaries from the adults' perspective. However, children do not inquire about their skills and abilities, they learn preconceptions. For this reason, it is common that they doubt or downplay the opinion of other children.

The importance of taking into consideration the actual participation allows children to create opportunities for socialization through partnerships in activities, identifying and responding to community problems (Saandi & Liebel, 2012), where children are enacted as citizens through their actions (Larkins, 2014). Nevertheless, many obstacles prevail in how children can participate and these are also linked to conceptual weaknesses or even blindness (Stoecklin, 2012).

Social justice at school

“Gross domestic product (GDP) growth has not translated into a parallel improvement in the life quality of people” (Nussbaum, 2012:19), making an analogy in education, an increase in school performance does not guarantee social justice and a fair treatment. It is necessary to detect the practices that are not congruent with a fair treatment at school, to implement alternatives that can allow children’s participation, based on sociability and respect.

Although the school is one of the main places where principles of justice are taught and practiced with children, hardly teachers, school authorities and families think about the reason why a given practice is fair, and at the same time, there is a lack of literature about the concept of childhood social justice at school.

Social justice requires respect for human dignity, implies treating people as ends and not as means (Nussbaum, 2012), by eliminating arbitrary distinctions where there are competing claims within the structure (Rawls, 2002). For example, Rawls mentions the practice of fair play as a basic moral notion where there is a self-interest restriction. In this kind of practice people recognize the commitment, the responsibility, and accept the benefits of acting justly. Thus, justice can mean a sense of duty or for ethical reasons, the resistance to selfish impulses that harm others (Liebel, 2013).

Based on above mentioned authors, justice is based on the principles of freedom, dignity and respect. This is also related to human rights because both concepts share these principles. This is the reason why the Convention of the Rights of the Child (CRC) in 1989 meant a breakthrough in childhood social justice.

Thus, children’s rights are the basic threshold that students must have at school as a minimum justice condition to provide equality and welfare to people. Inside schools, teachers and principals are the main generators of fair environments, Rawls assumes that the sense of justice is gradually acquired, he divides it into three: moral authority, where the person is unable to estimate the validity of the precepts; morality of association, in which cooperative virtues are distinguished such as loyalty, trust and integrity given in friendly relationships; and finally morality of principles in which an individual has already formed judgements and this allow her/him to improve the decision making processes (Rawls, A Theory of Justice, 1997).

Piaget conceives justice as the most rational of moral notions. This author divides justice into two kinds: the retributive and the distributive. In the first one, the notion of justice is inseparable from the penalty and is defined by the correlation between acts and their distribution, the second one involves the idea of equality. Thus, the author assumes that the sense of justice evolves into mutual respect as it progresses forward in cooperation between children and adults (View in Liebel, 2013).

Among the authors mentioned above there is a similarity in the construction of justice by prioritizing the authority of a third party with more experience. However, it is necessary to analyze the reasons why a child performs with justice, it could be either to avoid being punished or to believe that justice is a good in itself. If a child performs an act of justice just to not be sanctioned, the relationships are reduced to mutual benefit; the difference between the two is that in the first notion the benefit of not

being sanctioned is an end, whereas in the second one respects people as an end in itself. This nuance completely changes the purpose of acts of justice and therefore defines the purpose of the relations between children and adults at school.

Both authors emphasize the importance of people with authority over children to generate a sense of justice. Therefore, teachers are extremely important to safeguard the freedom, well-being, dignity and other children's rights.

Adults surrounding the child define, generate and promote how children participate. The concept of social justice at school where children's participation is subordinated by the margin of action that the adults allow them, based on the concept of childhood culturally constructed in the community, offer little opportunities for children to act and participate as individuals.

Participants in the research process.

Child participation is difficult to secure in countries undergoing a crisis of social justice (Gerison Lansdown, 2014). In Mexico, being a child is not easy, this social group represents 28% of the population and more than half lives are poverty. In addition, child's abuse is the main cause of death. The predominant vision of childhood is paternalism in which parents perceive children as private property, therefore there is a denial of their rights.

Children abuse is more common in marginalized groups of children, who tend to have more responsibility for their families and communities, sometimes as the main contributors to the family income (SEDESOL, 2010). All studied groups live in areas that experience significant levels of poverty. The selection process was based on the schools that have reported problems of participation and social organization. The two studied schools are located in the eastern part of the State of Mexico, one in the municipality of Texcoco in the community of San Jeronimo Amanalco and the other one in the municipality of La Paz in the town of La Magdalena Atlicpac. The study was conducted with children enrolled in their final elementary grade from both schools. In the first school participated a group of 26 children and in the second one two groups of 24 and 25 children.

The children were invited to participate and expressed their interest in doing so. They were provided with invitations to participate in established groups within the selected geographical areas, where the host organizations committed to support the fieldwork on behalf of the research objectives of children.

This research develops an understanding of social justice in elementary school: rights, duties/ responsibilities, participation and agency, with children aged between 10-12 years. The research sought an inclusive definition of participation for children in relation to the CRC. The literature about child participation' knowledge focuses on discussing the factors and concepts of childhood and participation but rarely depart from the concepts that children have. Projects are run by adults for the purpose of adults, even if you have good intentions, (Stokelin, 2012, Lansdown 2014; Gaitan & Liebel 2011; Malone, 2010).

Methodology and fieldwork

The process of the research used action-research (Stenhouse, 1989). The three groups generated qualitative data through participatory reflection and action, following the methodologies of Freire (2007). The groups had sessions about the subject of children's rights, participation and teamwork. Later they chose and worked on a problem that worries them at their school. Then they took part in the process of exploring their own experiences and meanings by projecting photos they took about the moments they considered most important in the development of initiatives or projects to improve their school. Finally, there was a process of reflection using the kaleidoscope experience strategy, (Stoecklin, 2012). After reflecting, the participants were asked to write daily activities, the specific people (relationships) with which they connected during these activities. Later, participants were asked to highlight those people that do not take into account their views in the process of making decisions that concern them. Finally, they were asked to think about the reasons why these people do not listen them, the feelings they have about themselves and what could be done (motivation) to change the situation. The sessions were performed in 2 to 3 hours for 3 months.

During the development of the project there were phases whose purposes were to promote children's participation in the transformation of the school through the knowledge of rights. In the first phase of the project, the children and the teacher raised the problems at the school that have not been solved. They asked their other classmates about issues that concern them at school, through ludic activities to encourage participation and semi-structured interviews about what it means to participate. Subsequently, in phase two each group took control over what to do to transform the school. In phase three children took actions to improve the school, then children collected photos of the moments that they considered important in implementing their initiatives, and some children took notes about their experience. After the implementation, children sought strategies for the project to continue operating even after their graduation. In the last stage the children, parents and teachers were interviewed about the process of student's participation, difficulties in their participation, and about how they visualize themselves as actors who make decisions to improve the environment.

For a more detailed analysis of the data, the information was classified into three categories: social justice, participation and children's rights. Children reflected about the photographs taken for these categories, conceptualizing the meanings of participation for themselves. Finally, this information was contrasted with the concept of CDN.

Limitations of this study.

A limitation of this research is not considering all the actors of the school community. Since the impact of the project would lead to a radical change in how adults visualize childhood, including the youngest children in primary school (children aged 6 years) who have the ability to participate, express themselves and explore their ideas and talents, while teachers need to change their paternalistic ideas.

Findings

In order to understand the actions that emerged from the researched groups, it is described an overview of the key actions developed by the group to change the children's perspective, and their skills and abilities to influence their environment. It was analyzed the moments in which the children's participation changed part of their educational structure, so that they questioned the concepts of teachers, students, and school officials to rebalance the distribution of rights and responsibilities.

The children's main objective for the project was to leave a better school for their friends and family. At the beginning of the project the children took the activities as games in which they could say their points of view. When children were questioned about problems, they showed major concern for issues related to violence to younger children, environment, water conservation and to the improvement of playground areas during breaks. When they raised the main problems related to violence, children recognized that they are the ones who exclude the little ones for playing during breaks and that they are the ones who abuse others at school. Children were concerned with issues of pollution. They mentioned that they do not throw garbage in places but they burn the trash at their homes, that is, children identified themselves as part of the problem. At this stage of the project, the team interested in combating violence mentioned that aggression and disrespect were present during breaks due to the reduced spaces and therefore, people fight easily. In consequence, they decided to expand the library and to get more toys in order to have another space of fun at school. Other children from the same group decided to paint games on the floors so the younger children could also have a place to play without getting hurt.

During the problems' detection process, two things arose in common: the children's acknowledgment of themselves as part of the problem and their proposal of actions for a common good. When children assume responsibility of their actions, they take the opportunity to express willingness to change for the common good. In this action the children give up selfishness and the benefits of injustice, that is, one of the principles of justice, Rawls, Nussbaum, Sen. In addition, it is proved that although a child under 12 years is vulnerable and needs protection, they are also capable to protect and look after other people, then they can take responsibility, and thus exercise their agency.

In order to implement the transformational measures at school children performed the following:

Violence: They made a toy library, thereby improving the library and could provide recreational toys. For this, the children requested support from the entire school to donate toys and also asked people from their same community. To reinforce this activity a tour for them to see a playroom, and its operation so in that way they could get more ideas for their implementation. Other children worked on the school playground, games were painted on the floor for the smaller children.

Pollution: The members of the team spoke with the person in charge of cleaning the school to avoid burning garbage along with the principal of the school, then they pass each classroom to explain the proper way to separate the garbage and the benefits of doing so, then they painted and fitted out cans for sorting waste into organic and inorganic. some children went to City Hall to ask the president to send the garbage trucks more often.

In the process of developing their initiatives the children sometimes discredited the views of their peers and turned to teachers for answers, this caused some discomfort among members of the group because in between them there were children who were not listened to or allowed to comment on the actions to be perform.

Children expressed anger and desire to stop working with their group. In a way that they lived a wrong recognition... which is a form of oppression. Beyond the simple lack of respect, it can inflict a serious wound, that afflicts people with a discontent for themselves that disables them. Due recognition is not just a courtesy but a human need, (Honneth & Fraser, 2006).

In the final phase of the work the children invited their parents to show them the actions that they had worked on for the last three months. The children shared their experience of participation in school, the difficulties of organization and action, for it, they described the process of making an initiative in school.

One of the projects with the greatest impact in the families was the playroom. The parents expressed their pride and agreed to join the project with the finality that that school space would also become part of the community. When parents suggest to join they created a positive recognition for themselves as people who care and can do good things for their schools and community.

Children express the difficulty of performing an action and that every detail of their project involved a lot of work, a girl said "I never thought I could make a change, we are just children," another kid said: "I now believe that I am able to make a change in the world."

This statement show that children debuted in achieving to complete their improvement actions in their school, they also mentioned that changes can occur at home with their own actions, that is, they conceived themselves as actors to recognize the act and express their views in interactions in their daily lives, becoming a social actor with the capabilities that are built through reflexivity and interaction (Stonkelin, 2012).

The development of agency is not linear between interaction and the evolution of its dynamic capabilities and contexts in which they live, and this is actually a long life process, Stonkelin, 2012. Thus the participation is not based on activities, but in a position to daily life where children assume various forms, it is not intended to show that active participation is the best way to participate.

At the completion of the project an interview was applied in order to investigate the concept of child participation, where the expression of participation means: to be heard, to think, to do things, support, help, and pride. They consider that there is no participation on their part when they are not heard. People who decry their opinion are family members, mostly being felt ignored by their own peers. They consider not being heard because they are younger, they do not believe in them or because they are told they don't understand. About it a girl said: "Adults think that children can not do the same to them."

Children think that the way to change this in order to participate is: to give their ideas, working together, talking to people so they would listen to them and changing older people.

Discussion

This study shows the three principles on which participation can help build justice:

- The events produced that the actors become more responsible in front of their community.
- Acts of positive recognition by members of the school.
- Acts of reflexivity of children around their recognition as a person capable of transforming its environment.

The fieldwork also revealed that if children have the opportunity to review and take action to transform the school, to get to take responsibility and commitment to end its actions (Libel and Gaitán, 2013; Larkins, 2014).

In contrast to the hypothesis where the participation of children is a substantial activity for building social justice, there are some tensions that remain in this framework as the recognition of children as capable of deliberating fairly and as people who take their responsibilities to act, as the prevailing imagery of children as persons and people of the future developments in society. With the presented investigation is not to explain that children have a sense of justice well developed, rather, the extent that if the practice of the sense of justice, children practicing the social justice and they could be co-builders of fair schools. If children are isolated from these practices, their vulnerability is increased in the participation in their community.

Conclusion

While the mobile of education is installed on making productive people so they can have better wages, think about the future of children and not the present, intangible values such as participation in meaningless and difficult to generate changes to the order previously established.

Beyond to just expect schools to make changes for of children it's important to build schools to reflect the rights of others, so that children's participation ends up being one of the most important factors if we are to speak of justice in schools. Taking children as capable of transforming their environment dignifies them as individuals and gives them another position in their school and community.

The precepts that adults have on children, will teach children until they themselves doubt their own ability, therefore, the best way to change what you think childhood is, is by listening to them and allowing them to be part of actions to promote justice, thus the ideas that they have on their development will be challenged by their experience.

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Fostering Social Justice Orientation through Clinical Legal Education in the Caribbean – Stakeholder Considerations

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Abstract

Caribbean law schools governed by the Council of Legal Education, aim to "facilitate the development of competent legal practitioners for the region", who, among other things, "are inspired in the promotion of social justice". Towards this end, students are required to attend a legal aid clinic in their final year of law school, where they are exposed to unequalled experiences in working with low income members of the community to address a variety of concerns.

This paper explores through tutor and student experience, whether the social justice component of the Council's mission is being realized in the current structure of its curriculum. Students and staff from legal aid clinics at three (3) law schools in the Caribbean were interviewed.

Findings revealed that many final year law students were unaware of the Council's mission and many failed to discover the link that exists between the roles that the law and the legal profession play (or not) in addressing the social justice issues faced by members of the community.

This paper highlights the fact that greater effort must be taken to ensure that the mission of the Council is shared by all stakeholders as a fundamental doctrine; that there is need for the enhancement of the curriculum that would foster a greater appreciation for, consideration of and dedication to, social justice and that there is need for greater institutional support for clinical legal education programs.

Key words: social justice, clinical legal education, curriculum

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Introduction

The establishment of the Faculty of Law at the University of the West Indies in 1970 marked the introduction of a system of legal education and training specifically designed to suit the needs of the Caribbean. Prior thereto, legal training was primarily undertaken in England. The manner in which law was being practiced in the Caribbean region at this time necessitated a change in the focus of legal education and training for those attorneys who wished to practice there.

By agreement (referred to as “the Treaty”) amongst the governments of certain Caribbean territories and organizations in 1970, the Council of Legal Education (“the Council”) was established as the regional body vested with responsibility for ensuring that a new structure of legal education and training would be implemented. This new structure required a candidate to obtain dual qualifications for the practice of law, achieved firstly through a course of academic legal training at a university, followed by a programme of training with practical content and emphasis, at a one of the Council’s Law Schools. Upon successful completion of both programmes, a single final qualification in the form of a Legal Education Certificate (L.E.C.) would be awarded to students and this qualification is recognised as the professional qualification for admission to practice law in common law Commonwealth Caribbean territories.

The first student intake at the Faculty of Law at the University of the West Indies under the new structure was in the year 1970 and the first students began their studies at the Hugh Wooding and Norman Manley Law Schools respectively in the year 1973. The Eugene Dupuch Law School was established by the Council in 1998 and the first student intake at this Law School was in the year 1998.

Legal education for the region has traditionally been grounded in the belief that there are ethical and moral obligations by which those who desire to practice law must be guided. Accordingly, one of the objectives for legal education and training as set out in the Treaty, was to “provide teaching in legal skills and techniques as well as to pay due regard to the impact of law as an instrument of orderly social and economic change”.

At the Faculty of Law, students are provided with a solid foundation in the principles of law. The curriculum at the Law Schools exposes students to the knowledge, skills and professional attitudes (Barnett 1996) that competent legal practitioners with a sense of public service responsibility and a desire to advance social justice are expected to possess via a clinical legal education programme which advances social justice through a collaborative and interdisciplinary approach.

This paper reviews the clinical education programme at the Law Schools with the aim of understanding whether the Mission of the Council is being achieved as it relates to social justice and the role it plays in the professional lives and professional identities of its students. The experience of students and Tutors has been examined in this exercise.

The Mission

It is the Mission of the Council to “facilitate the development of competent legal practitioners for the Region who, appreciate their responsibility as members of an honourable profession and recognizing the needs of their socio-economic environment, are inspired in the pursuit of excellence, the maintenance of high ethical standards, the promotion of social justice and the strengthening of the rule of Law”.

Clinical Legal Education Programme

Clinical legal education is fundamental to the training of students at the Law Schools. The Council has always been concerned about the roles that the law and the legal profession play in addressing social justice issues. As such, students are taught multi-dimensional lawyering skills which instil a commitment to social justice and involve multifaceted strategies that are geared to accomplishing change for underserved individuals who may become clients of new attorneys, once they obtain their professional qualification.

Students study law and obtain knowledge and lawyering skills contextually. As part of the programme, students get an opportunity to work collaboratively with clients to investigate facts that help to reveal injustice. Students also help to educate clients about their rights and they collect evidence that will assist in advocating on the client’s behalf.

The curriculum at all three of Council’s Law Schools is the same, subject only to variations in the laws of the territories that each law school serves. The Law Schools engage in “skills-oriented programmes of training and competence-based training” (Barnett Report 1996). By virtue of the Treaty, the programme at the Law Schools aims to:

1. Prepare students for the practice of law in their respective territories by the provision of a regulated period of institutional training.
2. Provide a scheme for legal education suited to the needs of the Caribbean.
3. Provide teaching in legal skills and techniques as well as to pay due regard to the impact of law as an instrument of orderly social and economic change.
4. Provide training for the analytical skills and implementation techniques required to manage a legal practice in a competent manner.
5. Provide training to students with the skills, knowledge and professional attitudes that they must have to become competent legal practitioners.
6. Ensure that students become aware of the socio-economic needs of the region.
7. Sensitise students to the need for high ethical standards, to promote social justice and to strengthening of the rule of law.

The Council has always placed emphasis on the mandate expressed in the Treaty that students are to be trained in a system which “recognises the importance of law as an instrument for social change and development”. Toward that end, the programme of legal training offered by the Law Schools has been under continuous review and efforts have been made through the years to incorporate the recommendations made in the Barnett Report (1996) as well as those of the Academic Review Committees of

Council and the Curriculum Review Sub-Committees of the various Law Schools (reviews Curriculum and new programmes, methods of assessment, teaching and learning strategies), with a view to enhancing the training afforded to students who will be performing in the professional role of attorney while possessing a commitment to social justice.

Students are afforded the opportunity at the Law Schools to achieve an awareness of their roles and responsibility in and to the community with emphasis placed on their ethical and moral obligations in the practice of law.

The most important values which inform this programme are respect for the rule of law, maintenance of public trust and confidence in the professionalism and integrity of the institution, professional competence and the maintenance of high ethical standards. Upon completion of the programme, it is anticipated that the Mission of the Council would be realised in its graduates.

Distinctive features of the clinical legal education programme at the Law Schools include:

- Work attachments during a ten week period at the end of Year I - All Year I students are required to undergo an in-service training programme for a minimum of ten weeks during the summer vacation of each year. They are placed in public and private law offices in a Commonwealth Caribbean territory of their choice.
- Court attendance in Year I - There is a compulsory court attendance programme for students of the Law School. Students are required to attend a number of criminal and civil trials in both the Supreme Court and the Magistrates Courts.
- Attendance at Legal Aid Clinics at the Law Schools in Year II – Exposure to an interdisciplinary approach to clinical legal education. At the Hugh Wooding Law School this involves the combination of law and social work services.
- Attendance at Alternative Dispute Resolution training and Mediation Advocacy in Years I and II.
- Attendance at elective Specialist external clinics – These include but are not limited to, the Corporate Law, Criminal Law, Family Law, Child Advocacy, Conveyancing, Intellectual Property, Oil and Gas and Human Rights clinics for one Term in Year II.
- Participation in the American Caribbean Law Initiative's Caribbean Law Clinics – This clinic is held twice a year over a four day period. The Fall Clinic is held at a Law School in the United States and the Spring Clinic is held at a Caribbean Law School during Year II.
- Participation in internal, regional and international competitions – International mooting, client interviewing, international mediation and negotiation competitions.

Students are afforded, through a multi-dimensional approach at the Law Schools, opportunities unique to programmes which place emphasis on clinical legal education as a fundamental educational pedagogy.

Students are exposed to the impact that the practice of law has on people- Barry (2007). They are able to develop an awareness of the role socio-economic factors play in the practice of law and client representation and how they can become an empowering force in the lives of poor clients- Eagly (1998).

The association of Legal Aid Clinics with Law Schools in the Caribbean has provided an unequalled opportunity for the clinical training of students who are equipped with the recognition of their role and responsibilities in the community and have served as an invaluable medium through which these values are imparted. All clinics assume a “social justice” agenda, in the representation of indigent persons and in the development of a pedagogy that allow students to learn from the clinical experience. This provides an avenue for discussion about varied political, economic and social issues as well as moral lessons about economic disparity, unequal access to justice and disproportionate application of the law.

The clinical programme at the Law Schools continue to expand with a view to creating diverse clinical experiences for students, thereby accommodating different models of clinics in the form of specialist clinics. The portfolio of clinical offerings has been broadened to include clinics in areas that may appear to be ideologically neutral on their faces or which may appear to exclude traditional notions of social justice, for example the intellectual property or corporate law clinics. These clinics however, similarly afford representation and legal assistance to those members of society who would not otherwise be in a position to pay for the services they require. Every opportunity is utilised at the clinics to develop in students an awareness of the fact that the legal profession is not merely a personal vocation but rather, a public office- Barnett Report, 1996.

The programme also allows students to reach persons who may not necessarily be touched by traditional legal services. It provides support for individuals who may not be involved in litigation and students are also able to respond to non-legal concerns or concerns unable to be redressed by law (for example, through access to final year social work students from the University of the West Indies who are assigned to the Legal Aid Clinic at the Hugh Wooding Law School).

The programme offered at the Legal Aid Clinics of the Law Schools, like similar programmes offered at law schools worldwide, develops in students, leadership skills, facilitates the transfer of knowledge, introduces critical and creative thinking, professional judgment, problem-solving skills, ethical conduct, a passion for social justice, a sense of public obligation and encourages collaboration- Srikkantiah & Koh (2010). These outcomes have the benefit of transforming the final year law student and allowing them to be instruments of change as they enter the world of work.

There are other aspects of the clinical legal education programme offered at the Law Schools which foster social justice orientation and serve to reinforce in students, their obligations as legal practitioners. These include:

Ethics, Rights and Obligations of the Legal Profession Course

This course addresses inter alia, the status of members of the legal profession as officers of the Courts, the independence of members of the legal profession, the duties of the legal practitioner to the Court, to his clients, to members of the public and to

the profession. The ethics of the legal profession is also covered as well as the legal practitioner's obligations to the public to promote the rule of law, to support the creation and maintenance of an independent judiciary and the role of the legal profession in assisting members of the public to secure adequate representation in legal proceedings.

Alternative Dispute Resolution and Mediation Advocacy Training

Students are introduced to the essential skills needed for effective client representation in mediation.

Remedies Course

This course addresses general and special damages in contract and tort as well as pleadings and proof. Students are provided instruction on the calculation and assessment of damages in cases of personal injury and death. Apportionment of damages and remoteness is also covered. Judicial trends in the West Indies are highlighted.

Trial Advocacy Training

Students are expected to acquire competence during the two-year course in:

- (a) general advocacy (including court room etiquette);
- (b) negotiation and alternative dispute resolution;
- (c) interviewing clients; and
- (d) preparation of cases for litigation and settlement.

Research Methodology

The clinical legal education programme offered by the Law Schools was examined and the exercise adopted a Tylerian evaluation approach (an objectives-oriented evaluation approach) which sought to determine whether the existing programme allows for the Mission of the Council to be realised insofar as it relates to social justice.

Students were asked to express their opinions regarding the curriculum design, content and characteristics of the clinical legal education programme and to indicate whether their experience fostered in them an awareness of social justice as a professional responsibility and a commitment to providing legal services to meet the needs of the poor or other disadvantaged members of society.

Qualitative research methods were employed in this investigation as this approach provides rich insight and detailed context as well as depth, and creates openness on the part of participants (Worthen et al 1997; Heppner & Heppner 2004). This approach best enables the investigator to arrive at conclusions and to make recommendations regarding the matter being considered.

For the collection of data, a socio-demographic academic survey questionnaire was employed. Information was gathered through the medium of an online survey of students at the Norman Manley and Eugene Dupuch Law Schools, paper survey of students at the Hugh Wooding Law School as well as face-to-face interviews and focus group discussions of students and tutors at the Hugh Wooding Law School. After data collection, analysis was conducted. In addition, there was a content

analysis of curriculum documents including course manuals and the Legal Education Certificate programme outline.

The data was analysed using thematic analysis whereby relevant themes emerging from noteworthy comments were categorised in order to arrive at an understanding of the arguments of students and tutors regarding the curriculum as it relates to social justice orientation and to make recommendations for improvement.

Findings

Some students were provided with the survey questionnaire online and others were provided a paper questionnaire in various groups. This was an anonymous, voluntary survey. These surveys were conducted three weeks prior to the focus group discussions. The questionnaire was divided into three main areas: *Biodata* (which sought to determine the age and sex of the respondent as well as the Law School attended and country of domicile); *Social Justice Orientation*; and *Clinical Legal Education*. 84 students responded to the survey from the three Law Schools, of approximately 600 final year students.

Social Justice Orientation

This section sought to gauge the level of student orientation in the concept of social justice as well as to determine the extent of engagement with social justice issues and initiatives within the context of the curriculum at the Law Schools. The accumulated responses revealed that social justice is important to most of the respondents. More than half were aware of the Mission of the Council, though many felt that the curriculum, in its current form, did not sufficiently expose them to the concept of social justice. By way of example, one student stated that she had not been exposed to the concept of social justice while at Law School. Another student stated, “I was aware of the concept prior to the Law School”.

Students were asked to define social justice. The following responses were obtained among others:

“Not sure what social justice entails”.

“I am the beneficiary of social justice”.

“It confirms my rights and responsibilities to others as a law student and encourages me as a trained minister of justice to represent and see that justice is served and delivered to the ordinary members of the public who are helpless and voiceless”.

“I define social justice in accordance with my beliefs as a Christian, not because of the law school. I seek justice for serious causes such as neglect of seniors and poverty and education”.

Of those students who indicated that they had been exposed to social justice at Law School, all credited the general Legal Aid Clinics (and particularly the Human Rights and the Child Advocacy specialist clinics) as the primary source of their social justice orientation. One student commented that:

“My experience at the clinic has shown that there are many individuals who are in need of legal assistance and have been at a disadvantage due to their financial and intellectual restrictions. These individuals are very much entitled to legal assistance as anyone else and should not have to suffer because of any shortcomings they may face.”

When asked about the level of exposure to social justice issues and initiatives at Law School one student stated, “Not significantly, only through the legal aid clinic and helping needy clients”.

Other students have indicated that their social justice orientation came via exposure to certain extra-curricular activities afforded students through the undertakings of the Student Representative Council which has been established at each Law School pursuant to Regulations of Council. The Inter-Varsity Christian Fellowship was also credited as being an avenue through which students had been exposed to social justice.

The majority view was that students were not significantly exposed to the concept of social justice outside of their activities at the Legal Aid Clinics. Students did however acknowledged having some level of exposure in the following courses:

- Remedies
- Landlord and Tenant
- Criminal Practice and Procedure
- Mediation Advocacy
- Trial Advocacy
- Ethics, Rights and Obligations of the Legal Profession

An interesting observation that came out of an analysis of the data obtained from the survey questionnaire and corroborated during focus group discussions with students and face-to-face interviews with tutors, was that students have been exposed to the concept of social justice at various points throughout their clinical legal education experience and tutors at the Legal Aid Clinics agree that exposure to social justice issues and initiatives is most prevalent at the Clinics. Student made the following statements regarding their social justice exposure:

“Only certain course such as [the]General Legal Aid Clinic and Ethics, Professional Rights and Obligations course”.

“Orientation programme in Year I”

“We were introduced to social justice in the Law of Remedies course”

“Via the Criminal Practice and Procedure course; this was mainly covered during discussions on sentencing of convicted persons”.

“Trial advocacy, particularly pleas in mitigation; also legal aid clinic made me aware of legal needs for representation among the poor”.

The majority of respondents were of the view that the clinical legal education programme offered by the Law Schools was too academic and not dissimilar to the three year programme offered by the Faculty of Law. Many felt that greater emphasis should be placed on opportunities for practical work experience which actively promote social justice, like that afforded them through attachments to clinics.

Students also acknowledged during focus group discussions, what had been stated by tutors in interviews - that there was in fact a multi-faceted approach at the Law Schools, which is geared towards the realisation of the Mission of the Council of Legal Education and that each student would have been exposed to the concept of social justice to some degree at varying points in time, throughout the continuum of their Law School training.

The majority of students, recognised social justice as a professional responsibility and would provide legal services to indigent and disadvantaged members of society should the opportunity present itself. A smaller number of students expressed a specific professional interest in social justice advocacy as a law practice specialisation. These students articulated a commitment to providing legal services to the underprivileged and underserved in their communities

A few students had no professional interest in social justice advocacy, preferring instead to concentrate their knowledge in areas other than those which have a bearing on social justice and to which they have been exposed during Specialist Clinics at Law School.

Clinical Legal Education

This part sought to determine the level of student exposure to social justice issues and initiative via the legal aid clinics specifically, which is a mandatory programme offered during their final year at the Law Schools. The data obtained was examined with a view to ascertaining student perspectives on the clinical experience in a social justice context.

Generally, students endorsed the importance of legal aid clinics as a critical component of their final year learning experience and for their social justice orientation.

“[my] experience at the clinic has shown that there are many individuals who are in need of legal assistance and have been at a disadvantage due to their financial and intellectual restrictions. These individuals are very much entitled to legal assistance as anyone else and should not have to suffer because of any shortcomings they may face.”

96.10% of the students surveyed indicated that their training at the Legal Aid Clinics was beneficial to their transition into the world of work and 90.91% of students considered their training at the Legal Aid Clinic to be useful insofar as their career goals are concerned- 24.68% of whom strongly agreed. For most students, their experience at the Legal Aid Clinic served to give them a sense of closure and afforded them the opportunity to reflect on what they had learnt during their previous years of training (Bailey, Oliver & Townsend, 2007; Cuseo, 1998)

Summary

There is an overall awareness amongst final year law students of social justice as a professional responsibility. Many students were of the view however, that the curriculum in its current form did not sufficiently expose them to the concept of social justice prior to their final year attachment to the Legal Aid Clinics. As such, prior to focus group discussions, many students failed to make important linkages in some cases, between the roles that the law and the legal profession play in addressing social justice issues faced by members of the community.

However, the opportunity to work in Legal Aid Clinics has been lauded by students as one that afforded them exposure to social justice issues and initiatives and provided them the best opportunity to prepare for the world of work.

The majority of students indicated that they would provide legal services to indigent and disadvantaged members of society should the opportunity present itself. A smaller number of students expressed a specific professional interest in social justice advocacy as a law practice specialisation. These students articulated a commitment to providing legal services to the underprivileged and underserved in their communities. A fewer number of students possessed no professional interest in social justice advocacy, preferring instead to concentrate their knowledge in areas other than those which have a bearing on social justice.

Conclusion

The data suggests that the Mission of the Council as it relates to social justice is not being adequately realised in the student population. The findings have revealed that the concept of social justice means different things to different respondents in different circumstances as advocated by Törnblom 1992. Respondents provided varying definitions for the concept of social justice and there were those who could not provide any definition. The inevitable corollary was that student opinion varied as to whether or not they had been exposed to social justice at the Law Schools.

Focus group discussions however revealed that the concept of social justice and the term social justice advocacy had not previously been contemplated by many students. Others were aware of the concept but differing views as to its definition were provided. Some students admitted that they could not define social justice at all.

Following focus group discussions, all participants admitted that they had in fact been exposed to social justice issues and initiatives during their tenure at Law School, though in an abstract and indirect manner and that this had made it challenging for them to identify exact points of exposure. Students readily agreed however that their clinical experience at the Legal Aid Clinics in their final year at Law School had provided them with a focused social justice orientation.

The results of this study reflect an awareness of social justice as a professional responsibility. However there was little evidence of a commitment on the part of students to providing legal services to meet the needs of the poor or disadvantaged,

upon receipt of the necessary professional qualifications. A small number of students have signalled a commitment to social justice in their professional career choice.

Recommendations

Several pieces of literature promulgating clinical methodologies in legal education, stand on common ground in the understanding that exposure to a social justice mission within a formal clinical education programme, provides students not only with a key linkage between their legal education and their practice proficiency, but also with the intellectual grounding for a long-term commitment with the fostering of social justice as the main focus.

The data highlights multiple opportunities for growth in so far as the Council's social justice agenda is concerned. It is recommended that a social justice campaign be launched in each of the Law Schools in a manner that would allow for the Council's Mission to be more explicit and for there to be common understanding amongst stakeholders regarding Council's educational philosophy in the promotion of its social justice mandate.

One of the key strategies most likely to result in increasing the number of students who may choose to pursue social justice advocacy upon graduation, is planning, building and ensuring institutional support for social justice amongst all of the Council's stakeholders. Ensuring strong and effective infrastructure for social justice programs is also critical. Educating the profession about the challenges faced by those living in poverty and the legal needs that arise as a result, through continuing legal education programmes hosted by the Council or bar association initiatives, will also help to encourage more attorneys to include a social justice agenda in their practice.

It is also recommended that social justice should be creatively packaged for newly qualified attorneys with a view to increasing lifelong commitment. For example, offering participation in a mentorship programme may assist many in overcoming any reticence they may have regarding representation of the under-represented.

Much can be learned about how to increase student interest in social justice advocacy by focusing on what motivates those survey respondents, currently in the minority, who have indicated a commitment to serving those members of society who can ill-afford legal representation. These will become the attorneys who are more likely to provide such representation. These students will become the attorneys who will work for an employer that supports indigent clients and who will be more likely to seek out such clients rather than waiting to be called upon.

Reflecting on the work of experienced attorneys who currently function in this regard and understanding their motivations, will also offer important insight into the most effective means of fostering social justice orientation at the Law Schools and could enhance the quality of mentorship programmes.

Further, the expansion of out-reach programmes as well as the development of a social justice resource centre, are initiatives that should form part of an overall, comprehensive legal programme at the Law Schools. Lastly, a review of the existing curriculum at the Law Schools is a major strategy that would ensure that the Council's

Mission, in so far as it relates to social justice, is fulfilled. This reconceptualisation exercise should include an orientation programme or specific course of training in social justice, which would extend beyond an introduction to substantive and procedural laws.

All of the initiatives outlined above, will go a long way towards a more purposeful execution of the Council's mandate as it relates to social justice.



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The Perception of Science Secondary School Teachers towards the Science Learning Problems of Lower Secondary School Students in Thailand

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Abstract

The purposes of this study were to investigate the science learning problems of lower secondary school students through science teachers' perception. This study included a comparison of science learning problems between different levels of school achievement, and investigation of the issues that science secondary school teachers need to solve in science learning. An open-ended questionnaire was responded by thirty-six science teachers from schools located in nine different areas across Thailand during September 2014. Certain teachers were interviewed for obtaining more details. The obtained data were analyzed by content analysis. The results indicated that problems in science learning included students lacked science process skills and had less interest and responsibility in science as well as lacking of science laboratory equipment in schools. The gap of student's chance to do the experiment between schools in rural area and urban area was found. Moreover, learning activities for increasing students' achievement and their process skills including students' ability in language were the issues that needed to be solved. These findings provided the data for the authors to further develop the learning model and activities to solve these problems.

Keywords: teacher perception, science process skills, science learning problem, lower secondary school student

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Introduction

Science is a subject that enables students to get skills to solve problems in daily life. Students' ability to solve science problems can demonstrate the competence of economic and development of a country in the future (Klainin, Dechsri, & Pramojnee, 2008). However, the Programme for International Student Assessment: PISA 2006 which was a system of international assessments that measured 15-year-olds' performance in science literacy. It measured students' ability to apply knowledge and skills throughout their lives in the future showed that the scores of Thai students placed below the mean scores of OECD (OECD, 2007). Moreover, the Ordinary National Educational Test (O-NET) which evaluated the quality of education at the national level based on the Basic Education Core Curriculum B.E. 2551 (A.D. 2008) indicated that grade 9 Thai students' mean score in science have placed almost the lowest among the other subjects. The results of science mean scores of Thai students during the year B.E. 2554-2556 were; 32.19, 35.37, and 37.95 respectively (National Institute of Educational Teaching Servic, 2013). Some studies identified that Thai education has limitations and problems about instructional strategies such as insufficient basic concept in science, lack of thinking skills (Katesing, 2005, Klainin, 2006; NIETS, 2008; IPST, 2009 cited in Cojorn, Koocharoenpibal, Haemaprasith, & Siripankaew , 2012), time limitation (Colangelo, Okumura, Patrick, Whitten-Kassner, Chen, & Thammasunthorn, 2009; Lati, Supasorn, & Promarak, 2012; Kruea-In & Thongperm, 2014) and lack of science equipment (Klainin, Dechsri, & Pramojnee, 2008; Colangelo, Okumura, Patrick, Whitten-Kassner, Chen, & Thammasunthorn, 2009). In addition, to solve problem of Thai students' achievement, the context of science learning in the classroom has to be known. Teaching-learning activity was one of the issues that affected students' learning and conceptual development. The actions and details of classroom atmosphere affected science learning can be explained by teacher. Therefore, the authors conducted this study to investigate the science learning problems through teacher.

Research Methodology

Objectives of study

1. To investigate the science learning problems of lower secondary school students through science teachers' perception.
2. To compare the science learning problems between students from schools having O-NET test scores above and below the mean score of national O-NET test.
3. To investigate the issues that secondary school science teachers need to solve in science learning.

Method

The mail surveys were used to collect the data. The open-ended questionnaire was responded by the eighth grade science teachers. There were thirty-six science teachers (36 schools) from nine areas throughout Thailand; upper northern, lower northern, upper northeastern, lower northeastern, west, eastern, southern, central, and Bangkok of Thailand in September 2014. Those schools were located in rural area, city and big city area. Five teachers were interviewed via telephone for obtaining more details and

for the reliability of the data. Those teachers from five schools which placed at different school achievement and located both urban and rural area of upper northeastern, lower northeastern, upper northern, southern, and Bangkok area. Privacy and be allowed were the limitation for conducting the interview. Based on the reported O-NET science test of academic year B.E. 2556(A.D. 2013), the authors categorized the answers of thirty-six science teachers into two groups; teachers' perceptions from school that having O-NET test scores above and below the O-NET national mean score. Their answers were analyzed by content analysis. The levels of school achievement were also considered for the trend of problems. Triangulation was used in terms of data angulation and review triangulation for increasing the reliability.

Findings

Finding 1:

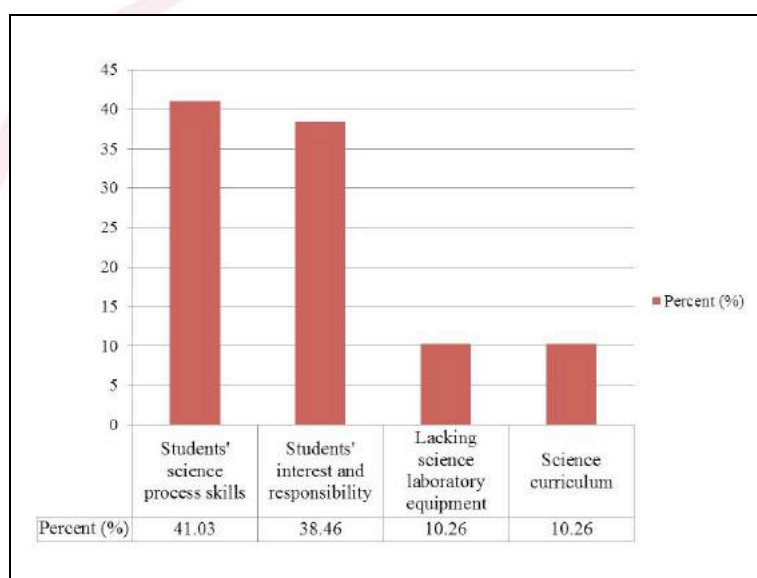


Figure 1: Type of Problem on Thai Science Classroom

To answer the objective 1; to investigate the science learning problems of lower secondary school students through of science teachers' perception. The results were categorized into four themes of problems namely students' prior knowledge, student behavior, science equipment, and curriculum.

The answers were counted for investigation the trend of problems. Finally, the identified problems on Thai science classroom context sorted by descending were students lack science process skills; students showed less interest in science and responsibility, lacking of science laboratory equipment, and improper science curriculum (see Figure 1). First of all, problems related to students lacked science process skills were mentioned by science teachers as following; *measuring*- students used improper tools such as using the beaker instead of the test tube, some student had no skills of using microscope and wrongly hold the microscope. Teachers also mentioned that students did not know the correct way on how to maintain or keep the science laboratory equipment. In terms of *using number*, students could not calculate mathematics when they solved the science questions. For *communication skill*, the

teachers from the school having O-NET score higher than mean score of the O-NET test mentioned that students could not explain their understanding in order fashion. They wrote in a meandering fashion. It demonstrated that students were not good at writing in paragraph. Some teachers from school having O-NET score below the mean score of O-NET test mentioned the problem related to students' abilities in reading and spelling words. In terms of *formulating hypotheses*, students could not identify science question and their questions did not reflect dependent or independent variable. For *interpreting data*, students drew wrong conclusion. For *experimentation*, teachers mentioned that students had no plan on working. The examples of quotation were as following;

"Students cannot use equipment appropriately"
"Students had no skills on using equipment and chemical substance"
 ☞ *These sentences refer to..... Measuring skill*

"Students cannot discuss the results"
"Students cannot make the conclusion"
 ☞ *These refer to.... Interpreting skill*

"Students did the experiment without planning"
 ☞ *It refers to.... Experiment skill*

The second problem was students had less interest and responsibility. For example, students returned late assignment and talking too much in the classroom. They also showed less interest while learning, no enthusiastic and using mobile phone. Moreover, some teachers from school having O-NET score below mean score of O-NET mentioned that students had low motivation and need inspiration for learning.

The third was lacking of science laboratory and learning equipment. Teachers from different levels of school achievement mentioned the different types of lacking equipment. Problems of lacking basic science laboratory equipment such as microscope shortage or malfunction were found in some schools having O-NET score below mean score of O-NET test. As a result, students had no chance to do the experiments. To enable the complete contents, teachers used the video clip involving those experiments instead even though they still concerned about students' process skills on using microscope. In the science toy course, the advanced science learning materials such as robots, used for science engagement were not enough for students from school having O-NET score above mean score of O-NET test. It demonstrated that each school had different problems including the gap between students from schools in rural area having O-NET score below mean score of O-NET and big city having O-NET score above mean score of O-NET. These showed the quotations that categorized by keyword into each theme (see Table 1).

Themes	The example of quotations referred in each theme
(i) Students' prior knowledge in science and others	<ul style="list-style-type: none"> -Low achieving students need a longer time learning and they were false on spelling -Wrong procedure on the experiment, -Students cannot use equipment appropriately -Students lack of skills of equipment and chemical substance -Students had no plan on working -Could not propose the ways to solve problems. -Write in a meandering fashion -Students cannot make the conclusion -Students could not identify science question -Lack of ability in reading and reading comprehension
(ii) Student behavior	<ul style="list-style-type: none"> -Less concentrated on learning, Less effort -Less attention while doing the experiment, Lack motivation in learning, Less confident to do the activities, Students late handing assignment -Talking too much in the classroom -Using mobile phone -Did not submit science task.
(iii) Science equipment	<ul style="list-style-type: none"> -The tools and equipment for enhancing science skills were limited. -Lack science equipment, teacher demonstrated the lab instead. -The equipment was not enough; therefore, the class could not complete the experiment. The video clip was used instead. -Malfunctioned science equipment
(iv) Curriculum	<ul style="list-style-type: none"> -The content related to mathematics was not paralleled with science content. Therefore, science teacher need to teach some content of mathematics for applying to science question i.e. square root. -The amount of content was not suitable for timing; as a result some experiments were skipped. -Science content was not sequenced in order.

Table 1: The example of quotations categorized by keyword into each theme

Finding 2:

To answer the objective 2; to compare the science learning problems between students from schools having O-NET test scores above and below the mean score of national O-NET test.

The national mean score of the science O-NET test (37.95) was used for grouping the level of school achievement. Consequently, there were two groups of school achievement; below and above the mean score of O-NET test. By categorized teacher's perceptions about trend of problems, the results showed that the percentage of students' interest and responsibility problems found in both groups were quite

similar (40% and 45%) as shown in Figure 2. However, the problems related to lacking of process skills in students between two groups were different (40% and 50%, Figure 2). Moreover, details of teachers' responses indicated that students from different levels of school achievement had different issues of lacking science process skills. For example, lack of basic science process skill such as measuring skill was mentioned by most teachers from school having O-NET test score below mean score of national O-NET test while lacking of integrated science process skills such as interpreting data was mentioned by most teachers from school having O-NET test score above mean score of O-NET test. However, lacking of communication skill was mentioned in both groups including spelling and ability to read (below mean score group) and writing skill (below and above mean score group). In terms of lacking science equipment, schools having O-NET test below mean score group displayed higher percentage (20%) than that of school having O-NET test score above mean score of O-NET test (5%) as shown in Figure 2. The issues of lacking science equipment were different; basic science laboratory equipment (below mean score group) and advanced equipment (above mean score group).

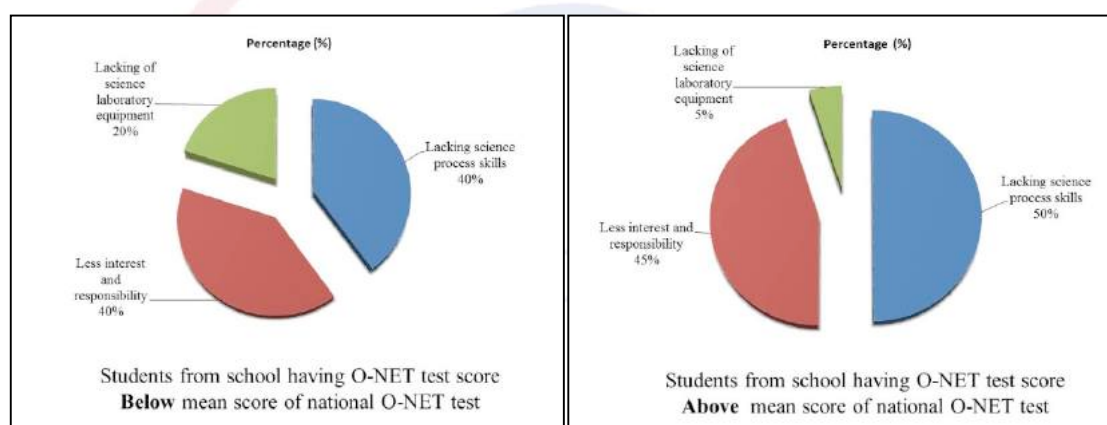


Figure 2: Comparison Trend of Problem in Schools

Finding 3:

To answer the objective 3; to investigate the issues those secondary school science teachers need to solve in science learning.

Teachers gave various answers in the questionnaire. The answers were categorized into seven types namely; using tablet as the learning tool in science classroom, higher order thinking skill, students' science process skills, students' interest and responsibility, ability in language, curriculum, and learning activities for increasing students' achievement. The highest percentage of issue that teachers need to solve was learning activities for increasing students' achievement (22.22%). The second was students' interest and responsibility (19.44%) and the third was students' science process skills (16.66%). Other issues including students' ability in language which involved students' spelling ability, reading comprehension, and writing skill were also needed to solve. (see Figure 3)

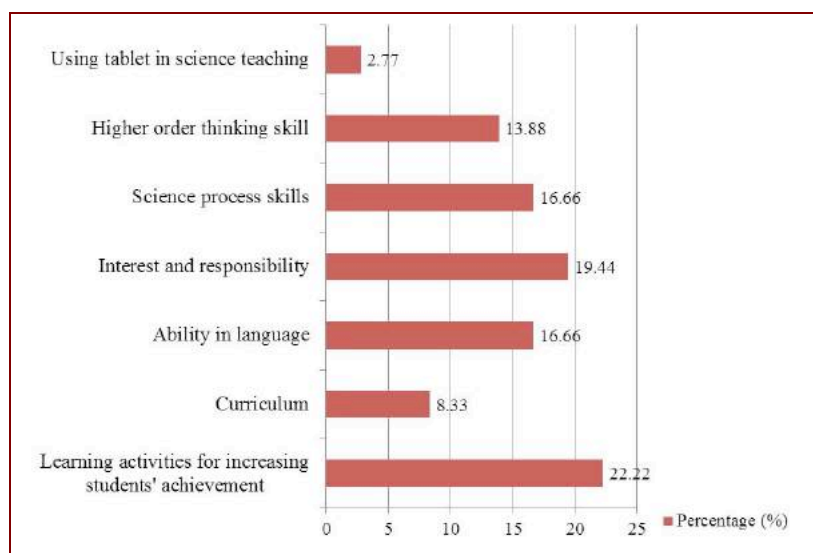


Figure 3: Issues that teachers need to solve

Discussions

Discussion of finding 1: science learning problems of lower secondary school students through science teachers' perception.

According to Harnischfeger-Wiley Model (Gross determinants of pupil achievement) consisted of three categories: background characteristics, teaching-learning activities, and pupil acquisitions (Harnischfeger & Wiley, 1976; Haertel, Walberg, & Weinstein, 1980).

The authors hypothesized that students' achievement in science was influenced by teaching-learning processes (consisted of teacher activities and pupil pursuits) and background factor (consisted of curriculum institutional and pupil background). The findings of this survey in terms of actions or activities which were obstacles for teaching – learning science was named as “problem in science classroom”. A finding, problems related to teacher activities was students' lacking science process skills. It probably affected learning activities that created by teacher. For example, teachers stated “*students did the wrong procedure, used improper science equipment and drew a wrong conclusion*”. It demonstrated that students' lack those process skills might related to learning activities and finally students could not acquire science knowledge. Furthermore, the problem of lacking science laboratory equipment in this survey might affect creating activity of learning in science classroom; therefore, students had less chance to do the experiments. A study of Kruea-In & Thongperm (2013) stated that insufficiency of laboratory equipment was a significant obstacle in the integration of science process skills into teaching. Therefore, students' achievement became low. Moreover, several reports showed that science process skills correlated with science performance and achievement (Feyzioglu, 2009; Oloyede, 2012; Volkan, Dilber, & Yasemin, 2012; Chaurasia, 2015) even though a study reported low positive correlation between the science process skills and achievement in science among high school students (Raj & Devi, 2014). Consequently, lacking of science process skills might affect their achievement.

The problem of students had less interest and responsibility including talking too much in the classroom, less discipline, not enthusiastic and late handing assignment might involve pupil pursuits. These actions led the teacher spent time for classroom management; therefore, the actually learning time became less. Students did not submit assignment on time would affect their learning experience. Therefore, students did not have enough practicing in learning. Moreover, students lacked responsibility including low motivation or inspiration could be explained in terms of pupil background factor. These problems might cause students having low achievement. Some studies indicated that responsibility affected students' achievement (Sangkalan & Laeheem, 2011) and motivation had correlated with achievement (Cavas, 2011; Akpan & Umobong, 2013 ; Muhammad, Bakar, Mijinyawa, & Halabi, 2015).

Discussion of finding 2: comparison the science learning problems between students from schools having O-NET test scores above and below the mean score of national O-NET test.

The findings were considered in three aspects as shown in Figure 2. According to the amount of lacking science laboratory equipment of schools having O-NET below and above mean score of national O-NET test were 20% and 5%, respectively. It indicated that lacking of science laboratory equipment in schools located at rural area or small city still have been found. This finding was consistent with the study of Vailikhit et al (2013). Moreover, Boonklurb (2000) reported that lacking of science equipment was a limitation of teaching/learning science in Thailand and the study of Colangelo et al (2009) suggested that school should support the lab material for science learning. It demonstrated that lacking science laboratory equipment affected students science process skills in below mean score group because they had less chance to do the experiment. Consistent with previous study, lacking of laboratory equipment was the significant obstacle when science learning activities needed to be integrated into science process skills (Kruea-In & Thongperm, 2014). However, the amount of students' lacking science process skills in above mean score group (50%) was higher than that of the below mean score of O-NET test group (40%). These result related to the opportunities to do the experiment. Students from above mean score group had more chance to do the experiment as a result teacher could observe students' science process skills in more details. The responsibilities of students were not different and it showed a great impact to Thai student learning even in other subjects.

Discussion of finding 3: the issues that secondary school science teachers need to solve in science learning.

Teachers gave the priority to problem solving on science achievement and process skills. They wanted to learn and discovered the learning activities to increase students' achievement. In other words, teachers wanted to increase student performance for both science and language. However, teachers also stated that the problems of interest and responsibility should be solved. A study showed that responsibility affected students' achievement (Sangkalan & Laeheem, 2011).

Conclusion

According to teachers' perceptions, students having less interest and responsibility in science were found in science classroom. Lacking of science laboratory equipment still has been found in Thai science classroom context. The challenged problem on Thai classroom was students' lacking science process skill Students' ability in using language was frequently mentioned by science teachers. Moreover, solving problems of learning activities for increasing students' achievement and their process skills were needed as well. These findings provided the basic data to further develop the learning model for solving problems.

Limitation of this study

This survey was the first stage of learning model development. This survey was conducted from only eighth grade science teachers from certain areas. Time, place including situations involved science teachers might affect the responses to the questionnaire and interviewing. Moreover, it was only the teachers' perception. It did not evaluate students' abilities directly or given data by students for confirmation.

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High School Students' Understanding of the Nature of Science

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Abstract

The purpose of this study was to investigate students' understanding of the Nature of Science (NOS). One hundred and eight high school students at a secondary school in the Secondary Educational Service Area Office 36 participated in this preliminary study. An open-ended questionnaire adapted from the *View of Nature of Science - Form C* questionnaire (VNOS-Form C) of Lederman et al. (2002) was applied to collect data. By using content analysis, students' responses were categorized into 4 groups including; informed, transitional, naive, and no understanding. The research findings showed that most of the students had transitional understanding about NOS mostly in the aspects of; science, technology and social are effect of each other, science demands on evidence, scientific knowledge is tentative, creativity and imagination in science, science is a social activity, the human subjectivity in science. They could identify these characteristics but they could not give more reason to support their answers. However students held highest percentage of naive understanding and no understanding in some aspects. In particular 86.11% of the students held a naive understanding about diversity of science process; they understood that inquiry is a step by step scientific method and the only way to explore scientific knowledge is through experiment. Furthermore 75.93 % of students had no understanding in the aspect of science is based on both observation and inference. They could not explain or answer the questions of this aspect. The research finding suggests that science teachers should focus and find proper teaching and learning approach for enhance students' understanding of the nature of science and using the students' prior understanding as a basic to develop effective science teaching and learning.

Keywords: Nature of Science, NOS Understanding

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Introduction

The goal of science education is to promote scientific literacy (The Institute for the Promotion of Teaching Science and Technology (IPST.) 2003; Crowther; Lederman and Lederman. 2005; Flick; and Lederman. 2006; Lederman. 1992). One characteristic of the scientifically literate persons is understanding of the nature of science. An understanding of the nature of science can help students to understand the process of science and make informed decisions on socio-scientific issues (IPST. 2003; American Association for the Advancement of Science (AAAS.). 2013; Lederman. 1992) and to appreciate science as a part of culture and society (Driver et al. 1996; McComas; Clough; & Almazroa. 2000).

These are the key aspects of the NOS that high school students must know; 1) scientific knowledge is tentative, 2) Science is based on both observation and inference, 3) science demand on evidence, 4) the diversity of scientific process, 5) the subjectivity in science, 6) creativity and imagination in science, 7) science is a social activity, and 8) science, technology and social are effects of each other (IPST. 2002; AAAS. 2013; Abd-El-Khalick; & Lederman. 2000; Lederman et al. 2002; McComas; Clough; & Almazroa. 2000; Sandoval. 2005; Schwartz; Lederman; & Crawford. 2004).

The previous studies have shown that in the difference contexts students understand the NOS differently. For example in some context students understand that scientific knowledge can be changed when there is new evidence to rebut the evidence or interpretation of the original conclusion. Scientists do new experiments to prove or disprove the new evidence (Ladachart; & Suttakun. 2012; Chamrat; Yutakom; & Chaiso. 2009) but other students perceived that scientific knowledge cannot be changed. It is the truth and proved already (Kijkuakul; Yutakom; & Engkagul. 2005; Khishfe. 2008; Schwartz; Lederman; & Crawford. 2004). In particular researches have reported misunderstanding about the nature of science in many aspects as follow. Scientific knowledge is the truth, because there is empirical evidence to support it and is not related to the use of creativity and imagination. Creativity and imagination of scientists cannot be taken as scientific evidence (Mahalee; & Faikhamta. 2010; Khishfe. 2008; Schwartz; Lederman; & Crawford. 2004). Scientific laws are more reliable than scientific theory. Scientific laws cannot be changed, but the scientific theory can be changed (Chamrat; Yutakom; & Chaiso. 2009; Schwartz; Lederman; & Crawford. 2004). The quest for knowledge is a scientific method of experimentation and requires definite stages (MahaLee; & Faikhamta. 2010; Chamrat; Yutakom; & Chaiso. 2009). Society and culture have not impacted on science because scientific knowledge is universal and constructed of experiments that follow a certain step by step formula. (Kijkuakul; Yutakom; & Engkagul. 2005; Chamrat; Yutakom; & Chaiso. 2009). The belief and the values of a scientist should not affect their work. (Chamrat; Yutakom; & Chaiso. 2009; Khishfe. 2008; Khishfe; & Abd El-Khalick. 2002) In addition, most of the students were unable to distinguish the observation and interpretation of the scientific evidence (Khishfe. 2008; Khishfe. 2012; Khishfe; & Abd El-Khalick. 2002; Limpanontt. 2011). Students still show no understanding about scientific knowledge is a result of the interpretation. (Ladachart; & Suttakun. 2012). Students still lack awareness about the importance and

complexity of the scientific enterprise and the collaboration between scientists and society. (Kijkuakul; Yutakom; & Engkagul. 2005; Bell et al. 2003).

Research Objective

This study is the first phase of the NOS learning model projects. Because of a variety of understandings of the nature of science in different contexts, so the authors would like to know high school students' understanding of the nature of science in the northern Thailand context where the authors will develop a learning model for enhancing students' understanding of the nature of science.

Significance of the research

1. The data from this study can be use as a guide to create a learning model that encourages students to understand the NOS.
2. The science teacher can use the results of this research as a guide to develop learning activities that are based on students' prior understanding of the NOS.

Scope of the research

The participants

The participants were high school students who study in Science - Mathematics program of 2nd Semester of 2015 academic year, at a school in The Secondary Educational Service Area Office 36, Thailand. The researcher chose the participants by purposive sampling with cooperative students or volunteers. The total of participants was 108 students consisting of; 7 students from Grade 12, 29 students from Grade 11 and 72 students from Grade 10.

The scope of the nature of science in research

This research explored the NOS in the aspects which should be teaching and learning to high school students consisted of; 1) Scientific knowledge is tentative, 2) Science is based on both observation and inference, 3) Science demand on evidence, 4) The diversity of scientific process, 5) The subjectivity in science, 6) Creativity and imagination in science, 7) Science is a social activity, 8) Science, technology and social are effects of each other

Definition

Understanding of the nature of science refers to the ability to describe the comparative examples about the nature of science: 1) Scientific knowledge is tentative, 2) Science is based on both observation and inference, 3) Science demand on evidence, 4) The diversity of scientific process, 5) The subjectivity in science, 6) Creativity and imagination in science, 7) Science is a social activity, 8) Science, technology and society

are effects each other. Students express themselves and one can analyze students' understanding of the nature of science from the questionnaires adapted from VNOS-Form C (Lederman et al. 2002.)

Research Design

The study utilized a survey research design to permit the authors to understand the participants' understanding of the nature of science. Qualitative and quantitative approaches have been used to analyze data.

Research Methodology

Data collection tools

The data was collected by the open-ended questionnaire adapted from VNOS-Form C of Lederman et al. (2002) and the Index of Item-Objective Congruence (IOC) value of each questionnaire item is between 0.67 – 1.00. It was separated into two parts. The first part, general information section, aimed to examine initial data of students such as gender and grade. The second part identified students' understanding of the nature of science. This part has 12 question covering 8 aspects of the nature of science. The questionnaire was taken pilot study with 31 high school students that were non-participants in this study.

Data collection

The data was collected during November – December, 2015. The time allotted for students to complete an open-ended questionnaire was about 45 minutes.

Data analysis and statistics

The data were analyze by using content analysis to classify students' answers into four groups including; informed, transitional, naive and no understanding or no answer (Khishfe; & Lederman. 2006) by using criterion as follows;

1. Informed (I) group was defined as the group of students who gave their description of the nature of science which relate to the scientific community.
2. Transitional (T) group was defined as the group of students who gave their description of the nature of science which relate to the scientific community but not completely or didn't cover all the issues.
3. Naive (N) group was defined as the group of students who gave their description of the nature of science which did not relate to the scientific community.
4. NO understanding or NO answer (NU) group was defined as the group of students who did not answer questions or who gave the answer "I do not understand the question" or repeated the question.

Furthermore the frequency and the percentage of students in each group were investigated and the examples of students' answers of each group were selected to clarify the findings.

Findings

The high school students' understanding of the nature of science at a secondary school in The Secondary Educational Service Area Office 36, Thailand was surveyed. The total of participants was 108 students consisting of; 7 students from Grade 12, 29 students from Grade 11 and 72 students from Grade 10. Of the participating students forty three were male and sixty five were female. The results of the survey are shown in Table 1.

Table 1: The frequency and the percentage of students in each understanding of the nature of science group

Aspect of Nature of Science	The frequency and the percentage of students in each group understanding			
	I	T	N	NU
Scientific knowledge is tentative	0 (0.00)	90 (83.34)	18 (16.66)	0 (0.00)
Science is based on both observation and inference	0 (0.00)	26 (24.07)	0 (0.00)	82 (75.93)
Science demand on evidence	0 (0.00)	93 (86.11)	0 (0.00)	15 (13.89)
Diversity of science process	0 (0.00)	15 (13.89)	93 (86.11)	0 (0.00)
The subjectivity in science	0 (0.00)	68 (62.96)	0 (0.00)	40 (37.04)
Creativity and imagination in science	2 (1.85)	90 (83.34)	14 (12.96)	2 (1.85)
Science is a social activity	0 (0.00)	88 (81.48)	20 (18.52)	0 (0.00)
Science, technology and social are effects of each other	2 (1.85)	102 (94.45)	0 (0.00)	4 (3.70)
Total	0.5 (0.47)	71.5 (66.20)	18.13 (16.8)	17.9 (16.55)

Note : **I** : Informed, **T** : Transitional, **N** : Naive, **NU**: No answer or No Understanding

Table 1 showed that most of the students had transitional understanding about NOS mostly in the aspects of; science, technology and social are effect of each other, science demands on evidence, scientific knowledge is tentative, creativity and imagination in science, science is a social activity, the human subjectivity in science. They can identify these characteristics but they cannot give more reason to support their answers. However students held highest percentage of naïve understanding in the aspect of diversity of science process (86.11%) and no understanding in the aspect of observation and inference (75.93%). The details of students' understanding of the nature of science in each aspect are as follows.

Scientific knowledge is tentative

Most of the students (83.34%) had transitional understanding; they accepted scientific knowledge can be changed but they cannot complete explain why scientific knowledge can be changed. For example:

"Scientific knowledge can be changed because scientists discover new evidence, then make scientists accept it. It is a new theory" (S454)

"Can be changed if a scientist creates new principles" (S431)

"Scientific knowledge can be changed. If a scientist tested the theory with new idea then the theory should be consider new" (S510)

The other students (16.66%) held naïve understanding; they believed that scientific knowledge cannot be changed because the knowledge has been recognized and has been tested. For example:

"Scientific knowledge cannot be changed because it was tested and accepted already" (S517)

Science is based on both observation and inference

Most of the students (75.93%) held no understanding; they did not answer the question or did not reflect their understanding on this aspect. However some students (24.07%) had transitional understanding; they can explain that the scientists create a conclusion from the evidence of research and observation or scientists get their scientific knowledge from their observation. But they cannot explain that scientist make inference of those observations. For example:

"The scientists conducted the principles and concepts from the direct observation of organisms" (S430)

Science demands on evidence

Most of the students (86.11%) had transitional understanding; they were aware that science demands evidence but they cannot explain that scientific evidence may be conducted by experimentations, investigation, or observations. For example:

"The scientists do the experiments on animals because they try to prove their ideas" (S453)

"They may get information or evidence from experiments" (S405)

However, some students (13.89 %) held no understanding; they could not answer the question or reflect their understanding of this aspect.

The diversity of scientific process

Most of the students (86.11%) held naïve understanding; they that the scientific process is only the step – by – step scientific method and the construction of scientific knowledge require the experimentation. For example:

"The scientific process is step-by-step. The results of the study are reliable and have been explicitly recognized by the scientific community" (S603)

"If the scientists do not use the step – by – step scientific method. The results of their researches are not accepted" (S413)

However, some students (13.89 %) had transitional understanding; they understood that the scientific process does not necessarily have exactly the same sequence of steps. Scientists do a variety of processes but students cannot explain about the diversity of the scientific process.

The subjectivity in science

More than half of students (62.96 %) had transitional understanding; they can explain that scientists construct scientific knowledge in different ways because scientists have different ideas but the students cannot explain or gave more reason to support their understanding such as scientists' prior knowledge, scientists' values, race and nationality of scientists or the social context of scientists' work. For example:

"Because scientists have the different ideas and point of views" (S428)

"Because people have different views and each person imagine something in a different way" (S463)

A smaller percentage (37.04%) held no understanding; they could not answer the question or reflect their understanding of this aspect.

Creativity and imagination in science

Most of the students (83.34%) had transitional understanding; they believed that scientists use creativity and imagination in science but they explained that the scientist use their creativity and imagination only to plan and design scientific inquiry. For example:

"Scientists only use creativity and imagination in the planning and design process" (S468)

"Scientists use creativity and imagination in the process of planning and design (experiment)" (S512)

"Creativity and imagination are used in the planning and design inquiry. It requires planning and design. Using the imagination is important in science" (S506)

Only 12.96% of the students had naïve understanding; they understood that creativity and imagination cannot be used to create scientific knowledge because scientists have tried to find the truth. For example:

"Scientists cannot use creativity or imagination in their work because they discovered scientific knowledge from experiments" (S501)

However, 1.85 % of students held no understanding; they did not answer the questions and only two students (1.85%) had informed understanding; they could explain that scientists use their creativity and imagination in all of scientific process or in all processes of created scientific knowledge.

Science is a social activity

Most of the students (81.48 %) had transitional understanding; they accepted social is supporting of the development of scientific knowledge but they cannot explain scientists working together as a social group or as a science community. Scientists need to support or to promote scientific enterprise. The scientific works will affect the quality of life in society. For example:

"Scientists cannot do their works if the society does not accept their works and that mean their work would be meaningless or bad" (S418)

"If the society does not accept scientists' work the scientist cannot do their work because they have no money or no resource for do their experimentation" (S508)

However, there is some students (18.52%) had naïve understanding; they understood that scientists working without social relationships. The successfulness of scientific work only depends on the scientists. For example:

"Because scientists have conducted researches by themselves without support from society in the process of scientific knowledge development" (S423)

Science, technology and social are effects of each other

Most of the students (94.45 %) had transitional understanding; they can explained that technological developments have resulted in the construction of scientific knowledge or the developed of technologies effects on the quality of human life. The advancement of technology has meant the development of science and quality of human life but they cannot explain the coherence in all aspects. For example:

"The advancement of technology can help to develop scientific knowledge" (S505)

"The advances in technology affect the quality of human life. If society lacks advances in technology, society might be obsolete and underdeveloped" S454

Some 3.70 % of the students held no understanding; they could not answer the question. Furthermore, some of the students (1.85 %) had informed understanding; they could explain that technological developments resulted in the development of scientific knowledge and it can improve the quality of human life. The development of scientific knowledge influences the development of society and technology. When people have a better quality of life they would have the ability to develop scientific knowledge and technology as well.

Conclusions and Discussions

Firstly, most of the students had transitional understanding about NOS mostly in the aspects of; science, technology and social are effect of each other, science demands on evidence, scientific knowledge is tentative, creativity and imagination in science, science is a social activity, the human subjectivity in science. They can identify these characteristics but they cannot give more reason to support their answers. For example they accept scientific knowledge is tentative but they cannot complete explain why scientific knowledge can be change. Maybe it is because The NOS is taught by implicit approach (Mahalee;& Faikhamta. 2010) so they did not reflect on their thinking or learning about the NOS.

Secondly, most of the students had naïve understanding that the scientific inquiry is a step-by-step process: that scientific inquiry is only experimental, consistent with the research of Chamrat; Yutakom; & Chaiso (2009) and Mahalee; & Faikhamta. (2010). Maybe it is because in the science classroom students do the experiment repeated step-by-step from textbook. Teachers believe that doing experiments is enough to promote students' understanding of the scientific process. (Abd-El-Khalick; & Lederman. 2000)

Thirdly, most of the students lack an understanding that science is based on both observation and inference. It is consistent with the research of Ladachart; & Suttakun (2012) Khishfe (2008) and Limpanontt (2011). This could be a consequence of implicit learning; students have never had experiences on the NOS explicit learning (Mahalee;& Faikhamta. 2010). In learning activities from textbooks, students know and use observation and inference as a basic process skill but they could not connect between what they did in science classroom and the scientists' work.

Finally most of the students lack an awareness of the importance and complexity of the scientific enterprise. This is consistent with the research of Kijkuakul; Yutakom; & Engkagul (2005) and Bell et al. (2003). Maybe it is because students are not given the opportunity to reflect on the scientific enterprise explicit during learning. They read and memorize science content in textbooks for the purpose of examination. They show a lack of interest about how scientific knowledge is used in the real world.

The study suggests that science teacher must encourage students to explicit and reflective about the nature of science found from the scientific inquiry activity and the history of science in science lessons and using the students' prior understanding as a basic to develop effective teaching and learning.

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Flipping with a MOOC: A Case Study of an English Academic Writing

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Abstract

Massive Online Open Courses (MOOCs) have been growing in popularity with educational researchers and learners in online environments. Courses in English for Academic Purposes (EAP) in higher education setting often bring together students from different academic backgrounds. However, MOOCs platforms haven't provided many choices for EAP courses. For this reason, such courses tend to demonstrate materials that are sufficiently general to be practical and relevant to all students. Most teachers often need to supplement their teaching with online materials that are relevant to the students. Although MOOCs have not been designed widely as supplements to English language teaching and learning for EAP, this research investigates the efficacy of integrating MOOC pedagogy in English as foreign language (EFL) writing instruction. There are forty Taiwanese sophomores who enroll in an EFL essay writing course. This study explores the learning experience in an English writing course that includes classroom observation, peer feedback, a teacher's assessments, and perceptions toward MOOCs. In this study, MOOCs writing class is employed as supplementary materials and social interaction in an essay writing class. Data will be included students' perception questionnaires toward online learning environment, teachers and peer interactions, observation, reflective journal, and their writing assignments. It is expected that this MOOC course will facilitate students' learning process by interacting teachers and classmates' feedback.

Keywords: blended learning, flipped classroom, MOOC, English for academic purpose, EFL writing

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Introduction

Technology continues to transform education in a very different way, including traditional and online contexts, as the recent popular teaching and learning platform of massive open online courses (MOOCs) demonstrates (Pappano, 2012; Erdem-Aydin, 2015). Although MOOCs are seen to be, and in fact are designed to be, standalone online courses (Hill, 2012), their introduction to the higher education landscape has expanded the format for possible blended course designs. Creating a blended course that incorporates another instructor's MOOC teaching load, while allowing the blended course instructor to shape the in-class components. However, fitting in-class modules into an existing MOOC in a way that optimizes students' engagement and performance, can be really challenging.

This paper reports a case study of a blended undergraduate course in edX Writing 101- English Writing and Style in Fall 2015, which incorporated the University of Queensland MOOC. It blended course design that the researchers think are responsible for these perceptions. Although the blended course adopted the entirety of one particular MOOC, the paper suggests that other course curriculum may well be both possible and desirable.

Literature Review

Blended approaches to teaching integrate traditional (face-to-face) instruction with online material, creating what can be flexible and effective model for instruction (Bowen, Chingos, Lack & Nygren, 2012; Hill, 2012). Although there is no standard and novel approach to blended courses, they often involve a rigorous, time-intensive curriculum design of face-to-face courses to integrate face-to-face and online learning completely.

MOOCs are defined as online course that ensure large-scale interactive participation and aim for open access by the Web. Learners may enroll and track the content. Instruction is delivered via videos, texts, quizzes, discussion forums, sources, and so on. According to Hollands and Tirthali (2014), MOOCs serve many purposes. They might be regarded as an important action for democratization of education because the ability of reach more individuals with better quality of learning materials.

MOOCs serve a new option for blended course. Instead of "flipping" one's course by producing online teaching materials, instructors can implement their courses around existing MOOCs (Fisher, 2012). Instructors would choose some parts of the MOOC in their traditional classroom context. The challenges of blended courses are curriculum design and students' engagement in the MOOC course learning. The researchers in this study noted that there is a lack of and a need for studies on MOOCs participants' perceptions and feedback in different context in order to design more efficient learning process in the blended course of MOOCs and traditional course.

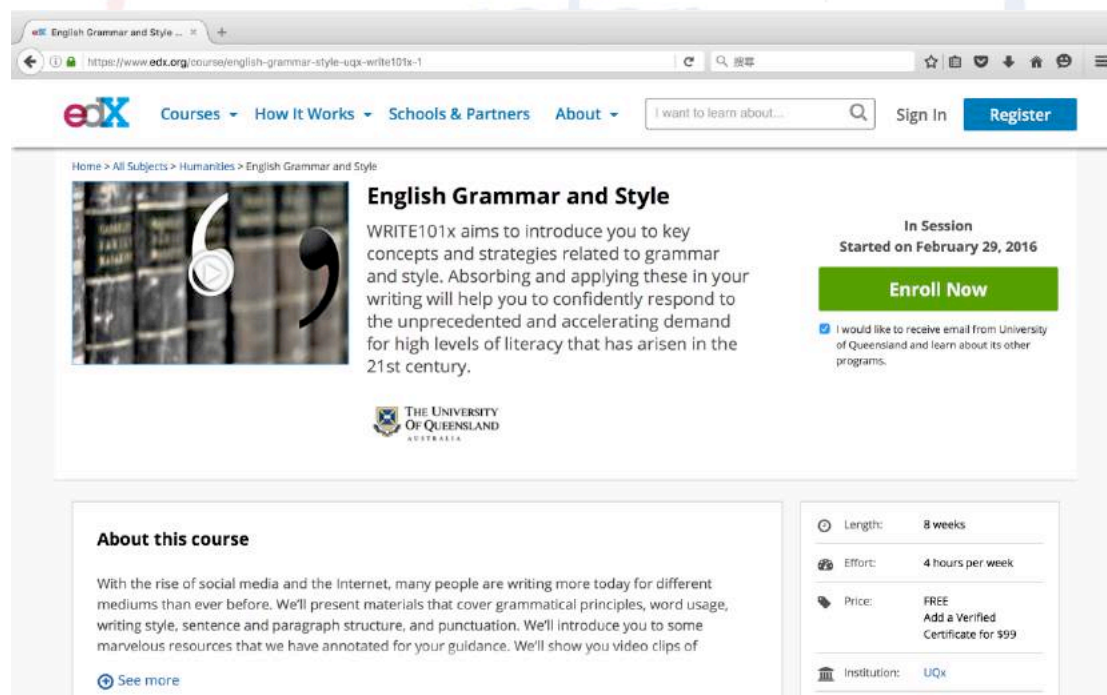
Methodology

Instructional Context

The setting for the present case study was college-level course on English Composition taught at I-Shou University. The instructor incorporate edX MOOC course- English Writing and Style into the freshman writing class. The research as an instructor decided to draw the MOOC main course (online lecture videos, exercises and quizzes) in her writing course syllabus. Forty students participated in this blended course.

The start of the 8-week University of Queensland MOOC happened to coincide with the beginning of the I-Shou University semester, one of the reasons researchers chose to use it as part of this writing course (see Figure 1). Since the topics covered in MOOC course were grammar points that most participants learned before, the instructor introduced and reviewed the lessons in the remaining class periods. Students were also assigned related writing exercises, which were discussed in weekly face-to-face class sessions led by the instructor. During eight-week session, instructor would preview and review the lessons in edX platform. Instructor and teaching assistant checked their progress by using checklists. Figure 2 shows the layout of English Writing and Style throughout the fall semester 2015 course.

Figure 1: The edX homepage of English Grammar and Style



The screenshot shows the edX homepage for the course 'English Grammar and Style'. The browser address bar displays 'https://www.edx.org/course/english-grammar-style-ugx-write101x-1'. The navigation menu includes 'Courses', 'How It Works', 'Schools & Partners', and 'About'. A search bar contains the text 'I want to learn about...'. The main content area features a video player with a play button and a large quotation mark. The course title 'English Grammar and Style' is prominently displayed. Below the title, the course description reads: 'WRITE101x aims to introduce you to key concepts and strategies related to grammar and style. Absorbing and applying these in your writing will help you to confidently respond to the unprecedented and accelerating demand for high levels of literacy that has arisen in the 21st century.' The University of Queensland logo is visible. To the right, it indicates the course is 'In Session' and 'Started on February 29, 2016', with a green 'Enroll Now' button. A checkbox option is present: 'I would like to receive email from University of Queensland and learn about its other programs.' Below the main content, there is an 'About this course' section with a 'See more' link. On the right side, a table provides course details:

Length:	8 weeks
Effort:	4 hours per week
Price:	FREE Add a Verified Certificate for \$99
Institution:	UQx

Figure 2: Topics covered in a MOOC course

Week 1	INTRODUCTION TO THE COURSE
Week 2	INTRODUCTION TO SENTENCES
Week 3	INTRODUCTION TO VERBS
Week 4	INTRODUCTION TO NOUNS AND PRONOUNS
Week 5	INTRODUCTION TO ADJECTIVES AND DETERMINERS
Week 6	INTRODUCTION TO ADVERBS AND CONJUNCTIONS
Week 7	INTRODUCTION TO PREPOSITIONS AND PARAGRAPHS
Week 8	INTRODUCTION TO PUNCTUATION

Data Collection and Analysis

In order to explore student experiences learning in this blended course, a focus group was conducted with six students during one of weekly class sessions after the MOOC course ended. The focus group was conducted during the outside class periods. Students were informed that the focus group was interested in their feedback on this blended course. The focus group was audio recorded and transcribed for later analysis. Later in the semester, students were asked to write reflection journal, which designed some questions by the researchers to further explore their learning process and themes that emerged from all participants.

Qualitative data analysis for this study involved the constant comparative method (Strauss & Corbin, 1988) and development of case studies (Yin, 2003). During the initial stage, the transcripts of focus group and students' reflection journal underwent line-by-line coding in order to establish patterns related to students' learning process and perceptions of this blended writing course. These overarching patterns were triangulated (Strauss & Corbin, 1998) with researchers' perspectives as the course instructor. During this interactive process, the researchers met twice a month to discuss the emergent patterns and observed classroom, refined patterns, and exchanged ideas.

Results and Discussion

Overall, student responded about this blended learning course was exciting. They stated MOOC's lecture videos as designed simply, presented a little boringly and fast. Also, they described MOOC as generally a little challenging for them because their English is not first language, especially the way they taught grammar terminology. As for the assignment, students described that they didn't have time to complete it due to the limited time and language barrier. Regarding the face-to-face traditional class, students noticed that they prefer to interact with the instructor in the traditional class. Students' feedbacks were collected in the following section.

Nature of Self-Paced Learning

Since none of students heard of MOOC before they enrolled English Writing and Style, they were excited about this kind of online learning community. Students considered that there were several advantages of the MOOC over a traditional course such as flexibility, convenience, and accessibility. After the instructor introduced the MOOC course, students knew that they had to arrange their time on weekly video lectures at their own pace in their spare time after class. As one student mentioned:

“As for the edX course, it was emphasized with British accents and also with the plenty of academic contents initially. In addition, it was about grammar, so I always needed to check out those meanings of terminology of grammar after the edX course.” (Student A)

“Because I am interested in learning English, I think that I would like to keep trying the edX course. Also, I like the way watch video lectures if I am available.” (Student C)

Students agreed that MOOC course is novel but a little challenging since it was taught in English. Some materials were too easy, but some were pretty difficult. Students mentioned that the first four weeks materials were quite easy, including verbs, nouns and pronouns, and sentences patterns. However, the assignment needed to take a long time to complete it. They didn't have extra time to write this assignment because they also read assigned reading and homework in the traditional face-to-face class.

“Well, there were the four homework at the beginning....as you had time, We would positively try to finish the homework because of the motivation that we might get some the feedback from the professor. Actually, we think that I would like try that if we have time” (Focus Group B)

Local vs Global Learning Communities

Some students participated regularly in the English Writing and Style MOOC to complete quizzes and exercises; however, edX discussion forums and assignments were the most challenging practices for students to participate actively. As mentioned earlier, students reported that time constraints and language barrier as the reasons for not engaging in the MOOC course. Instead, the instructor asked them to use checklist to check their learning process and write the reflection journal regularly. In addition, they tended to ask questions with the instructor or classmates in the face-to-face class. One student described that no one reply her question in the discussion forum when she posted a question in the MOOC course. This student is an active and hard-working student. She described that “I was okay as it showed on by subtitles because I could repeat it.” She also mentioned other problems.

“As for the edX course, it was emphasized with British accents and also with the plenty of academic contents initially. In addition, it was about grammar, so I always needed to check out those meanings of terminology of grammar after the MOOC course.” (Student A)

This student's positive feedback on MOOC course revealed that she could take the challenges of learning new MOOC materials in English. She enjoyed this kind of learning and also tried to look for some other MOOC courses related to English learning as her self-study courses to improve her English.

Student Perception of the Instructors

Students reviewed both instructors on the MOOC course and face-to-face class in their reflection paper. Quite a few students perceived the MOOC instructors (at least three) were less humorous and interactive. Sometimes instructors spoke too fast on the lecture videos. Students explained that "MOOC teachers expressed their ideas in a very complex way, and sometime we confused by their explanation." They tried to email the instructors about questions, but the MOOC instructors or assistants did not reply to the students. On the other hand, students pointed out that "*the MOOC instructors were very experienced and professional, but they looked very serious in some way. They did not tell a joke in front of class.*" (Focus Group B)

In contrast, students regarded class instructor's role in the face-to-face class as a responsible facilitator. They described the instructor as arrange their learning tasks on schedule in the MOOC, explaining reminding students to complete their in class exercise and MOOC exercises and checking their learning process every week. In the focus group, one student reported:

"I think that teacher could explain some useful sections of edX course instead of learning those uselessly difficult words. As we learned edX course, we often click on that videos many times because there is no handout for that. Even though the instructor always reminded us to complete our homework, we sometimes needed teacher's more explanations in class."

Another student also commented about this issue:

"After we have done the exercises, we can discuss them together then we will find out the final answer. I think that we could try to give them our explanations for each question. Also, there were some questions without the correct answers so the classmates and I had no idea to know if we really get the correct answers or not. If teacher could spend time elaborate about the question and discussed in class, that would be better for us."

As noted above, students reflected that the class instructor still played an important role in organizing and facilitating learning process, especially in the MOOC course. Students understood the flexibility and accessibility of MOOC courses; however, they would appreciate the "real" instructor to solve problems and suggest that the instructor needed to support them to figure out some challenging exercises in the MOOC course. They were more likely to enjoy interacting with instructors in the traditional face-to-face class.

Conclusion and recommendation

Recently, many universities are encouraged to establish MOOCs in Taiwan. The current study investigated a case study of a blended undergraduate course to integrate a MOOC into the curriculum and course. The instructor introduced edX Writing 101-English Writing and Style in the freshman English composition class. Forty students participated in this blended writing course. While these numbers are small to support conclusions on the efficacy of this blended course, students' experiences can provide a guideline of implementing a blended course in the future study.

From students' reflection journal and interviews, they agreed that MOOC course is very interesting but a little challenging since all materials and lectures were taught in English. When it came to mentioning materials, students reported that some were too easy, but some were pretty difficult. Students also commented that the first four weeks materials were quite easy, including verbs, nouns and pronouns, and sentences patterns. However, the loading for the assignment was very heavy and needed to take a long time to complete it. They didn't have extra time to write the assignment because they also read assigned reading and homework in the traditional face-to-face class. The finding supported Samuels' statement (2014) that he claimed that instructors still need to use actual class time to help students to engage in a MOOC course in a critical and creative fashion. Moreover, students' positive feedback on this MOOC course revealed that they could accept this kind of global learning community and were willing to take the challenges of learning new MOOC materials in English. Some enjoyed this kind of learning and also tried to look for some other MOOC courses related to English learning as their her self-study courses to improve their English. Finally, drawing on the findings of earlier studies (Firmin, et al, 2014; Mehaffy, 2012), the researchers believe that students would spend more time on engaging the MOOC course and then they would understand the significant role of autonomy in language learning.

When compared to the instructors between the MOOC course and face-to-face traditional class, students reviewed both instructors were different in terms of teaching style and interaction. Quite a few students perceived the MOOC instructors (at least three) were less humorous and interactive. Sometimes instructors spoke too fast on the lecture videos. Students explained that "MOOC teachers expressed their ideas in a very complex way, and sometime we confused by their explanations." They tried to email the instructors about questions, but the MOOC instructors or assistants did not give any feedbacks to the students. Some students reflected that the class instructor is important to organize and facilitate the learning process, especially in the MOOC course. Students understood the flexibility and accessibility of MOOC courses; however, they would appreciate the "real" instructor to solve problems and suggest that the instructor needed to support them to figure out some challenging exercises in the MOOC course. They were more likely to enjoy interacting with instructors in the traditional face-to-face class.

Recommendation

The research suggests that additional investigation could be conducted into the role of online and other learning resources can play a key part in increasing persistence of effort to improve students' learning outcomes for different student populations such as Japanese or Korean. For non-English native learners, it takes efforts to practice the listening comprehension and writing proficiency. Teachers should prepare related MOOC materials to enhance students' learning outcomes and introduce key concepts before taking a MOOC course. Moreover, teachers should offer an incentive to encourage students' more engagements and persistence when participating in a MOOC course.



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Active Compassion: Empowering Buddhist Nuns through STEM Education

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Abstract

This study advocates tertiary Science, Technology, Engineering, and Mathematics (STEM) education for Buddhist nuns in the Himalayan Region and links it to international initiatives to advance gender equity and equality, as well as women's empowerment. It examines the perspective of His Holiness the Dalai Lama on science education for monastics and advances an interdisciplinary perspective on Buddhist and Western scientific or secular education. Current opportunities for Buddhist nuns to receive tertiary education in the STEM fields are explored as well as the evolving roles and perspectives of Buddhist nuns in the twenty-first century. This study advances the idea that nuns empowered with STEM expertise can be significant actors, honoring their monastic vows to care for sentient beings, through leadership roles in sustainable development and infrastructure projects.

Keywords: STEM education, Buddhist nuns, women's empowerment, gender equality, sustainable development

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Introduction

In 2005, Buddhist scholar Elizabeth J. Harris asked, “What is the challenge or model that Buddhist women should express to society through their lives and practice?” (p. 275). For the past 2,500 years, Buddhist nuns have selflessly attended to a range of religious and secular functions in Buddhist-run schools, orphanages, and medical clinics. Today more than 160,000 Buddhist nuns worldwide (Karma, 2010) work, in all its multiplicity, as a manifestation of their monastic vows to alleviate the suffering of sentient beings and to engage in *active compassion*, a core Buddhist practice that involves feeling compassion and acting on it. Yet, the contributions Buddhist nuns have made to Buddhism largely go unacknowledged within their religious and secular communities, which all too often regard women and Buddhist nuns as second-class citizens. While there are well-publicized international imperatives advancing education for women and girls in Science, Technology, Education, and Mathematics (STEM) fields, rarely is STEM education linked with empowering Buddhist nuns. This study explores STEM education in the context of expanding postsecondary or tertiary educational opportunities for Buddhist nuns and preparing Buddhist nuns to engage in leadership roles in sustainable development projects, particularly in the Himalayan Region. This study examines STEM educational opportunities for women and girls in Buddhist institutions, and explores the question: What agency could nuns advance through their humanitarian work if they could gain tertiary knowledge and experience in the STEM fields?

This study advances all levels of teaching and learning, particularly in tertiary education, for Buddhist nuns and novices in STEM fields. It regards education as a basic human need and concurs with Karma Leshe Tsomo, one of the earliest and forthright advocates of the education of Tibetan Buddhist nuns, that equitable educational opportunities for women is a human rights issue (Haas, 2013). This study regards STEM education as a kind of transformative education devoted to relieving material and social suffering in the world. More specifically, it advances STEM education that helps women and girls to achieve their spiritual goals, develop their identities with greater latitude, and prepare them with requisite scientific knowledge in STEM fields for leadership roles, not just in science education but also in infrastructure and sustainability projects.

This cross-cultural exploratory and experimental study is firmly rooted in international initiatives to advance women’s rights and empowerment. It explores the Dalai Lama’s perspective on Western, scientific curriculum and pedagogy within the monastic community. It provides an interdisciplinary justification and pedagogical framework that advances pragmatic approaches to STEM teaching and learning in Buddhist contexts. It regards STEM education as instrumental in the twenty-first century in empowering Buddhist nuns as significant moral and ethical actors in fulfilling their vows to improve the spiritual and material conditions for all sentient beings. It also acknowledges the potential of STEM education to broaden and enrich the secular curriculum in Buddhist schools. Moreover, this study links STEM education in Buddhist contexts with sustainable development initiatives, which strive to improve the quality of life and education for women and girls, and to address issues of social justice, poverty, and human suffering in their communities in ways that, as the Buddhists might say, are non-harming to the environment. Further, this study is

predicated on the idea that women's equity, equality, and empowerment can be advanced by preparing Buddhist nuns for leadership roles that require knowledge and experience in STEM fields. in infrastructure and sustainable development projects. Moreover, these educational initiatives engage Buddhist women in addressing the "business as usual" corruption and fraud routinely associated with sustainable development and infrastructure projects in the Himalayan Region and recognize the untapped potential of Buddhist nuns as major catalysts of transformative sociocultural change.

Dalai Lama's Support of STEM Education for Buddhist Monastics

Nothing in core Buddhist teachings excludes or restricts women from educational opportunities (Gross, 1993, 2007; Mon, 2015), and His Holiness the Dalai Lama has taken deliberate and progressive steps toward modernization by supporting secular, or Western scientific education, in monastic schools. He has long held a personal interest in science and admitted that under different circumstances he likely would have been an engineer (Singer & Ricard, 2015). His commitment to science education is reflected in his views before 1959, the year he fled Tibet and entered India in exile, when

It was clear to me and others in the country that one of the underlying causes for Tibet's political tragedy was its failure to open itself to modernization. As soon as we arrived in India, we set up Tibetan schools for refugee children with a modern curriculum, which included scientific education for the first time. By then I had come to recognize that the essence of modernization lies in the introduction of modern education, and at the heart of modern education there must be a command of science and technology. My personal commitment to this educational project has led me to encourage even the monastic colleges, whose primary role is to teach classical Buddhist thought, to introduce science into their curriculum. (Dalai Lama, 2005b, p. 3)

"Not only have I sought to grasp specific scientific ideas," the Dalai Lama observed, "but have also attempted to explore the wider implications of the new advances in human knowledge and technological power brought about through science" (Dalai Lama, 2005c). Further, demonstrating his commitment to secular or scientific education, the Dalai Lama writes,

Seeing the tremendous importance of science and recognizing its inevitable dominance in the modern world fundamentally changed my attitude to it from curiosity to a kind of urgent engagement... I wanted to understand science because it gave me a new area to explore in my personal quest to understand the nature of reality. I also wanted to learn about it because I recognized in it a compelling way to communicate insights gleaned from my own spiritual tradition. (p. 9-10)

Through ongoing conversations initiated in the late twentieth century, the Dalai Lama has actively advanced reciprocal dialogue and forged ideological common ground between Western science and Buddhism. In the early twenty-first century, he famously asserted, "If science proves some belief of Buddhism wrong, then Buddhism will have to change" (Dalai Lama, 2005a, p. 1), a point clarified in the following passage:

If scientific analysis were conclusively to demonstrate certain claims in Buddhism to be false, then we must accept the findings of science and abandon those claims... the empirically verified insights of modern cosmology and astronomy must compel us now to modify, or in some cases reject, many aspects of traditional cosmology as found in ancient Buddhist texts. (Dalai Lama 2005a, p. 3)

The Dalai Lama explains that like science, religion relies on empirical methods of critical investigation, the unbiased findings through observed reality and rational analysis (Yee, 2009; Tibet-Institut Rikon, 2016) that include observation and inference as well as experimental repeatability and verification (Dalai Lama, 2005b, 2005c). Significantly, the Dalai Lama (2005b, p. 208) regards science and spirituality as aspects of one reality as well as mutual sources of knowledge and well-being. Just as “modern science can benefit from Buddhist perspectives” (www.scienceformonks.org), scientific insights have enriched his Buddhist worldview, from subatomic particles that correspond to Buddha’s teachings on the dynamic and impermanent nature of the universe and the human genome, a manifestation of the human equality (Dalai Lama, 2005b). With “wisdom grounded in and tempered by compassion” (Dalai Lama, 2005b, p. 208), religion helps to address the formidable moral dilemmas posed by science. The Dalai Lama (2005b) said, “My plea is that we bring our spirituality...to bear upon...science and the directions of technology in human society. In essence, science and spirituality, though differing in their approaches, share the same end, which is the betterment of humanity” (p. 208). Recognizing the potential of both religious and secular education to be emancipatory, he finds that scientists, like monastics, have a “special responsibility, a moral responsibility” to serve the interests of humanity in the best possible ways (Dalai Lama, 2005b, p. 207).

Among his support of more recent reforms in Buddhist education, in 1995 the Dalai Lama sent a message to the first annual international conference on Buddhist nuns declaring the nuns’ right to religious and secular education (Vonnak, 2014). In 1998, the Dalai Lama prompted educational reforms to the Buddhist curriculum, which in some cases had not changed for centuries (Yee, 2009; Tibet-Institut Rikon, 2016). The Dalai Lama stated, “The Dharma [Buddhist teaching] is at a critical juncture. You might think that it would be good to spend the rest of your life as a hermit, but we also need qualified people to teach others” (Choegyal, 2014). Amid “outmoded scientific pronouncements or social norms” (Gross, 1993, p. 39), Buddhist academic centers began modernizing their curricula by including secular education. By 2000, “Initial resistance from some senior monks and fears of diluting traditional studies in monasteries have gradually eased” (Yee, 2009) as formal scientific education was integrated into the curriculum of many Buddhist monastic academic centers.

One measure of the Dalai Lama’s commitment to science education is indicated by his financial support. In 2009, the Dalai Lama provided \$150,000 for the Mind and Life Institute, a neuroscience research center at Stanford University that seeks to establish connections “between the empiricism of contemporary scientific inquiry and the contemplative, compassion-based practices of Buddhism” (Singer & Ricard, 2015). In 2012, the Dalai Lama received the \$1.7 million-dollar Templeton Prize. While he donated \$1.5 million dollars to the Save the Children Fund, he also appropriated \$200,000 in prize money to the Mind and Life Institute, which for

decades has promoted collaborations between science and spirituality. Further, he gave approximately \$75,000 to support the science education of Tibetan monks (but not nuns), explaining, “we have been teaching science to selected monk students and are now expanding that effort by introducing modern science within the general monastic education curriculum” (The Dalai Lama, 2012).

No other spiritual leader of this era has approximated the Dalai Lama’s groundbreaking pronouncements in support of science as well as the sense of urgency to cultivate the interdisciplinary symbiosis of science and religion to deepen human knowledge and solve global sustainability issues. He has provided a “vision and directive for the exiled Tibetan monastic community in India to engage science, and to initiate science trainings that would eventually support new learning at the frontiers of science and Buddhism” (www.scienceformonks.org). Moreover, he has clearly conveyed his support of secular education in Buddhist monastic institutions as well as the need for mendicants to apply science education in local and global community contexts (Jamyang Foundation, 2015). It is clear that the Dalai Lama supports secular education within Buddhist institutions, yet, what have the Dalai Lama’s educational reforms meant for women and girls in the Himalayan region?

Status of Educational Opportunities for Buddhist Nuns in the Himalayan Region

More than ever before, Buddhist nuns have greater access to secular education (Karma, 2004) and are earning university degrees (LeVine, 2004; Vonnak, 2014). In addition to performing their traditional roles in the sangha and lay community, nuns increasingly utilize their advanced educational degrees by providing health care as well as P-16 secular and religious education in their communities. Once educated, the status of nuns noticeably improves in the sangha and the secular community (Jamyang Foundation, 2015). While monks traditionally garner more respect than nuns, educated nuns tend to be more respected than uneducated nuns in their communities (Haas, 2013). Similarly, Cheng (2007) found that compared to less educated nuns, educated nuns tend to have greater social prestige and are better treated by the laity. In fact, while the laity traditionally prefers and requests the services of monks as opposed to nuns, an unintended consequence is that it affords nuns comparatively more time to devote to their studies (Cheng, 2007).

Despite these positive educational outcomes, the majority of Buddhist nuns in the Himalayan region are relatively deprived, receiving only a rudimentary education with little or no opportunity to continue in higher education or receive instruction at any level in the STEM fields. There is a perennial shortage of qualified religious and secular teachers (Gross, 2006), particularly in the most cloistered and remote areas of the Himalayan region. Compared to Buddhist monks, nuns have precious few educational prospects and spiritual leadership roles, both circumstances linked to pervasive and historical discrimination against females in Himalayan cultures. While Sexism and gender bias are at the heart of presumptions that women do not want to study in the STEM fields, nuns are stigmatized as less worthy than monks of receiving an education, in part because females are often perceived as inferior students. It is not uncommon for science curricula and materials to be provided to monks, not nuns, or for the nuns to get the cast-off materials from monks when they get new materials (Cheng, 2007). Further, monks often receive substantially more financial support from the laity but also from governments that provide more financial aid to monestary schools for monks than for nuns (Cheng, 2007). Despite their hard

work and potential, by many measures the Buddhist nuns of the Himalayan region have been disenfranchised, denied “the support and respect that nourishes the highest aspirations of the Buddhist sangha” (Dinsmore, 2012).

This study identifies five programs that currently provide grass-roots, micro-level support of STEM education for Buddhist mendicants. The surveyed programs include “Science Meets Dharma” (SmD); learning opportunities offered by the Jamyang Foundation; the Emory-Tibet Science Initiative (ETSI); the Social Work and Research Centre (SWRC); and Science for Monks. These science education programs offer a wide variance of concentrations, motivations, goals, and strategies, and some of are not necessarily compatible with the approach this study advocates. For example, this study endorses empowering women through tertiary education, a model the SWRC, a non-sectarian program, fervently rejects.

While some programs are less well known others are world famous, such as the SWRC program and its founder Sanjit “Bunker” Roy, who conducted a popular TED talk in 2012 and National Public Radio interview in 2014 (Roy, 2015; Castonguay, 2009). Of these programs, the SWRC program provides the most statistical data indicating the success of its programs, for example, in terms of the number of schools it operates in India, girls it educates, and women it has trained as solar engineers. The target demographic varies from program to program. For example, the SWRC has found it more productive to center on recruiting middle-aged grandmothers. Other programs tend to cater primarily to young adult monks (represented in photographs on the websites of these educational programs), such as the Science for Monks program, focusing exclusively on science education for monks not nuns. While some programs claim that nuns are eligible, it appears that in reality few nuns participate in most monastic science education programs, due in no small measure to cultural influences in the male-dominated sangha if not Himalayan culture in general. The SmD program requires a prerequisite “Nun Empowerment” course, designed to help nuns to develop a more self-confident self-image (tibet,institut.ch) and overcome their adherence to patriarchy prior to studying science education.

There are significant pedagogical distinctions in these programs, involving factors, such as teacher- or student-directed learning and experiential learning experiences. Some programs emphasize the importance of immersive educational and cultural experiences within their science educational programs, involving teacher exchanges in which Western teachers teach in Buddhist institutions in Asia, while others involve Asian mendicant students and teachers visiting Europe and the U.S. Some programs were developed under the auspices of the Dalai Lama, and some were not. Interestingly, of the five programs surveyed, it is the only one featured in the 2015 book *Caring Economics, Conversations on Altruism and Compassion, Between Scientists, Economists, and the Dalai Lama*. Moreover, some programs appear to have been designed primarily if not exclusively by Westerners, whereas the design of other programs seems more inclusive. The SmD program is distinct in that its goals include creating autonomous science education programs, designed and taught by monastics, that eventually exist without SmD oversight. The duration of some programs ranges from several days to years. Of these five programs, the SWRC can be considered the most unorthodox in that it does not employ university-educated teachers or conventional teaching strategies, nor is it designed exclusively for Buddhist mendicants. The SWRC weighs in as a significant educational model based on the

Dalai Lama's endorsement, its global celebrity, and its measurable successes in empowering women and implementing transformative social change. Yet, of the five programs, the SmD and ETSI models may be the most progressive and applicable for developing the kind of tertiary education for Buddhist nuns in STEM fields that this study endorses.

“Twenty-First Century Nuns”

Based on fieldwork I conducted in Kathmandu, Nepal, in 2014, Buddhist nuns are gaining greater access to education and are earning advanced degrees, yet tertiary education in the STEM fields is widely unavailable. While the nuns that I interviewed focused intently on the various dimensions of their own spiritual development, they seemed keenly aware that it is in their best interests to study religious and secular subjects to achieve their monastic and human potential. They are increasingly supportive of women's teaching and learning and are evolving into new models of female monastic leadership, confirming Karma's claim, “As nuns have become better educated, they have developed new attitudes towards their roles and their potential” (Karma, 2004, p. 357). These nuns call each other “Twenty-first century nuns,” aware of how they differ from their predecessors in terms of their evolving understandings about and attitudes toward, for example, “ungenderizing” (Gross, 2016) social organizations, disciplinary knowledge, professions, and Buddhist teachings. Further, they are changing in terms of increasingly valuing secular educational studies and engaging these subjects, as well as selfless service to local and global communities, in ways that are more in keeping with core Buddhist teachings (Gross, 2006, p. 361). Their views seem compatible with predictions that, “Buddhist women will lead more and more and will create new places for themselves under the umbrella of their religion...in Buddhist Asia” (Barnes, 1996, p. 287) and “Buddhists will take up issues that have not been central in earlier times and will think about them in Buddhist ways” (Gross and Ruether, 2001, p. 208). For centuries, Buddhist nuns supported the sangha largely through subsistence farming, but by many measures twenty-first century Buddhist nuns in the Himalayan region are embracing seismic changes in their monastic lives and work.

Sustainable Development and STEM Educational Initiatives for Women

Sustainable development is defined as “Development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development, 1987, p. 43). The major challenges of sustainable development include but are not limited to natural disaster resiliency, energy consumption, water management, sanitation, climate change, poverty, and social exclusion. Sustainable development projects involve social and economic sectors, including housing, health, education, human rights, and cultural heritage as well as agriculture, irrigation, commerce, industry, tourism, and finance. Sustainable development projects involve typically infrastructure sectors, including electricity, communications, transportation, water, and sanitation (Government of Nepal National Planning Commission, 2015).

While tertiary STEM education for Buddhist nuns can help nuns to fulfill their monastic vows and live the Eightfold Path, it also supports the international women's educational and sustainable development initiatives advanced by scores of

governmental, international governmental, and nonprofit organizations. For example, this tertiary STEM education program is compatible with the Education for Sustainable Development (ESD) program, part of UNESCO's strategy for the Decade (2005-2014), which defines education for sustainable development as, "a process of learning how to make decisions that consider the long-term future of the economy, ecology and equity of all communities. Building the capacity for such futures-oriented development is a key task of education" (UNESCO, n.d.). Additionally, this STEM education program advances the Sustainable Development Goals unanimously approved by the United Nations in September of 2015. It is also compatible with the women's empowerment goals of the 2005-2014 Decade of Education for Sustainable Development (DESD), the international women's educational initiatives advanced by the Global Fund for Women, UNICEF, the United Nations Girls' Education Initiative, Women's Empowerment International, Women's Empowerment International Foundation, Education International, and the Center for Women's Leadership Initiatives.

Corruption in Sustainable Development and Infrastructure Projects

Sustainable development and infrastructure projects seek to improve the quality of life in communities, yet too often these projects are mired in corruption. In 2003, the World Bank reported that, generally speaking, such projects are fraught with fiduciary risks, including bribery, theft, fraud, breaking the law, lack of accountability, and lack of transparency. Sarah Chayes' book *Thieves of State; Why Corruption Threatens Global Security* (2015) explores corruption, often linked to global sustainable development and infrastructure projects. In every case, Chayes concludes, the scourge of corruption is the cause not an effect of global instability. While this study endorses Chayes' (2015) assertion that ending such corruption requires thinking, "more creatively in terms of innovative, broad-based, nonviolent citizens' movements" (Chayes, 2015, p. 196), it advocates strategies to counteract corruption based on a Buddhist conception of the Noble Eightfold Path, which includes practicing right speech, action, livelihood, effort, mindfulness, (Bhikkhu, 2007, p. 2737). Living the Eightfold Path corresponds to individual and social morality centered on causing no harm and working to benefit all sentient beings (Gross, 1993). Further, this study is also predicated upon a Buddhist understanding of corruption as a manifestation of greed, hatred, and delusion, the root causes of "all manner of suffering and unhappiness for ourselves and others" that impede individuals from liberation and transformation (<http://www.sunyatacentre.org/the-three-poisons/>). The Dalai Lama is quoted as saying that a positive action requires the development of a positive vision, which this study supports in terms of tertiary STEM educational opportunities for Buddhist nuns.

Development Projects and Chronic Corruption in Kathmandu, Nepal

For many residents of Kathmandu, it is a tough place to live in the best of times considering Nepal is one of the poorest and most corrupt Asian countries. In 2014 the International Corruption Perceptions Index rated Nepal 126 out of 175 countries, indicating it as one of the most corrupt (International Corruption Perceptions Index, 2014). The Nepalese government, described as "unbelievably corrupt, slow-moving and frustrating" (Wolfson, 2015), is plagued by poor governance, ongoing infighting of the deeply divided Nepali government, and patronage networks that keep the state

dysfunctional by demand (International Crisis Group, 2010). In fact, in March of 2015, the government and aid agencies of the United Kingdom threatened to cut aid, totaling approximately \$132 million, to Nepal unless it agreed to reforms to constrain its rampant corruption (Bhagat, 2015; Burke & Rauniyar, 2015; Sharma, 2015).

Even before the devastating earthquake on April 25, 2015, the aquatic system of the Kathmandu Valley was heavily polluted with industrial and domestic waste and the city of Kathmandu had a chronic water crisis, namely a shortage of clean surface water (Karn and Harada, 2006). The water and sanitation treatment facilities in Kathmandu were grossly inadequate in this overpopulated city exceeding one million residents. Every day one hundred and fifty tons of waste, almost half of it untreated, was dumped into its aquatic systems (Suwal, 2015; Pandey, 2006). Water essentially went straight from the river to the tap. Residents were required to pay a substantial monthly fee for running water, but in most households the taps ran dry at least ten days per month. The situation required residents to fetch water from community taps, a task relegated almost exclusively to young girls and women. Some residents purchased water delivered by water trucks and stored in cisterns on their properties. Yet, not even supplied water was potable, since the surface and ground water of the Kathmandu Valley was heavily polluted by natural and anthropogenic contaminations (Suwal, 2015). In fact, a study of the water quality in Kathmandu found that Coliform bacteria contaminated 36% of samples from treated water and 80% of tap water samples (Koju, Prasai, Shrestha, and Raut, 2014). Kathmandu suffers from persistent waterborne diseases and a significant number of its children die each year from water contamination (Suwal, 2015).

Under normal conditions more than one billion dollars in foreign aid flow into Nepal each year (T.B., 2011), but profiteering from humanitarian aid is easiest during a crisis, like the earthquake of 2015. While “The impact of natural disasters is compounded by corruption” (Chayes, 2015, p. 186), “It is at the moment that a crisis becomes most evident that external finances flow most easily” (Bayart, Ellis, and Hibou as cited in Chayes, 2015, p. 186). The Himalayan region is earthquake-prone, and following the earthquake on April 25, 2015, it was business as usual for “the corrupt government machinery” (Bhagat, 2015). The Nepalese government reportedly provided a weak relief response, seized much of the foreign humanitarian assistance, and centralized government control over the distribution of a significant portion of aid funds. In Nepal, corruption on all levels of the government is legion. Tragically, the corruption associated with entrenched kleptocratic networks compounded the earthquake’s devastation, prompting one survivor to lament, “Our own people have destroyed Kathmandu” (Wolfson 2015).

Conclusions

This study, advocating tertiary STEM field teaching and learning opportunities for Buddhist nuns, offers a strategic vision for promoting gender equity and equality as well as women’s empowerment in sustainable development and infrastructure projects. There is nothing in core Buddhist teachings indicates STEM education is incompatible with nun’s vows or the science education initiatives endorsed by the Dalai Lama, who since issuing a progressive imperative in 1999 has actively promoted secular and science-based education among the monastic community (scienceformonks.org; Science Meets Dharma, 2015). This study endorses tertiary

education in STEM fields, not just for Tibetan but all Buddhist nuns, particularly in the Himalayan region, one of the most impoverished areas of the world. This study underscores the value of secular and scientific education in the sangha and Buddhist institutions, as well as STEM education that integrates Buddhist and Western knowledge. This study found the historical religious and cultural marginalization of nuns persists in the context of science education programs and resources, the lion's share of which supports almost exclusively science education for monks, not nuns. This study supports the evolution of more gender inclusive Buddhist institutions and leadership as it endorses using Buddhist moral and ethical guidance to address the endemic fraud and corruption associated with sustainable development and infrastructure projects. Providing STEM tertiary education and technical expertise can produce tangible benefits, namely empowering women with the knowledge and experience to lead in sustainable development and infrastructure projects as well as to increase the participation of women and girls in the public sphere and critical decision-making positions in local and global communities.

Education will be an increasingly powerful ally of Buddhist nuns in the twenty-first century. These STEM initiatives afford Buddhist nuns opportunities to honor their monastic vows to care for sentient beings and to engage the world in disciplinary provinces that have needlessly been inaccessible to women. These initiatives could herald a transformation of Buddhist female monastic educational traditions and humanitarian work as well as a revalorization of core Buddhist teachings. Supporting tertiary STEM educational initiatives for Buddhist nuns, as well as cultivating nuns as humanitarian leaders practicing active compassion in the context of sustainable development projects, is a wise utilization of moral and ethical women, an untapped resource who can do much to transform the Himalayan Region and by extension the world.

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Leading Change Together: A Pitch for Education, Community Engagement, Social Justice, and Sustainable Development

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Abstract

Leading Change Together is the powerful idea of impact behind the mission of Global Tassels, a registered 501(c)3 international organization focused on alleviating poverty in the most severely-impacted communities around the world. Global Tassels' signature mission is to provide access to a college education with the goal of permanently empowering the sustainable development of such local communities. Our transformational model is derived from a chain of transactions, beginning with our students' passion for change, and culminating in the full commitment of their local community organizations to provide sustainable, poverty-reduction programs for the benefit of the people they serve.

The importance of college and university involvement, investment and participation are highlighted with individuals and community organizations from Haiti, Colombia, Ivory Coast, India, Guatemala and the Philippines. We believe that providing free undergraduate college education to the Student-Leaders is a commitment that colleges and universities must make—a positive and sustainable educational initiative and a form of social justice.

Our goal is to have students involved in academic leadership, openness to college-ready activities and an action oriented toward community engagement. These interactions will play roles in developing and supporting a new generation of talents around the world. Thus, our organizing principles of education, empowerment and engagement—taken together—comprise the means to transform daily lives for the residents of severely impacted communities around the worlds

Keywords: social justice, poverty, community engagement, sustainable development, Student-Leaders

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Education with a Purpose

One can argue that education is known as the core of life's livelihood and longevity. It [education] has been the backbone of any individual's social, economic, and political identities. It is the only gift that keeps on giving when it is attained and used as a way to contribute back to our society. But, education has not been in the frontline of opportunity for many. Historically, education has played a role on reimagining a child's future but education has also been an age-old problem for millions of disadvantaged families around the world. Access to education is not as easy as many would think. For example, in a society where there are political instabilities, those who govern can indirectly reject education for millions of children. Places where war and conflict can displace families from where they live which in essence takes away children's chances to receive education for a very long time. UNICEF (2014) reminds us that, "the world's low-income countries remain home to concentrations of poverty and disadvantage, but many impoverished children live in middle-income countries – countries plagued with large income inequalities."

In addition, where people live in this world can have a major influence on access, affordability, and the quality of learning. Millions of people are living in dire communities around the world. Some are in remote places that prevent them from having the prominent access to go to school. In many slum communities, where poverty is highly visible, children are often cheated from getting a safe and affordable learning environment. According to, Better Care Network, "research findings reveal that poverty is a major underlying cause of children being received into institutional care and that such reception into care is a costly, inappropriate, and often harmful response to adverse economic circumstances" (Greenberg & Williamson, 2010). Having an education is key to a successful future but the truth is an education with a purpose is a fruitful manifestation of success if it is pass from one generation to the next.

What do we mean? Education must start from when a child is at the primary stages of childhood development all the way to his or her adult life. It is an algorithm whereas if invested correctly, the level of success for that particular child is known to be higher than those who are taken out of the educational pathway during these years. An education with a purpose comes with a passion, not just for the individual but also for others. Herein, the "purpose" does not have to be specific but it must be an act of kindness and a form of giving back where it can positively impact people's livelihood and surrounding environment.

Background on Project

In 2014, we were both involved in the founding of a new organization with hopes to take on the challenges on access to education for those students living in poverty areas around the world. We called it, Global Tassels¹ [GT in short]. The transformational model is derived from a chain of transactions, beginning with our future students' passion for

¹ NOTE: For more information about Global Tassels, please visit the organization's official website www.globaltassels.org.

change, and culminating in the full commitment of their local community organizations to provide sustainable poverty-reduction programs to benefit the locals they serve. We had the opportunity to lead our operations and capacity building work in countries like India, The Philippines, Haiti, Côte d'Ivoire, Colombia, Guatemala, and Kenya. But something striking happened in the summer of 2015, during our first visit to Kenya. The trip to Wangige at the Caroline Mungai Foundation Orphanage Home and School was a visit of a lifetime and a life changing one. It was the most inspiring and eye opening experience where everything validated our true passion in education and community work – hence the work we do in GT.

To us, the problem became clear. After visiting a few orphanages in cities like New Delhi, Port-Au-Prince, Wangige, or those in the rural areas of Guatemala City – there seems to be one similar issue with the young adolescents living in orphanages. We found that those who soon will turn 16-18 years of age are deemed to be “aged-out”– to some countries when an orphan becomes an adult, their time at the home will end and they are required in many ways to start a new “adult” life hoping that they have acquired enough skills not just as an individual but for most, to start a family. During our visits, we found it interesting that most of the founders of these homes did not have any strategic plans to address this. For us, we found it as a concern but no one seems to “figure it out” as of yet. We are quite aware of the different situations these orphanages are in and how limited their budgets are. SOS Villages (2008) states,

“The best place for children’s emotional and physical well-being is within a family, where they can live their childhood to the fullest and prepare for a future where they can realize their potential. However, the number of children that do not grow up in a caring family environment is increasing. Their deteriorating living conditions and the lack of support extended to them are cause for great concern. The international community, governments, civil society, and local communities have a duty to support the world’s most vulnerable children and their families, to ensure that children become strong, emotionally stable and self reliant.”

The leaderships of orphanages are often members of the community church. Some are individuals who see the needs of their own neighborhoods and some are individuals in the diaspora who just want to make their home country a better place. In fact, I learned to understand how hard it is for them to take ownership of such responsibilities that would require a lifetime commitment. Their daily operations ranges from maintaining the facilities to making sure the kids have the resources they have for school; from hiring trustable staff who will ultimately give their heart out to work as parents of the kids to making decision on whether or not to admit another child to the home; from keeping the health and safety of the children to desperately finding support from individual or corporations who are willing to give financial contributions. In fact, this is the reason why we also implemented PROJECT KIN (Kids In Need), a project focus on the needs of the orphanage. If we start the intervention early, we feel that we can work and volunteer with the different orphanages contribute to the success of the child. In fact, “all evidence

suggests that direct-care volunteering does not reduce the risks of orphanages, but heightens them” (IAIM, 2015).

During our visitations, our partners ventured on with some dialogues that perhaps young adult orphans may qualify for vocational trainings and a number of kids might be equipped enough with the right skill sets that would get them enrolled in a program like Global Tassels. However, that is not always the case. Without any pathway programs for these young adults to go to college, we are concerned that their future and vulnerabilities, they might end up in the black hole of poverty in the streets. The organization feels very strongly to impose our service work with organizations and educational institutions to assist them in some areas.

- (1) Strategic Planning: Without pursuing an internal strategic plan by the orphanage’s leadership we strongly believe that we would lose the very core mission and hard work of these orphanages around the world –a mission which is invested in the education of their children – and an investment that should be supported throughout the child’s higher education experience and thereafter. With our partners we plan to infuse the resources and training as early as possible. To provide activities which are focused on leadership development, good manners, skills and language trainings and so on.
- (2) Resource Support: Through our Good Will Projects and via GT Volunteer Corp, we hope to launch a program where we can serve the communities, home, local schools, and orphanages in our countries. This can range from building classrooms to assisting in beatification projects to provide new energy for kids by having a safe, healthy, and accessible learning environment. Our goal in the future is to maintain and enhance these mini projects to bigger one with hopes that it can grandfather into one of our Student Leader’s Project – a two-year project commitment geared to poverty reduction post graduation.
- (3) Policy Lobbying: We also want to be a member voice with the leadership of our partners. Therefore, we will continue working with them to promote and lobby for opportunities for their kids. For instance, we are currently working with local Universities in the cities where we work to think about scholarship programs for those kids with academic and leadership potentials. We also realize that government agencies do not fund orphanages, hence this why they exist. Orphanages became a call for action for the inconsistencies of government system, especially in the developing world. Over the years, they became the answer to many sets of complex problems. UNICEF plays a leading role with educational policies for children. They are the frontline for advocacies for instance when the Nepal Earthquake happened, it became apparent that there were no transparencies between the people and agencies. UNICEF (2015) states, “The issue then arises in having the developing world’s voice be heard, since they do not have the same resources to offer as the developed states. These states are able to use their resources to enact policies that favor their own interests rather than follow policies and suggestions of the developing world...” – as partners, we hope that we at Global Tassels can also be a voice to our partner organizations.

Wouldn't it be a tremendous assistance for these orphanages if they know that once their eldest kids complete secondary education that they have a safe haven? – *a safe haven in higher education which will qualify them to be more competitive in the job market.* Wouldn't it be only fair for public and private institutions in those communities to provide some funding and opportunities to these orphanages after they have invested to raise children out of the dangers of the streets? – *funding support to further the kids education to be responsible educated adults will be impactful.* Wouldn't the early financial supporters of these kids whether local or someone international be happier to know that the money they invested to raise these kids and to get them to become a better person are worth every penny because they have a future after living in the home? – *this is a gift that keeps on giving.*

Leading Change Together is the powerful idea of impact behind the mission of Global Tassels, we are a registered 501(c)3 international organization focused on alleviating poverty in the most severely- impacted communities around the world . Our signature mission is to provide access to college education with the goal of permanently empowering the sustainable development of such local communities.

Sustainable Development

At the end of 2015, the United Nations ended their 15-year global projects to combat poverty called Millennium Development Goals (MDGs), which started in 2000. The UN reported successful achievements and continued challenges to battle and eradicate extreme poverty. Because there are still a lot of work to be done, the MDGs transformed to the new Sustainable Development Goals (SDGs) which is a plan of action for another 15 years (2015-2030) for the UN, non-governmental organizations, governments, businesses, community organizations, and individuals to continue, implement, and achieve new goals, all 17 of them.

We believe that forming Global Tassels in 2014 and aligning its mission to serve, as one organization under the bigger umbrella of the SDGs, will provide us with the opportunity to contribute to a bigger purpose. Although there are many areas that we feel we can tap on in regards to the 17 areas, our central commitment is in Goal 4: Quality Education. Below are the exact target points of the new Sustainable Development Goals #4, *Ensuring inclusive and equitable quality education and promote lifelong learning opportunities for all:*²

TARGETS

4.1: By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes

4.2: By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education

² NOTE: For more information about the Sustainable Development Goals, please visit: www.sustainabledevelopment.un.org

- 4.3: By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university
- 4.4: By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship
- 4.5: By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations
- 4.6: By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy
- 4.7: By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development
- 4.a: Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all
- 4.b: By 2020, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes, in developed countries and other developing countries
- 4.c: By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States

As seen here, the goals can be viewed as a guide to many organizations like Global Tassels. It has an alignment to our mission in regards to education from the primary level to higher education. It has a focus on children, adolescents, and young adults. And moreover, the goals can be used to create a benchmark for measuring outcomes.

Social Justice

The connection between social justice and education is one that seeks to connect the two concepts in one common definition. Social justice finds, at its core, pillars of equity, access, and inclusion for all citizens. In our modern world, poor communities and those of color have suffered from the lack of these values. It is not enough to bring all members of society onto equal footing; rather, it is of utmost importance to get at the root cause of these inequities. Only then can social justice result in a citizenry poised to tackle the work that lays ahead of them. Education regarding social justice needs to include the analysis of multilevel components of oppression—the individual, cultural, and institutional (Boyle-Baise & Langford, 2004). By knowing the root causes of inequities at these levels, the specific biases and disconnects can be explored and resolved. Einfield and

Collins (2008) discovered that equality and empowerment were central themes when discussing social justice.

They noted that there was a range of attitudes regarding equality that spanned the continuum of a general belief in the presence of equal rights to understandings of the pervasive systemic inequality in society. Often, citizens' beliefs in their abilities to enact changes were challenged; thus, social justice education must also have provided students with the power and skills needed to be the change agents and champions of equality (Adams, 2007). If the goal is to educate citizens for social justice, then one must carefully examine how one shapes educational experiences to foster a sense of empowerment and commitment in students to work for social justice. The thirst for social justice cannot be slaked with just knowing where the problems lie; rather, it can be quenched with one sip of social action at a time. After a few sips, the nectar of social change can be fully realized.

Civic Engagement

Monard-Weissman (2003) states that a commitment to social justice involves an individual actively working toward equality for all society. How that work can be accomplished is not relegated to one route alone. There are several paths that can bring about social justice. These paths involve, among other work, advocacy, social and legal action, community organizing, and education (<http://animatingdemocracy.org/>). To be aware of the social injustices and then to be able to address those inequities requires individuals to witness the inequalities first-hand. These experiential education opportunities provide concrete and practical experiences that empower citizens with the realizations that they can make differences in the world (Einfield & Collins, 2008). They should also be a medium for pursuing democratic ideals of justice and equality in a pluralistic society (Hurtado, 2007). In this quest for parity, societal members have the agency to become civically engaged in their communities to improve the human condition. Thus, an engaged citizenry leads to the promotion of an open democracy (Curtis, 2012).

Civic engagement refers to the ways in which citizens can engage in the democratic process through civic, community, and political aspects of their lives (The Alliance for Strong Families and Communities, 2016). It also can result in learners' personal growth and provide the foundation needed to contribute to a more equitable and just society (Closson & Mullins Nelson, 2009). Previous research has revealed that the outcomes of civic engagement include the building of self-esteem and personal efficacy in individuals, as well as inducing social responsibility and civic mindedness (Kezar & Rhoads, 2001). By linking students' experiential education with a community, personal development and tolerance is fostered (Eyler & Giles, 1999). Civic engagement through collective problem solving can create lasting positive changes in communities (McGarvey, 2004). These skills and dispositions can prime citizens to meet their communities needs head on with specific projects and undertakings in mind. Thus, by working with community members, citizens gain multiple perspectives and multiple solutions to address the work at hand.

Civic Engagement & Social Justice

Civic engagement can be a structure for community-based learning that is collaborative in intent and sensitive to local needs (Boyle-Baise, 2002). It allows for citizens to understand local issues from differing perspectives, especially from those who may be marginalized or disenfranchised in society. When considering that individuals need to feel they have the agency to enact changes in their own communities, civic engagement can provide the vehicle by which social justice AND community action can both be addressed simultaneously. Education can provide learners with the knowledge and skills needed to develop such projects and social action (Comber, 2014). Through the lens of education, citizens can transform themselves from passive to active participants in the arena of social justice reform.

Global Tassels, Inc. provides post-secondary education to students living in impoverished circumstances who seek to improve the conditions of their communities through social action. This unique requirement allows the organization to identify future scholar leaders who seek to identify and address issues of need in the places where they live. The students enter into their schooling with a social justice project in mind that will be executed after they graduate from college. This focus on a project is identified as a key factor in a successful student experience. Through education, the skills, knowledge, and dispositions required to put this two-year project into action will be acquired by the student leader throughout the educational process. Moreover, the leader scholar will have opportunities to become engaged in the various communities through volunteerism, internships, and other forum both in the United States and in the countries where they live. These components of civic engagement will allow the scholar leader unique opportunities to address issues of social justice that are important to them and their communities. They will be able to put their theoretical learning into practice while being supported by Global Tassels throughout the entire educational experience. By working with one scholar at a time, Global Tassels impact is magnified in the work that each student leader is able to do within their communities. This model of education can manifest the goals put forth by the UN Sustainable Goal #4 and simultaneously fosters scholar leaders and builds human capacity in communities. These are important goals to achieve when ending poverty in these communities.

It is difficult to commit to social justice without a local affect in mind. There needs to be a focused outcome desired to address a specific issue. Citizens require the knowledge and practical experience to put their social action into play. Formal, informal, and practical education can provide these components to the learner. Post-secondary schooling, coupled with experiential education, can allow students to meld together grounded theoretical information and the hands-on constructs of an existing community action mechanism. An educational pathway that can allow such a supported construct can effectively teach learners WHY and HOW to enact change in their own communities. Such a pathway can achieve tangible and lasting results.

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The logo for 'iafor' is centered on the page. It consists of the lowercase letters 'iafor' in a light blue, sans-serif font. The text is enclosed within a circular graphic composed of two overlapping, semi-transparent arcs. The upper arc is a light blue color, and the lower arc is a light red color. The arcs are thick and have a soft, feathered edge, creating a sense of depth and movement around the central text.

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The Effectiveness of Authentic Material Application to Enhance EFL Students' Listening Comprehension

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Abstract

Up to now, there has been a variety of factors influencing on Thai EFL students who are learning English for their survival in the competitive societies, especially when Thailand becoming one of ASEAN Economic Community (AEC) members. One of the most influential factors is that Thai students still lack English communicative competence which is considered a key tool for communication. Listening, the most frequently used skill, plays a vital role in daily communication and seems to be the most problematic skill which needs urgent improvement. It is therefore, significant to prepare Thai EFL students for successful listening comprehension. In order to help them improve their listening comprehension skill more effectively in the real world, authentic listening materials are implemented in the English teaching class. This study aims at investigating the effectiveness of authentic material application to enhance EFL students' listening comprehension. The study was conducted with forty students who were studying in the Bilingual Program at a private school in Thailand. The instruments were pre-and post-tests which a dependent sample t-test was applied to test equality of means between the two-test scores. The finding indicates that the use of authentic listening materials has a positive effect and enhanced Thai EFL students' performances. Authentic materials enable them to interact with the real content and language used in the real world more efficiently. The finding of the study also implies that EFL teachers can promote their EFL students' listening ability by providing materials and activities that meet the needs of students' goals.

Keywords: Authentic Material, Bilingual Program, Listening Comprehension, EFL

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Introduction

In the 21st century, it is obvious that the trend of globalization seems to lead to closer relationship among countries around the globe. It is the process of international integration for the interchange of world view, goods, attitudes, and other aspects of cultures and religions. In South East Asia nowadays, there is an outstanding, big movement towards the establishment of Asian Economic Community (AEC) among the ten nations: Thailand, Singapore, Indonesia, Vietnam, Malaysia, Myanmar, Philippines, Brunei, Cambodia, and Laos. Not only are Economic issues highly stimulated but also other aspects such as educational, agricultural, or industrial societies. Consequently, as one of the main sources of this world movement, Thailand needs some effective readiness and changes.

There are various factors affecting this purposive alteration, especially for Thai people. Of all those vital factors which need more special attention, Communication is considered a key for all various doors. How can Thai people, who typically own a Thai language, communicate with those different languages speaking people? English, a Lingua Franca, is used as a tool for a communication among the countries around the world. The English language is spoken and has spread and developed globally which leads to a fact that Thai people cannot take it for granted or overlook this important feature.

To develop Thai students' communicative competence, which skill should teachers and students concentrate first? Among the four communication skills, listening is acknowledged one of the fundamental skills all human beings use to acquire a language. Listening takes place prior to the other skills. What's more, it is considered the most frequently used language skill in the English language. Listening plays a significant role in people's lives. Listening is almost everywhere, especially in daily communication or educational processes. A good mastery of listening skill is extremely important for ESL/EFL students who wish to acquire an advanced level in listening. There are several means to help EFL students enhance their listening comprehension. One of the most effective ways presented in this research refers to authentic materials, such as news broadcasts, announcements, and conversations. Learners are expected to develop their listening skills through these kinds of authentic materials (Berardo, 2006; Field, Kilickaya, 2004; 2008; Miller, 2006; Mousavi, 2012; Thanajaro, 2000).

Statement of the Problems

Up to now, there has been a variety of factors influencing on Thai students who are studying English for their survival in the competitive societies, especially when Thailand is getting ready for the establishment of ASEAN Economic Community (AEC) in 2015. If Thai students still lack English communicative competence, they may encounter both crises and opportunities when the AEC is implemented in a couple years. The English language is considered a key tool for communication among people in the countries. Unless Thailand or Thai students are ready or well-prepared thoroughly, especially on the language for the change, it seems the country and people lag behind other countries rather than be able to grasp the opportunities. At a famous private school in Lopburi province, there is a special program for English intermediate proficient learners named a "Bilingual Program". This program is

specially initiated and designed for the learners who desire to develop their English skills for their further education and profession. However, it seems students still find some difficulties in listening, especially when they need to utilize this skill while studying, following the instructions, completing some assigned tasks, or taking the tests.

Objective of the study

To probe whether authentic material application, to what extent, can enhance EFL students' English listening comprehension.

Research question

To what extent, do authentic materials enhance EFL students' listening comprehension?

Research Procedure and Methodology

The population referred to 110 Mathayomsuksa three EFL students in the Bilingual Program in Lopburi province. The samples of the study consisted of 40 EFL students. The average age of the samples was 15 years. The samples, linguistically, had to learn English as a foreign language in the Bilingual Program, and be EFL students whose English was not their second language or their mother tongue, enroll in a program in English as a foreign language and study in Mathayomsuksa three (Grade nine) Aside from the aforementioned criteria of participant selection, each of the research participants were not eligible if he or she had stayed or studied in the countries where English is used or spoken as a second or native language for more than one year, including those whose parents or relatives were English native speakers living together with the participants since birth. This was to assure the researcher that each research participant would have obtained minimal experience with authentic materials implemented in his or her EFL classrooms.

The participants attended the listening class from 10:10 to 11:10 in the morning twice a week, each class took 60 minute or an hour. One was on Tuesday and the other was on Wednesday. The participants were provided a research treatment for a total of 9 weeks, or 18 hours and pre-posttests were distributed after the treatment process.

The researcher conducted the study based on experimental research using a standardized test to investigate learner's proficiency whether they were in an intermediate level before each participant was selected. The pre-test, together with the post-test was also used to probe the significant differences between the pre-test and post-test scores. The selected tests were carefully analyzed and approved by the researcher advisor and listening specialists so as to achieve test reliability, content validity, appropriateness, clarity and conciseness or accuracy of the instructions. The tests were piloted before used in order to meet the learner's proficiency level, reliability and validity. Implemented authentic materials were opted from the internet such as CNN, BBC, and YouTube. Those authentic listening materials purposively selected were generally created for everyone worldwide, not for any pedagogical purposes. This meant that they all were originally authentic materials. The questions purposively used for the classroom pre-listening, while-listening, and post-listening

process were created, checked, and analyzed by specialists and native speakers in order to avoid errors or confusions while being used. However, all instruments were systemically piloted among other learners who had more or less the same language ability before implemented.

During the first week, the participants were asked to complete their demographic questionnaire and informed about the research procedures. Also, they were required to take a pre-test in the following day. The test was administered before the process of authentic materials application which started in the second week. The researcher gave the students an hour to complete the 30-item listening test. The researcher acted as a test controller and proctor. The researcher also invited another three teachers to help proctor during the test. In the following weeks, the participants are presented various authentic listening materials through the treatment process for 9 weeks or 18 hours; the participants were in the treatment procedure 2 hours per week. The contents or language used in the presented materials were somewhat close to what appeared in the pre-test, but involved a variety of events and situations. The researcher, for instance, made use of the announcement made by the school principal about the school conference in the pre-test and post-test, but the researcher provided the listening clip by the school director about the annual parent meeting. The researcher believed that each participant seemed to get familiar with the related contents or language used in those presented authentic materials. Meanwhile, other authentic materials such as news broadcasts and conversations were similarly presented. After the authentic material application for 18 hours, the participants were required to complete the post-test which was similar to the pre-test as aforementioned. The participants did not realize or aware that the tests would be the same as the researcher did not tell the participants that they had to do the same test once again at the end of the research session. According to some scholars such as Field (2008), Nematı (2011), and Thanajaro (2000), the time duration, approximately 6 weeks, between pre-posttests in listening was considered long enough for the participants to forget what they had been tested earlier. After they completed their post test, the researcher selected 6 representatives from the research participants for the interview session. These 6 representatives were chosen based on their score levels; 2 from high-score level, 2 from mid-score level, and 2 from low-score level respectively.

Data Analysis

This researcher utilized a pre-posttest as a means to investigate whether or not there were any statistically significant differences between the scores gained from the test assessment in the experimental group towards authentic material application for EFL students' listening comprehension. The researcher made use of pre-post test scores to figure out means, and standard deviations. After that, the scores from both pre-test and post-test were systemically compared by T-test in order to find out the t-value. The t-value indicates whether or not there were any significant differences between the pre-test and the post-test. In addition, the interview from the selected participants were made and coded as well as carefully analyzed to triangulate with other means.

Research Results

The results regarding the effects on the use of authentic materials on EFL student's listening comprehension are described in the table below.

Table 1 Results of Listening Comprehension Pre-test and Post-test

Test	N	Max	Min	X	S.D.
Pre-test	40	21	10	16.42	2.68
Post-test	40	26	16	20.08	2.57

According to the results from table 1, there were 40 participants in this research study. On average, their pre-test scores on listening comprehension were 16.42 ($X=16.42$, $S.D.=2.68$) out of 30. The maximum score which the participants achieved was 21 and the minimum pre-test score was 10. Furthermore, on average, the participants' listening comprehension post test scores were 20.08 ($X=20.08$, $SD.=2.57$) out of 30. The highest post-test score was 26 whereas the lowest score was 16.

To probe whether there was any significant difference between pre and post- tests, a dependent sample t-test was utilized in order to test equality of means between the two-test scores gained from their listening tests. In this research study, the SPSS/PC Version 22 was applied to analyze mean (X), standard deviation ($S.D.$), t-value, and significance level between the listening comprehension pre-test and post-test.

Table 2 Differences between Scores from Listening Comprehension Pre-test and Post-test.

Listening comprehension	Mean difference	Standard deviation	df	t	Sig. (2-tailed)
Pre-test & Post-test	3.65	1.657	39	-13.930*	.001

* $p \leq 0.05$.

Table 2 indicates that $0.5 t 39 < -13.930$ and significance level $t = 0.001$, $p \leq 0.05$. Consequently, on average, the pre-test on listening comprehension ($X=16.42$, $S.D.=2.68$) and the post-test on listening comprehension ($X=20.08$, $SD.=2.57$) were significantly different ($p \leq 0.05$). The listening comprehension post-test scores, on average, were 3.65 more than those of the pre-test. It reveals that, on average, the post-test scores on listening comprehension the participants achieved were higher than those of the pre-test scores.

Research Discussion

Building on the findings revealed in the previous chapter, this part focuses on the principle research purposes and questions, in the pursuit of which the researchers probed whether authentic material application, to what extent, can enhance EFL learners' listening comprehension, and also investigate EFL learners' attitudes towards learning English listening comprehension through authentic materials.

For the research question: To what extent, do authentic materials enhance EFL learners' listening comprehension?

It reveals that the research participants who were EFL students and involved with authentic material application could enhance their listening comprehension now that the average score of their listening comprehension post-test was higher than that of their pre-test.

From the result mentioned above, it was associated with other scholars' research results such as Ghaderpanahi (2012), Miller (2005), and Thanajaro (2000) supporting the positive effects of the use of authentic materials on the learners' listening comprehension. However, the researchers should consider the levels of the learners, the difficulties of the material itself, and the researchers' varied treatment processes.

According to the results gained from the interviews, the research participants had positive attitudes towards learning English listening comprehension through authentic materials. They enjoyed learning from authentic materials. They also mentioned that they felt more comfortable and confident when listening to the authentic materials. What's more, they gained more knowledge and strategies to improve their listening comprehension through authentic materials implemented in class which matched what they confronted in the real world. Not only did they prefer to learn their English for listening comprehension through authentic materials but they also supported that authentic listening materials had positive effects and helped them understand more texts outside their classroom. However, there were still a few participants mentioned that some types of authentic materials such as English news broadcasts or announcements were still difficult for them to comprehend because of the real language used in the texts including the natural speed of the speech from the texts. Some participants required more time and strategies to practice their listening through authentic materials.

From the results, the research participants seemed to better improve their listening comprehension and had positive attitudes towards learning English listening through authentic materials. Consequently, it could be summarized that authentic material application in EFL class promoted positive effects towards EFL learner's attitudes. This result was associated with the findings conducted by most of the scholars, namely Bacon & Finneman (1990), Dornyei (2006), Field (2008), Ghaderpanahi (2012), Miller (2005), Otte (2006), and Thanajaro (2000). They mentioned in their research that learners had positive attitudes and felt motivated when they were learning their English listening comprehension through the use of authentic materials implemented in class. They asserted that the learners preferred to study through authentic materials because those materials helped them increase not only their listening skills, but also their lexical items including idioms, slang, and cultural issues. They also got familiar with the natural speed of the speaker's speech as well as their various accents. It helped them achieve their listening tasks more effectively, both in their class and in the real world. Once they could accomplish their listening tasks, they felt more confident and comfortable to deal with various situations. This finding also supports Bacon & Finneman (1990), Dornyei (2006) and Harmer (2007) stating that learners had positive attitudes towards the use of authentic materials when they could comprehend and achieved the tasks, especially when they could use the language in their daily lives in the real world. For the disadvantages and obstacles the

participants found during the research process, the results gained from them matched the previous research findings mentioned by some scholars. Martinez (2002), Peacock (1997) and Kim (2000) mentioned in their research findings that authentic materials often contained difficult language, unneeded lexical items or vocabulary, grammar, and too many structures. Consequently, it was not too surprised that the lower level learners might have a hard time decoding the texts. These factors might also demotivate the learners. Berardo (2006) and Madden (2007) also asserted that interpreters recorded on the listening materials might consist of a variety of accents which might affect the listeners who were not familiar with them. Dumitrescu (2000), Ghaderpanahi (2012) suggested that some authentic materials could be used only with the older age group, but for the younger age group they could be inappropriate because of unfamiliar words, phrases, and idioms. However, those scholars confirmed the positive effects on the use of authentic materials implemented in EFL classroom when those material were appropriate, relevant to the learner's needs, interests, and preferences as well as suitable to their ability and language proficiency.

Conclusion

According to the research findings, it indicates that average scores from EFL learners' listening comprehension post-test were meaningfully higher than those of the pre-test. Moreover, the findings reflect that EFL learners had positive attitudes towards the use of authentic material to enhance their listening comprehension. Consequently, it could be summarized that the effects of the use of authentic materials could enhance EFL learners' listening comprehension as well as promote positive attitudes towards learning English listening towards authentic materials. In addition, the effects of the use of authentic materials could motivate EFL learners and increase their comfort level and self-confidence to accomplish their listening tasks in the target language.

Recommendations for further research

This research was empirically conducted with only a small number of EFL students who were studying English as a foreign language in the Bilingual program in a private school located in Lopburi province. Therefore, the interpretation as well as the generalizability of the findings should be limited. It is recommended for the future research that it should be administered to a larger scale or a larger group of EFL learners, or to EFL learners from various programs or higher educational levels so that the effects of the use of authentic materials could be widely interpreted. Furthermore, it would be really interesting to investigate the effects of authentic materials on various skills; writing, reading, or speaking. To my personal suggestion, the future research should be conducted focusing on the effects of the use of authentic materials on EFL learner's speaking skills. This is because a lot of EFL learners lack of oral communicative skills. Plus, the majority of the research participants desire to develop their speaking skills. They mentioned that speaking was one of the most important skills to improve for learning their target language. Also the research should be conducted with different kinds of research instrumentation, for example, it should be probed from different pre-test and post-test.

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