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Curricular Changes in Teacher Education: A View of Comparative Research in Three Contexts

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The IAFOR International Conference on Education – Hawaii 2017
Official Conference Proceedings

Abstract
This work is part of a project whose objective was to study curricular changes in teacher training programs from a comparative approach. We studied the curriculum of three universities (Harvard, University of Minho and UFTM) from 3 different countries (United States, Portugal and Brazil) in the last two decades. To achieve our goals, in addition to literature review and document analysis, we visited the universities, made observations, and interviewed teachers and students. We used content analysis and comparative education methodologies to analyze data. Results highlighted that practice-centered programs prevails in American education; that a praxis focused approach is emphasized in Portugal; and that there is a pursuit of a historical-critical guidance in Brazil (mainly revealed in teachers' discourses) with strong multicultural trend in current curricular policies. Our findings helped us to understand how those three universities make links between theory and practice in the training of their teachers, and drew attention to HTF (Harvard Teachers Fellows Program) for its school practice immersion since the very beginning of the program. Studying those experiences from a comparative point of view can help curriculum planners, higher education managers and policy makers devoted to the field of teacher education to develop courses/programs that are neither excessively pragmatic, nor idealized and detached from school routine. The project was funded by CNPq.

Keywords: Teacher Education, Curriculum, Educational Policy, Higher Education.

Introduction

This paper is part of a project whose objective was to study curricular changes in teacher training programs from a comparative approach. Our focus was on the training of teachers for the specific contents of Basic Education (chemistry, biology, history, etc.). We studied the curriculum of three universities in the last 20 years: University of Minho in Portugal, Federal University of Triangulo Mineiro (UFTM) in Brazil, and Harvard in the United States.

The choice of those universities is not fortuitous. Harvard University is known worldwide for both the important contributions it has made to the advancement of scientific knowledge and the education of leaders, and the prospective look it always represents. For the purposes of this project, Harvard is also important for the regular processes of curricular changes it performs. Challenging programs such as the Teacher Education Program (TEP) were also reasons to have Harvard as one of the first choices in a study of the nature of the one proposed here.

Universities in Portugal had to undergo a series of changes resulting from the implementation of Bologna Process. In addition, the country maintains important historical ties with Brazil, including the language, which could be very important to identify possible transfers from the Bologna process philosophy to Brazilian universities. University of Minho studied these changes, building important critical references that, in addition to curriculum studies carried out there, offered significant contributions to this project.

UFTM, in 2007, started a process to create six licensures, whose pedagogical projects were based on the idea of a general and humanistic education cycle, followed by three years of specialization. These courses were created within the framework of a very specific public policy for federal public institutions, REUNI (Program to Support Restructuring and Expansion Plans of Federal Universities), which has been the object of strong criticism from researchers of higher education, as well as teachers and students.

Literature review involved texts about curriculum, educational reform, teacher education, comparative research, educational policy and history of education in the three countries we analyzed. In addition to literature review and document analysis, we visited the universities, made observations, interviewed teachers and students. We used content analysis (Bardin, 2008) and comparative education methodologies (Bray, M.; Adamson, B. & Mason, M., 2007; Manzon, 2008) to analyze data.

Our study was divided into four phases: a detailed analysis of each institution, accompanied by a corresponding bibliographic survey (a case study about teacher education in each institution / country), and a final phase of comparative analysis of teacher education policies and their impact on the three institutions / countries analyzed.

DATA ANALYSIS

In this part, we analyze the three universities separately and after make a short synthesis of the main findings of our project.

UNIVERSITY OF MINHO – PORTUGAL

The University of Minho (perhaps, all Portuguese universities) seek the integration between theoretical studies and pedagogical practice, in particular during the curricular internship of the masters' degree. Currently it takes only 6 months, and culminates in the elaboration of a final paper (thesis). After changes resulting from adjustments to Bologna Process, the internship consists mainly in observation of other teacher's practice. Trainees should focus on one aspect of the observed practice, which may include the suggestion and implementation of a project, and write about it based on the theory studied during the course. The paper is presented to an examination board at the end of the course.

It is important to remember that within the European Space of Higher Education, students graduate in a field of knowledge (3 years) and then, the training for teaching occurs only in masters' degree. It lasts 2 years and the internship takes place in the second year of the program. As the contact with the practice was reduced (internship used to last a whole year), professors affirmed in their interviews that they try to make a movement to articulate theory-practice-theory (the idea of *praxis)* all the time during their disciplines.

Those disciplines may vary, depending on each master's degree in teaching, but, in general, they are focused on teaching and teaching of specific contents (mathematics, history, chemistry, etc.); Curriculum and assessment; Developmental psychology; School as an organization; Educational technologies; Special education, and, more rarely, on disciplines of humanities (ethics, sociology, pedagogical thinking, etc.).

Our interviewees mentioned theoretical bases of Piaget and the principles of reflective thinking, reflective teacher (for example, Antonio Novoa) to inform their teacher education projects. Consequently, the idea of integration between theory and practice (and more specifically, the idea of *praxis)* should be fundamental in their teaching programs.

The curriculum of the undergraduate and masters courses are proposed by the Ministry of Education, generally in a centralized way, with some margin for autonomy, so universities can choose a few disciplines to compose their curriculum (for example, electives, etc.). According to our interviewees, opening or closing of courses are directly related to the employability of students, and the university has the autonomy to do so.

FEDERAL UNIVERSITY OF TRIANGULO MINEIRO – UFTM – BRAZIL

In the Brazilian case study, we highlighted the experience of UFTM (Federal University of Triângulo Mineiro). Its licensure courses were created within REUNI, a federal project to increase the number of courses and institutions of higher education in the country, especially outside the main economic centers.

In Brazil, different from the other countries, teacher education is offered in undergraduate level (4 years course), in a licensure course that is offered along with the bachelor's degree. Students usually have a group of contents in the specific area of their choice (physics, geography, languages and literature, etc), disciplines related to

teaching of these contents and disciplines related to the field of education and humanities (sociology, sociology of education, psychology, history of education, didactics, politics of education, etc). There are a few mandatory components (Brazilian sign language, internship, and others that vary, depending on government decisions), and some established amount of hours for certain groups of components, but universities have flexibility to choose the disciplines to offer.

Those courses of UFTM had special characteristics. One of them was the attempt to implant a one year *Common Cycle*, with emphasis on a humanistic, interdisciplinary education, without initial division between courses. This project presented, according to their pedagogical projects, proposals inspired by international experiences.

After less than 6 years of the beginning of this proposal, Common Cycle was extinguished and each course followed its way, in a very traditional manner. According to our interviewees, UFTM was not able to accomplish neither the attempt of a humanistic and interdisciplinary education nor a better association between theory and practice during the courses.

The same problem is common in other undergraduate courses of the country (Pachane & Domiciano, 2012). Except for some specific successful experiences conducted by one or another teacher individually, a national program called PIBID (Institutional Program for Teaching Initiation) has been highlighted as the privileged space that facilitates effective articulation between theory and practice in the education of future teachers.

In general, teacher education courses in Brazil are more theoretical, with emphasis on the basic areas and research, with a historical separation between theory and practice. Those problems were mentioned not only by our interviewees but also in the literature about the theme.

There are different sources of theory influences in Brazilian education, from multicultural to traditional technocratic approaches, both in policies and practices. The discourses of teachers, students and in curricular documents, for example the pedagogical projects of courses, socio-historical approach frequently appears. Dermeval Saviani is one intellectual of education that is mentioned a lot, as a reference in the field, as well as Paulo Freire. Their conceptions are considered as a kind of ideal to be followed, but in the daily life of students, they mentioned to feel a more traditional and conservative practice in the classrooms.

Brazilian educational policies are now passing through a series of changes and the future of teacher education, as well as the future of education, is still very unclear for us. As examples, we can mention the fact that High School curriculum changed recently and those changes were object of strong criticism from entirely society. Parameters for teacher training are about to change too. There are projects of law prohibiting the discussion of themes like religion education or sexual education at school. The study of humanities, ethnical themes and social matters in general is about to be abolished in Basic Education. There are proposals of laws to arrest teachers who express opinions considered ideological or tendentious (especially in political terms) in the classroom. Thus, in this context, the orientation of education and teachers' education is still not clear for us.

HARVARD GRADUATE SCHOOL OF EDUCATION - HARVARD UNIVERSITY – USA

We can consider American experiences as a counterpoint to the densely theoretical models of teacher training programs we have studied up to here. They are strongly dedicated to practice, to classroom daily matters and to the solution of the quotidian problems of the school and its surroundings. For this reason, they are considered among the most pragmatic models of teacher training and analyzers identify connections with ideas of John Dewey in American Educational Programs.

In the US, different levels of teacher shortage cause different levels of requirement for admission into the teaching profession in each state, and as consequence, the existence of a wide diversity of training programs. From distance education in short term courses to doctorate level programs, USA live with the need to administrate a very complex system, where the most important pre-requisite for becoming a teacher is passing an examination.

This license is valid for a period of 5 years and needs to be renewed. Some categories can have only his first initial license, which can be renewed for another 5 years. Others can have the professional license. Usually the license obtained in one state is valid in a group of others, but there is no national license.

The state of Massachusetts has programs at various levels, from Teach for America, which practically works with lay teachers, to postgraduate programs. Harvard has undergraduate training programs (UTEP) and two graduate (TEP and HTF) degrees. Teacher training at Harvard is closer to projects such as PIBID than to regular undergraduate programs in Brazil. This openness to adjustment makes it possible for curricula to be changed at any time when necessary, being attentive not only to legislation and the training needs of students, but also to the local needs of states and schools.

The Undergraduate Teacher Education Program (UTEP, available electronically at http://utep.fas.harvard.edu/icb/icb.do) is held at the college in its final years, and is considered as a pre-graduation. The HTF (Harvard Teacher Fellow - http://www.gse.harvard.edu/htf) is the university's latest program and may replace the Teacher Education Program (TEP, http: //www.gse.harvard. Edu / masters / tep).

In this program, the hours of courses are not taken by subjects (generally 4 or 5), and the programs are relatively short (1 year or 1 year and a half). The emphasis is on the teaching methodology of a specific subject, which is somewhat similar to what we observe in Europe. There are courses in mathematics, social studies/history, English and science. They are very attentive to issues of multiculturalism and the psychological characteristics of adolescence, focusing on classroom conflicts, schools' relationship with the community, students' interests and needs.

When we conducted this research, HTF was about to start. The program was planned to begin with a spring semester course and monitored teaching at the Cambridge Harvard Summer Academy (CHSA) at the end of college last semester. Participants then have a further academic year of internship at partner schools across the country. In this period, they have reduced working hours in order to continue their studies and

additional training sessions offered by faculty. Such moments are online courses or videoconferencing meetings. Students then return to campus to complete the program with one more course and another monitored teaching period at CHSA in the following summer. At the end of this period, they may receive their initial teaching license, provided if they pass the required examinations.

Anyone who wishes can stay and have more disciplines, qualifying for the master's degree at the end of the following summer. Those who integrate full-time teaching (preferably in the same school where they did the internship) will continue to receive orientation and distance training for the first two years of their careers.

Summing it up, students perform the oriented practice from the first semester of their training, concomitantly to the disciplines. Then, they stay another year and a half on the program (one of which working in a public school), and continue to receive support from teachers for 2 years after the program ends. As an incentive, HTF is fee free, students receive a salary for their work as teachers and with the accomplishment of another 2 or 3 disciplines (only these are paid), they receive the master's degree.

It is important to note that in the US there is no expectation that students will teach for the rest of their lives. Teaching is generally understood as a moment in one's life, which may last a few years, or be the transition to another career or to retirement. Teaching in basic education is also understood as a quite exhausting profession. This way, the follow-up in the initial years of HTF has the intention to avoid the "clash of reality" of the beginning teachers and to make them stay longer - and with less frustration - in the teaching activity. We may say it attempts to avoid (early) evasion of the profession, to improve the quality of teaching work and to minimize burnout.

HTF and TEP have somewhat different structures. After the concomitant offer of both, evaluations will be carried out to show which program is most appropriate, whether both should remain, whether they should be agglutinated and undergo improvements, etc.

Conclusion

Results allowed us to reflect about professional identity of teachers, teachers' knowledge, competences and teaching profession. It opens possibilities of discussions with renowned Brazilian and foreign authors (such as Tardif, Perrenoud, Garrido, Pimenta and Brzezinski), and, in particular with the work of Suze Scalcon (2011).

"What a teacher should know" and "who he or she should be" are fundamental questions for the curriculum. They refer to the conceptions that direct the policies and practices of teacher education in each country, and that we briefly presented here.

Regarding international transfers between countries, there are indicators that globalization and international competition influence the three institutions. The economic bias appears strongly in some Brazilian policies and in the Bologna Process.

As shown before, we did not find common tendencies in teacher training theoretical orientations in the analyzed countries. Brazil, as Lima, Azevedo & Catani point out

(2008), oscillates between dialoguing with the international system, reacting to it or being a shy mix of Harvard and Bologna.

In Europe, Bologna Process pushes for post-graduation the only formative exit for basic education teachers, in the United States there seems to be, paradoxically, a movement towards teacher no need of specific specialization. This tendency may occur because of a lack of teachers in some regions.

With regard to local decisions on curriculum, the commitment of teachers' trainers to basic education is one of the main factors for the effective training of future teachers also committed to quality of education. If in the daily routine in their classes, professors focus the attention of students and directs them, for instance, to research methodology and motivate them only to go to doctorate, it is clear they won´t leave university with the desire to work at basic schools.

It calls our attention to the importance of the recruitment of teachers' educators, the existence of institutional commitment to the process of teachers' education (if not regional or national) and of the involvement of community in the construction of the pedagogical plans of the courses.

Those are some of the conclusions of our research. We hope our study can help on the expansion of knowledge and reflections about teacher education, especially to a better articulation between theory and practice in teacher training programs, among many other factors that still need our attention worldwide.

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Teacher Will: A Framework to Transform Classroom Practices! It's Intentional

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Abstract
The single unit of change in what matters for student learning is an effective teacher. What makes an effective teacher? Teacher and Administrator WILL. How do you design your classroom to ensure attention to "will power?" What are the teaching practices that align with "will power?" It's intentional. Explore a framework that has been proven to increase student achievement: Social Will (belief), Cultural Will (understanding the population), Organizational Will (infrastructure), and Political Will (courage to act). Ron Edmonds (1979) said it clearly, "We can, whenever and wherever we choose, successfully teach all children whose schooling is of interest to us. We already know more than we need to do that. Whether or not we do it must finally depend on how we feel about the fact that we haven't so far." The question remaining is, how do we feel about the fact that there are many students in our charge who are not being successful in their schooling? What is our collective and individual responsibility to change their trajectory? The four wills framework is a distillation of complex educational concepts that can be incorporated into classroom and leadership practices. These four wills are a part of an intricately woven tapestry between administrators, teachers, students, parents, and the community. Explore practical ideas to transform classrooms into learning spaces that address every child and districts into systems for every child, using "will power" that sets systemic and systematic change.

Keywords: Social justice, educational achievement, closing achievement gaps, social-cultural-organizational-political will, change

Introduction

Teaching is at least rocket science. It is a complex process that involves social architecture of human beings. The school administration and teaching force combine efforts to create educational environments that forge student achievement and success; for most students. Educators and communities alike recognize that the single unit of change for the trajectory for student achievement is the teacher. It is what the teacher does in the classroom that impacts the teaching and learning process. When the classroom door closes, they are on their own to deliver instruction to students. They can set a student on a course for success or failure by their daily actions and interactions. However, delivery does not happen effectively without design. Closely linked to teacher behaviors is the support administrators give to teachers. Central office administrators and campus administrators play a vital part in student achievement by the education design they put in place. The design and delivery of educational processes and procedures determine efficiency and effectiveness. (CMSi 2017) The design and delivery are the underpinnings of high student achievement. Given this understanding, which is elementary in nature, why then do we have students who are not successful. Transformation of school classrooms and teacher practices rest on their "will" power to do so. Ron Edmonds (1979) made it clear over four decades ago: "We can, whenever and wherever we choose, successfully teach all children whose schooling is of interest to us. We already know more than we need to do that. Whether or not we do it must finally depend on how we feel about the fact that we haven't so far." So, the central question is how do we feel about the fact that some of our students are not being educated to optimum levels. If indeed we know how to do this, why are we not doing so? What framework can educators use to transform classroom practice?

The purpose of this paper is to examine the "teacher will" to create classrooms that help every child succeed at top levels. My experiences as Superintendent in Clover Park School District (Lakewood, WA) serve as a reference, as well as the myriad of experiences throughout my educational journey. The following questions frame the discussion: 1) How do we feel about the fact that we have not addressed the needs of every child? 2) How do we establish the cultural, social, organizational, and political will to serve every child? 3) How do you design your classroom to ensure attention to "will power?" What are the "high fives" teachers can put into place in each of these areas?

Framework of Will: The Clover Park School District (CPSD) Story

Changing students' lives in the CPSD began with the mission that every child would be a productive member of their community. This was coupled with the belief that students who were educated in the CPSD would be prepared for their future, academically, socially, and emotionally, and look back on their CPSD experience with pride. There was a moral imperative to educate children and a responsibility to extend hope. Some people in the community said, "Not every child will go to college." As superintendent my response was, "They might not all go to college, but

our collective responsibility is to give them the skills so they can make the choice; to give them hope."

Rev. Dr. Patrick O'Neill shared information with his colleagues in the 1980s that remains true today – children are the future. (O'Neill, 1999) O'Neill wanted to know how our behaviors would change if we asked the question about children in America that the fearless Masai warriors ask daily, . "Kasserian Ingera,": "How are the children?"

> *It is still the traditional greeting among the Masai, acknowledging the high value that the Masai always place on their children's well-being. Even warriors with no children of their own would always give the traditional answer, "All the children are well." Meaning of course, that peace and safety prevail, that the priorities of protecting the young, the powerless, are in place, that Masai society has not forgotten its reason for being, its proper functions and responsibilities. "All the children are well!" - means life is good. It means that the daily struggles of existence, even among a poor people, do not preclude proper caring for its young.* Patrick T. O'Neill

Driven by the belief that in every child would be a productive member of their community, the vision for the CPSD was inspired by the vital question the Masai ask – How are the children? This is a critical question for those of us who are serious about the education of all students. We know that the answer should be: "And all the children are well." Student wellbeing is manifested as a result of our daily practices. As superintendent, classrooms visits were a part of my routine schedule; every day between 7:30 a.m. and 9:00 a.m. At first, teachers at first were hesitant, the union skeptical. But if the trajectory of student lives is to change, it can be done only by changing what takes place in the classroom. The staff became accustomed to my visits, and eventually teachers would anticipate my visits. When I had not visited their classroom in a while, they would stop me, eager to ask, "How are the children?" All the children are well when each one of them is successful and positively contributing to their community. That is the mission of the district, that is what underlies the belief system, and that shared belief system is what attracted me to CPSD. I knew that believing in the children helps them to believe in themselves. I said, "It is our expectations of them that determines whether they expect anything of themselves. It is our determination to ensure their success that determines whether they are successful. Changing the trajectory of student lives is a moral imperative." It begins in the classrooms, with teacher will. It is supported by leadership. Leadership compels a belief in oneself. It is about one's own personal mastery. "The core to leadership strategy is simple: To be a model. Commit yourself to your own personal mastery." (Peter Senge, 1994)

As I entered my tenure as superintendent in the CPSD, thoughts about how to portray the work in a cohesive form centered through four lenses: **Social Will, Cultural Will, Organizational Will, and Political Will.** Based on this framework, thus began in the CPSD the collective will for every child to be successful. This is how students' lives and trajectory for their future were changed. The four Wills, coupled with the pervasive question "How are the children?", and the establishment of a simple acronym ABCs framed the vision for students in the CPSD. The CPSD staff became committed to the ABCs: A – All, that is each and every, students can and will learn;

B – Build bridges and infrastructures to ensure their learning; and C – Communicate and celebrate successes. The transformation also included a curriculum management audit, which provided strategic direction for the work. The curriculum management audit recommendations were the basis for developing the strategic direction for the district but the framework was always within the four Wills.

Social Will

Social Will is about the belief in whether each and every child can and will be successful in the educational system. It is about teacher belief and administrator belief. As previously mentioned, Ron Edmonds points out that to "successfully teach all students" is a choice. (Edmonds, Effective Schools for the Urban Poor, 1979) Ron Edmonds' study on effective schools was a response to the Coleman Report (Coleman, 1966) which intimated that family background and socioeconomic status contributed more to student achievement than what happens in schools. Edmonds' position was that schools can and do make a difference in student achievement. He conducted a study in urban schools that showed success in student achievement despite family background and economics and devised correlates that directly impact student achievement (Edmonds, Programs of School Improvement: An Overview, 1982): Leadership, Instructional Focus, Safe and Orderly Climate, High Expectations, and Evaluation. These original five correlates were later expanded to seven (Lezotte, 1991): 6. Positive home-school relations, and 7. Opportunity to learn and student time on task.

Most educators do not really believe that every child can and should go on to higher education. They make discriminatory determinations about who should continue into high levels of learning and who should not. In other words, the success of students is in the minds of their teachers. Think of the enormous impact we have on children's lives daily. We can change their trajectory with the stroke of a pen, with the words, we say, with whether we believe in them or not. Ron Edmonds asked us, how we feel about the fact that we have not had the will to educate every single child although we know how to do so. It is about our belief system. When we were engaged in high school reform in the CPSD, our fight came from many fronts – one of them was from our own staff who said, "If we educate all children for college, who will make the hotel beds?" What would our response be if we asked which of our own children we want to make up hotel beds? The responsibility is to model at the leadership level that this thinking is not acceptable. It is not okay to "dis" (disrespect) our children. We have succeeded because someone believed in us. We must do the same for the children in our schools. It is unacceptable to throw away another generation of children. Social will is about our belief system. Teachers manifest social will when they establish practices that demonstrate belief in every child. Some practical examples of teacher belief are included in the "high fives" listed below:

- Asset-based teaching: The understanding and practice of acknowledging that every child brings assets to the classroom. It is the teacher's responsibility to discover and develop those assets.
- Helping students set high goals for their success in the classroom and providing learning opportunities to reach those goals.

- Use a success journal to help students celebrate their academic successes, enhance writing skills, and critically think about how they will accomplish their success goals.
- Process praise – identify specifics when giving praise.
- Engage students in relevant and experience-based learning. Engagement, rather than "drill and kill", offers students an opportunity to build learning through networking with others. In the classroom, this practice reinforces teachers' beliefs that students are capable of building their learning as oppose to being a vessel where knowledge is dumped.
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The second framework is the area of cultural will. The frameworks are interrelated and interdependent. While social will is about the ingrain belief that every child can be successful when we have classroom practices that support them, cultural will is about how well a teacher understands the children in their classroom.

Cultural Will

Cultural Will is about understanding the population of students with whom you work. We all have culture, heritage, and background. Gloria Ladson-Billings stated:

> *What makes this difficult is the finding that far too many teachers in U.S. schools possess only a surface understanding of culture - their own or anyone else's. As noted in another of my earlier studies, many middle-class white American teachers fail to associate the notion of culture with themselves. Instead, they believe that they are "just regular Americans," while people of color are the ones "with culture." This notion of regularity serves a normalizing function that positions those who are "not regular" as "others." Not recognizing that they, too, are cultural beings prevents these teachers from ever questioning taken-for-granted assumptions about the nature of human thought, activity, and existence. (Ladson-Billings, 1998)*

One must embrace who they are first before they can truly understand who their students are and what they bring to the table. Teachers must recognize their heritage and culture and how that impacts their interactions with their students. They must also celebrate and appreciate the cultural differences of their students. John Stanford, former superintendent in Seattle, said there are no excuses for students not achieving. (Stanford, 1999) Understanding Cultural Will is about understanding the influence of heritage and culture. Knowing the cultural nuances of students can be used to their advantage.

When we view people through their cultural lens, we enrich not only ourselves, but others as well. In the CPSD, we had district-wide book studies as a part of our monthly administrative meetings. Each of the Wills was studied over the course of a year or two. Books were chosen that would help further the conversation on the particular Will. We pushed the envelope to help individuals understand themselves as a cultural being and then to understand the population of students with whom they were working. The culminating project was a cultural quilt, with each piece done by a district administrator to reflect their cultural heritage and commitment to Cultural Will. This quilt was hung in the foyer of the central administration building (Student Services Center). An extension of the quilt project would be for every teacher, indeed

every staff member in a district, to build their own quilt patch for their classroom or workspace.

Research is rich in the connection between relationships and student achievement. (Howard, 1999) (Delpit, 1995) (Tatum, 2003) (Skria J. S., 2003) (Kuykendall, 2004) One of the best ways to establish relationships is to understand the culture and heritage of the students with whom you are teaching. A small gesture with a huge impact was to change the conversation from "all" students to "every" student.

As superintendent, I was often called to speak in large assemblies of either students or staff, or both. I noticed early on that when I looked at a crowd of people - sometimes as much as 2,000 persons, I saw a blur of faces. This was particularly true when I used "all" in my language. But when I used "every" it shifted my mental model, allowing me to focus on individuals. I proposed a change to the district's mission statement. Rather than using the term "all students will learn", change it to "every student will learn". This small, but significant, gesture helped to reposition how educators in Clover Park view students.

Cultural will is about our classroom practices that demonstrate an understanding of the rich cultural heritage and diversity that is our public schools, and yes, our society. Teachers manifest cultural will when they establish practices that show the tapestry of their classroom and how they intimately understand their own heritage and appreciate the heritage of the students in their classrooms. Sharing cultures is an important part of your understanding and their understanding. This may be an "old fashion" show and tell.

Some practical examples of teachers' understanding of cultural will are included in the "high fives" listed below. They are not in any priority order:

- Intentionally group students so that they are exposed to the many cultures in the classroom. An example might be in how you arrange your room or seat your students.
- Ensure curriculum materials and activities are multicultural in nature and representative of the students in the classroom, and/or world in which they will eventually interface. An example, go back and think about how the lesson relates to the teacher's culture and student's think about how it related to their culture and experiences.
- Respond to students using a lens of cultural understanding. Go to student events and be involved in their culture. An example, might be to walk the neighborhood and go to businesses, talk with those in the community.
- When students are using grammatically incorrect language based on their code-switching, provide reminders of standard English without insulting or demeaning them.
- Visually represent different cultures and populations throughout your classroom (bulletin boards, classroom decor)

The third framework is the area of organizational will. Organizational will are the things that impact the design of instruction.

Organizational Will

Organizational Will is about the infrastructure. From a system's perspective, we ask the questions: What are the hiring practices that contribute to or impede student learning? Where are the most effective teachers placed? How is funding allocated? From the classroom perspective, teachers ask different organizational will questions: How do you structure classrooms so that the flow of student learning is maximized?

Research from Ed Trust tells us that it is the quality of the teacher that makes a difference in student achievement. "Teachers are by far the most important in-school factor in determining whether our students succeed and our nation's schools improve. An ever stronger and more sophisticated body of scholarship confirms what parents have long suspected: Highly effective teachers help children soar, while ineffective teachers actually hobble students' chances for success." (www.edtrust.org) Ed Trust research showed students had very different achievement levels in 5th grade depending on whether they had been assigned 3 effective teachers or 3 ineffective teachers in prior grades. In fact, students assigned to three ineffective teachers lost ground; where in 3rd grade they scored at the 57th average percentile rank, by 5th grade they dropped to the 27th percentile rank. The teacher is the single unit of change for student achievement:

"…teacher effects appear to be cumulative. For example, Tennessee students who had three highly effective teachers in a row scored more than 50 percentile points above their counterparts who had three ineffective teachers in a row, even when they initially had similar scores. An analysis in Dallas found essentially the same pattern there: initially similar students were separated by about 50 percentile points after three consecutive years with high- or low-effectiveness teachers." (Hacock, 2009)

Organizational Will at the systems level asks these question: "How are students placed in advanced placement classes?" What access do students have to college preparatory tests? Algebra is considered the gate-keeping course for students to do well in college. Why is Algebra not required of all students? At the classroom level, the questions become what criteria are you using as a teacher to recommend students for gifted, honors, and advanced placement classes? How are you designing your classroom to encourage students to take college preparatory courses and placement tests?

Organizational Will at the system level is also about the allocation of resources. Are schools funded equally or equitably? When every schools in a district receives the same amount of money that is not necessarily the most effective for student achievement. (Skria L. , 2009) Parent Teacher Associations (PTAs) in schools with more affluent parents have the capability to raise more funds than PTAs in less affluent area. Some districts have gone to allocation of resources to schools based on their need. (e.g., Clover Park School District (WA) and Portland Public Schools, OR)

Organizational Will is about what you change in the structure of the school system and the schools within the system. Bolman and Deal calls it reframing organizations to maximum effect. (Bolman, 1993), indicating that the structural frame helps establish and maintain formal roles and relationships, the human resource frame focuses on improving relationships, the political frame provides insight into managing the competition for power and scarce resources, and the symbolic frame addresses the

need people have to find meaning in their work. The same is true of classroom practices.

Organizational will in the classroom is manifested in how you structure learning on a big scale: The flow of the lesson, the flow of the day, how you keep students engaged. Periods after lunch may be different than what you have done with the same class in the morning. How do you structure to ensure learning is happening?

Some practical examples of teachers' understanding of organiizational will are included in the "high fives" listed below. They are not in any priority order:

- Seating students – use intentional groups to maximize learning; create an environment that is inclusive
- End lessons with a culminating event (field trip or activity) – an intentional structure to create learning experiences that not only bring closure but increase exposure; backward design the lesson
- Allow the classroom space to be used as a safe haven – students who may need to come during lunch or other times when they do not have friends, etc.
- Avoid busy work – challenge them by having them create what makes sense for them in their learning packets.
- Lesson plans help focus both the teacher and students. Use them to help students understand what they should know and be able to do.

In the CPSD, some of the high school reform took the form of small learning academies with specific designations for example human services, communications, technology, science and math. Other reforms became school within a school where a large high school was reconstituted into four smaller independent schools. Still another reform was starting a school from scratch as a school with grades 5-12. This school phased in a couple of grades at a time. This school grew from 150 students to one with over 450 students and a waiting list to attend. It became the location of the district's International Baccalaureate (IB) program. Putting this school in place took courage amid pushback from community and staff, which leads to Political Will.

Political Will

Political Will is the courage to do what is right for our children. It is the determination to change the trajectory of students' lives from the policy level. In the CPSD, one of the first things we did as a superintendent and board team was to put a policy in place so that the position on every child being successful was clear. It was our equity and excellence policy. Because the position of superintendent is very tenuous, in order for change to be sustainable, there needed to be a policy in place so that the work would be secured.

The same passion for equity guided the work at the Oregon Education Investment Board (OEIB). The Board was formed by the Governor of Oregon to provide policy recommendations on where strategic investments should be made to ensure equity of outcomes in education. The Chief Education Officer established four subcommittees to begin this work. One of the subcommittees, Equity and Partnerships, took on the task of developing and recommending an equity lens from which the OEIB could review its work. The lens was approved for OEIB, as well as agencies throughout the

state. (McEwen, OEIB Equity Lens, 2012) It now serves as a guide for school districts and organizations as they develop their policies on equity.

Political will in the classroom is embedded in making sure the playing field is level. As an educational advocate, we are expected to stand in the gap and build a bridge for them. (M. Walker, personal communication, January 5, 2017) We should use instructional time to ensure that students address the myriad of social issues impacting and that will impact their lives. Many times, teachers do not view their role as political, however with political will, teachers show their courage in doing what is right for students. This may manifest itself in their interactions in their communities, their classroom management, or their interactions with parents.

Some practical examples of teachers' understanding of political will are included in the "high fives" listed below:

- Classroom management – the courage to ensure that the learning environment is conducive to learning for every child in the classroom.
- Your voice in ensuring that teacher contract is designed to support student learning and what is best for students, not just the adults in the system.
- Supporting and encouraging student voice in classroom and school processes. Student protest about social issues should be opportunities for students to be thoughtful and critical.
- Engage community and expose students to the adult role models in their community (e.g., law enforcement, board members)
- Recognize parents as the primary teacher – first teacher – and use them as a resource in your classrooms

Summary of the Framework of the Four Wills

The framework of the Wills evolved from my 44+ years as an educator. The premise of the four Wills is that when taken together, the collective will can be actualized to close the achievement gap for students who have not been successful in the public education system. The Wills must be addressed at both the systems level and the classroom level. The four Wills are not in priority order, but they must interface and are interactive. The four basic questions that frame the Wills are:

- Do you believe every child brings assets to school and that it is the responsibility of educators to address instructional delivery from that belief system (Social Will)?
- Do you understand the population of students with whom you are working and are you committed to ensuring their progress (Cultural Will)?
- Are you willing to redesign the organizational structure to ensure closing of the achievement gap for marginalized students (Organizational Will)?
- Are you willing to commit to policy at the governance level and have the courage to stand in the face of racism and criticism to make sure that every student is given the keys to their future (Political Will)?

When we have the belief, the understanding, the infrastructure, and the courage, we open the doors for transforming classrooms into ones where students intentionally

succeed. And, we animate the collective will, the will that can embrace closing the achievement gap for students.

Conclusion

The Wills framework posits that classroom practices are intentional and can be designed and delivered so that every child is connected and learning at high levels. Again, the four Wills are:

- Social Will is the belief that every student can be successful. Their success is deeply rooted in whether educators truly believe they can learn. Social Will is about high expectations. It is about the ability to give hope.
- Cultural Will calls for deep understanding of the culture and heritage of oneself and others. The value we put on others' culture speaks volumes about how we value ourselves. This requires a commitment to develop our individual response to others, and specifically our students. Our destinies are inextricably linked.
- Organizational Will requires a change in the infrastructure. What must change in the structure of the classroom so that students experience success?
- Political Will is about the courage to do what is right for students and to commits to policy at the governance level, however there are also behaviors teachers can demonstrate to show their courage at the classroom level.

Each of the four framework areas include "High Fives" – examples of practices for classroom teachers to consider in understanding and implementing social will, cultural will, organizational will, and political will. High Five is a term used for enthusiastically expressing support, agreement, and greeting. Oxford Dictionaries provides the following definition: a gesture of celebration or greeting in which two people slap each other's palm with their arms raised. (http://en.oxforddictionaries.com) These "High Fives" are not intended to be exhaustive. Teachers, administrators and other educators will undoubtedly have many examples of their own. The high fives for each of the four frameworks are summarized below:

Social Will

- Asset-based teaching
- Helping students set high goals.
- Have students use a success journal
- Process praise – identify specifics when giving praise.
- Engage students in relevant and experience-based learning.

Cultural Will

- Intentionally group students for classroom instruction.
- Ensure curriculum materials and activities are multicultural.
- Respond to students using a lens of cultural understanding. .
- Be aware of code-switching and provide reminders of standard English without insulting or demeaning them.

- Visually represent different cultures and populations throughout your classroom.

Organizational Will

- Group students intentionally for small group work.
- End lessons with a culminating event.
- Allow the classroom space to be used as a safe-haven.
- Avoid busy work.
- Use Lesson plans to help focus both the teacher and students.

Transforming classrooms

Social, Cultural, Organizational, and Political Will is a framework to transform educational systems. It has a proven record of success, as evidenced by the change in trajectory of achievement for students in Clover Park School District (Lakewood, WA). Clover Park School District went from schools scoring in the single digits on state standardized test to scores in the 80 and 90 percent for those same school. It was a clear focus on the ideas espoused in the framework. This framework is one that can also transform teaching practices. Examples are provided as "High Fives." Transforming school classrooms is a matter of collective will. It is intentional!

Successful transformation of school classrooms is a combined effort of teachers and campus/district administrators. The education of students is complex. It involves molding and shaping human beings. Just as an architect designs and builds physical structures, an educator designs and "builds" human structures. The design of instruction must be thoughtful and intentional and the delivery must be thoughtful and intentional. What a teacher does daily in the classroom is the single most indicator of student success. Therefore a successful teacher must believe in their students and have the highest of expectations for each of them (social will); understand the rich culture and heritage they personally bring to the classroom as well as those of their students (cultural will); organize the learning process with attention to the infrastructures that create student success (organizational will); and have the courage to address the issues that may impede student success and encourage those that will enhance student success (political will).

Addressing the needs of every child is a commitment to address Ron Edmonds statement that we already know how to do so, and the visceral feeling that we haven't done so is abhorrent. Our answer, as educators, when asked, "How are the children?" will be a resounding "And the children are well" because we will use a framework of wills to ensure their well-being.

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A Qualitative Study of the Leadership Practices of Repatriated US-Educated Chinese Organizational Leaders

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Abstract
The number of students participating in international education has continuously increased. Over the past six years, mainland China, in particular, has been sending the greatest number of international students to the United States. There is a limited amount of research conducted on the impact of international education on the Chinese as professionals in China. This paper discusses the findings of a qualitative study conducted as part of the requirements of a doctoral program.
This grounded theory methodology study was conducted in mainland China to understand how the merging of the East and West through international education affects human beings and social systems across the world. This study explored the leadership practices of US-educated Chinese organizational leaders. Research participants included professionals in various sectors, such as higher education, finance, trade, and entertainment. Findings from this study included the multi-dimensional educational experiences of the Chinese students, many of whom at the time of their study abroad program, had not previously been outside their country. These experiential learning outcomes were linked to certain organizational behaviors in these repatriated international students reflecting authentic cross-cultural leadership. In contrast to transaction-based cross-cultural code switching, the participants of this study exhibited unique bridging behaviors that indicated a more transformational direction.

Keywords: Chinese, culture, international, education, leadership

Introduction

The number of students from East Asia attending universities in the United States has continuously increased for the past four decades, particularly Chinese nationals from mainland China. Mainland Chinese students comprise a third of the international student population in the country. Growth in international education participation has spurred interest in understanding the experiences of these students while studying abroad. Studies (Yakunina, Weigold, Weigold, Hercegovac, & Elsayed, 2013) show that, given the significant differences in the culture, political inclinations, and educational background between East Asian international students and their Western hosts, engaging in international education for these students involve acculturation and acculturative stress. Despite this challenge, their attendance in American higher education has continued.

My administrative position in a state university in the United States provides me with insight into the international student experience, and in particular, how international students navigate the significantly different educational system in the university. Unlike domestic students who reconnect with their alma mater at some point, it is typical that contact with international students is lost once they leave the country. Complexities associated with transnational studies make it difficult to conduct studies on this population, explaining the dearth of information about the post-graduation lives of East Asian students. To a degree, this study fills the gap in knowledge about this human experience and provides valuable insight into the role that participation in international education plays in the professional lives of Chinese nationals back home.

Literature Review

Transformational Leadership

The leadership field offers numerous definitions of leadership and suggests even more personal traits (Gill, 2011) associated with leadership. Given the focus of this research study, this paper primarily discusses the literature on transformational and global leadership and the cultural dimensions that shape leadership practices in multicultural settings. Transformational leadership, as compared to laissez-faire and transactional leadership, is preferred in multicultural settings because it can use "a combination of skills and unique worldviews that combine to allow leaders the flexibility to create new conditions . . . that would not have emerged otherwise" (Evans, 2009, p. 24).

The focus of transformational leadership is on positively influencing organizational members through empowerment, motivation, and morality. At the heart of the practice of transformational leadership is the professional development of the members. According to Bass (1997), this leadership practice involves the use of any of the four "I" components of transformational leadership: individualized consideration, intellectual stimulation, inspirational motivation (leaders provide vision and encouragement), and idealized influence. In individualized consideration, the leader attends to the individual member's needs and wishes the member to become a future leader rather than continue being a dependent follower. In intellectual stimulation, the

leader's act to incite the member to think about issues brings about new perspectives rather than "feed on the ignorance of followers" (Bass & Steidlmeier, 1999, p. 188). Inspirational motivation involves visioning and encouraging members. An inspirational leader focuses on what is the best in people instead of allowing the worst in people--insecurities, danger, confusion, or conflict—negatively impact the work of the organization. By being inspirational, the leader propels members toward action and positive change to achieve a common goal. Lastly, idealized influence focuses on building trust, purpose, and showing conviction. Transformational leaders promote brotherhood rather than individual differences between members (Bass & Steidlmeier, 1999). Transformational leadership is social influence predicated on "openness, connectedness, empowerment, humility and humanity" (Gill, 2011, p. 89).

The cultural relativities that surround leaders across the globe increase the importance of the leader's moral character, motivation, values, and agenda. When values and interests differ, a leader can either strive to respect and work with the differences, or use authority and create a mandate. Egoism versus altruism defines the leader's moral intention; the benefit and cost to self or to others of the leader's actions define the moral consequences of the leadership practice (Bass & Steidlmeier, 1999). Motivating members "to work for transcendental goals that go beyond immediate self-interests . . . for the good of the group, organization, or country" (Bass, 1997, p. 133) reflects an authentic transformational leadership. Leadership which is predicated on self-promotion is inauthentic.

Transformational leaders possess the following: (1) vision of a compelling future, (2) commitment to this future, (3) energy and inspiration, (4) high-performance goals, and (5) action-inspiring team spirit (Evans, 2009). "When we create a vision of a more desirable state, we next must take the action to do something different than we have done up until now" (Evans, 2009, p. 91). The leader displays a sense of direction, shows the energy to follow that direction, and enjoys the pursuit of this goal. To lead the membership to achieving high-performance goals requires the leader to provide guidelines and team spirit. Collaboration, trust, and emotionally non-threatening channels of communication must exist to enable teams to work cohesively toward the same vision.

Key to the study of cross-cultural leadership is the recognition that values is an element of leadership. Existing within individuals and collectives, values often differ along cultural lines. Values are concerned with people's belief systems, cultural identity, ideas, and intrinsically desirable behaviors (Fua, 2009). They reflect the standards of conduct that are acceptable to one's self and society (Rokeach, 1973). Vasquez, Keltner, Ebenbach, & Banaszynski's study (2001) provides the following example: Americans value autonomy much more than community and divinity whereas non-Westerners weigh these three values equally.

As it relates to this study, Farh and Cheng's (2000) study on paternalistic leadership of the Chinese indicates good moral character as a key ingredient of moral leadership. Juxtaposed with Vasquez et al.'s (2001) findings indicating that values differ across cultures, it is reasonable to imagine that what constitutes good moral character varies

between cultures. "The relationship of culture with the values held by human beings underscores the point of this study. That is, there is a question about the universality of the Western thought" (Martinez, 2016, p. 16).

Global Leadership

The proliferation of multinational corporations in the 1990s precipitated discussions concerning what type of leader could effectively lead across substantial physical boundaries and cultural differences. It is from this inquiry that the concept of global leadership emerged. Global leadership as a discipline that deals with the intercultural dimensions of leadership tackles the question of the role that culture plays, and the value sets associated with this culture, in the practice of leading organizations. Scholars such as Alon and Higgins (2005), Bucher and Poutsma (2010), Creque and Gooden (2011), Levy, Beechler, Taylor, and Boyacigiller (2007), and Mendenhall et al. (2013) have contributed to the global leadership field various definitions of the 'global leader' concept. Global leader is an individual "who inspires a group of people to willingly pursue a positive vision in an effectively organized fashion . . . in a context characterized by significant levels of complexity, flow, and presence" (Mendenhall et al., 2013, p.75). This definition of a global leader is an example of a sensitizing concept (Charmaz, 2014) associated with grounded theory research studies.

Mendenhall et al. (2013) also identified fifteen global leadership competencies, nested under the following three main categories: Business and Organizational Acumen; Managing People and Relationships; and Managing Self. These competencies enable global leaders to recognize the multiplicity of perspectives and styles of operation and handle the complexities that come with working with other cultures, geography, or time zones (Caligiuri & Tarique, 2012; Earley & Mosakowski, 2004; Ng et al., 2009). This mindset enables global leaders to work effectively in multicultural settings. They have the ability to adjust their ways to fit the environment of their international constituents (Alon & Higgins, 2005; Bucher & Poutsma, 2010; Creque & Gooden, 2011; Levy, Beechler, Taylor, & Boyacigiller, 2007).

Key to the global leader's ability to lead across cultures are two forms of intelligence: cultural and social. Cultural intelligence is "an outsider's ability to interpret unfamiliar and ambiguous gestures the way that person's compatriots would" (Earley & Mosakowski, 2004, p. 140). Cultural intelligence equips global leaders with the "capability to function effectively in culturally diverse contexts" (Ng, Van Dyne, & Ang, 2009, p. 512). Cultural intelligence complements social intelligence (Gill, 2011) by equipping the global leader the social awareness required to empathize with others and the ability to "sense the shared values and priorities that can guide the group" (Goleman, Goyatzis, & McKee, 2002, p. 49). In combination, these two forms of intelligence enable the global leader to work cross culturally.

Cultural Dimensions of Leadership

Being a global leader is tantamount to recognizing the important role of culture in leading organizations. Culture has been conceptualized as a "collective mental programming" shared by a group (Hofstede, 1980, p. 43) consisting of the following six dimensions along which nations may differ (Hofstede, 1980; 2010).

- Individualism versus collectivism – reflects whether members of the society consider themselves as individuals or operate within a group
- Uncertainty avoidance– reflects the degree of discomfort felt by members of the society with regards to uncertainty and ambiguity
- Masculinity versus femininity – reflects the orientation toward competition and degree of assertiveness as opposed to cooperation and modest and caring ways
- Long-term versus short term orientation – reflects the orientation toward thrift and investing in the future versus a desire for quick results
- Power Distance – reflects the degree to which followers accept and expect power to be unequally distributed
- Indulgence versus Restraint – reflects the society's orientation toward enjoyment and gratification of basic natural human needs as opposed to following strict social norms

Although criticized for oversimplifying a complex social phenomenon that changes over time (Collard 2009), these dimensions provide a path to understanding leadership within the context of the Chinese culture. Constructed using an online tool, Figure 1 shows a comparison between the Chinese and American cultures; the former represents the home culture of international students and the latter represents their study abroad environment.

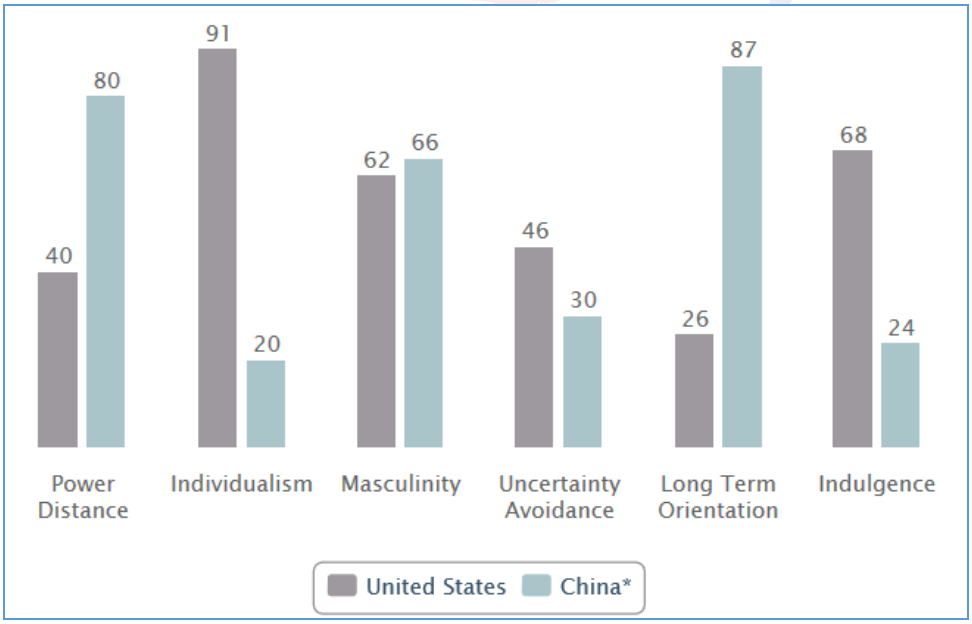

Figure 1 (retrieved from http://geert-hofstede.com/countries.html)

There is some information about the Chinese perspective on leadership through the work of some scholars (Gao, Arnulf, & Kristoffersen, 2011). Gao et al.'s (2011) study demonstrates the relationship between culture and leadership, which lends support to Chen and An's (2009) Chinese Model of Leadership Competence. This culture-specific leadership model considers self-cultivation, context profundity, and action dexterity as constituting Chinese leadership competence. "Self-cultivation is a process of transforming . . . to the higher level of the developmental ladder of leadership competence (Chen & An, 2009, p. 200). From this definition of Chinese leadership, we can see some similarities between the process of becoming a Chinese leader and the process of development of the Western leader.

Methodology

This qualitative study followed the grounded theory methodology and adhered to the principles of culturally responsive. The co-researcher approach was also incorporated in conducting this study. As an in-country study, several of the researcher's colleagues acted as co-researchers that provided logistic and cultural support and enhanced the researcher's credibility and trustworthiness with the participants.

Data Collection

This study had 24 participants. They were US-educated Chinese nationals who had returned to China after completing their graduate programs. Participants were employed in various sectors, including finance, higher education, and trade. Their ages ranged between 24 and 50 years. They were located in various cities along the eastern region of China.

Each participant provided consent to be interviewed and have their interviews audio recorded. Semi-structured interviews were conducted in five cities over a three-week period. Twenty interviews were face-to-face; three were telephonic; and one was via email. The researcher transcribed the recordings. After initial data analysis, seven participants were asked follow-up questions via email.

Data Analysis

Data analysis for this study followed the social constructivist approach (CGT). This approach allowed the researcher to uncover tacit meanings behind participants' utterances, situation, and events with the aim of understanding their lived experiences of leadership. Additionally, this approach put the focus on the intercultural context of the study which culturally responsive methodology studies require, including the nuances in the use of English as a second-language. Data analysis for this grounded theory study involved several iterations of open coding (1200+ codes) and focused coding (67 codes). The final stage of coding involved categorical coding which led to the classification of this study's findings into three themes.

Discussion

The findings of this study revolved around three major themes: (1) the learning experiences of the participants in the United States; (2) the participants' environment in China; and (3) the link between their international education and their organizational behaviors in China. The following passage from one of the participants reflected the motivation and learning outcome of the Chinese nationals from their international education in the United States.

> The point of international education is not about knowledge but to let people experience different things so people understand and build their awareness that people think in different ways and people behave in different ways (Marvin, personal communication, August 14, 2015).

The Learning Experiences in the United States

The great majority of the Chinese participants had not been outside China prior to going abroad to study. As such, their motivation for going to school abroad was to learn about the world outside China. During their sojourn, they were constantly comparing the Chinese systems with those in their host society—education, transportation, residential rules, and social norms. Inside and outside the classroom, they were challenged with new ways of thinking and behaving. The returnees felt that their international education experience expanded their abilities to think and behave beyond the traditional Chinese ways. In terms of social relations, they realized the concept of the 'other' and learned how to engage in group work in school. Behavioral development was manifested in their learning how to speak up to share their thoughts and taking the initiative to research information on their own. The vast majority of the participants described themselves as "open-minded" and more confident as a result of their experiences abroad. In sum, they were exposed to diverse opinions, interests, styles, and options.

The organizational context in China

The skill set of the returnees enabled them to obtain employment in multinational corporations, state-owned enterprises in China that conducted business with foreign entities, and highly-ranked state universities with international programs. This study found that the degree of application of international education was based on the social norms prevalent in the organization in which the returnees worked. Based on the participants' statements, this study found that multinational corporations (MNC) conducting business with non-Chinese organizations provide an environment that fosters and tolerates the use of Western skill sets. In MNC organizations, returnees reported that they could apply the Western knowledge and cultural intelligence they acquired through their international education. In comparison, returnees employed in state-owned organizations (SOE) had much less opportunities to use their Western skill set. In SOE's, opportunities to use their Western skill set arose only when they needed to interact with foreign nationals or had business transactions with MNC

organizations. Returnees in SOE's who was primarily dealing with the domestic market could hardly apply their international education.

This study found varying degrees of application of Western skill set in higher education in mainland China. Returnees working in universities associated with Western universities had Western leadership style, Western pedagogy, and adopted Western social norms. Similarly but to a lesser extent, those teaching in top-ranking Chinese universities adopted Western pedagogies. The leadership style of administrators in these prestigious Chinese state universities showed elements of inclusive leadership. In comparison, US-educated faculty in provincial universities and colleges reported to have limited ability to use Western pedagogy and were subject to criticism for deviating from the norm; they were expected to use traditional Chinese teaching methods.

This study included two returnees who were entrepreneurs. As independent businesspeople in China, these returnees did not have organizational links to MNCs, SOE's or the Chinese government. Their lifestyles revealed the unique situation of US-educated returnees that did not belong to any established organization in China. They appeared to struggle professionally. This particular finding was consistent with how a current international student described the plight of some returnees during an informal pre-dissertation conversation.

Linking International Education and Organizational Behaviors in China

This study found that, as a context for organizational behavior, the type of organization in which they worked shaped the Chinese returnees' leadership practices. Their employers were either multi-national organizations (MNC), state-owned enterprises (SOE), or state universities. International trading companies or banks based in the United States or other Asian countries and joint US-China universities were examples of MNC's in which the participants worked. The SOE's in which the participants of this study worked were either involved in international or domestic trade. The state universities wherein some of the participants worked were located in either metropolitan cities or provinces.

These findings on organizational behavior circled around the returnees' communication and leadership practices. Keeping in mind that the type of organization they led shaped their manner of operation, how they communicated as leaders was also context-based. In terms of communication, Chinese returnees who worked in MNC's or top-ranking state universities found more opportunities to converse in the English language than returnees who worked in organizations primarily involved in domestic ventures. In terms of style, returnees in MNC's where Western mindset prevailed, they spoke in the more straightforward manner they learned to adopt abroad. In MNC's, these returnees' use of Western communication style enabled them effectively conduct business with international stakeholders.

In terms of leadership, this study's findings indicated that the US-educated Chinese executives were more likely to adopt Western leadership practices. They described

themselves to be more collaborative and stated that they valued multiplicity of perspectives. Their orientation was toward less or flatter organizational hierarchy and believed in professional development for their staff. Participants in the MNC's and higher education institutions reported that they provided mentoring to their staff.

Similarly, the leadership practice of returnee-leaders in SOE's reflected inclusive leadership. They encouraged staff to engage in brainstorming activities and led constructive dialogue with them. In the SOE's where traditional Chinese social norms prevailed, returnees used familiar Chinese communication techniques to apply Western style social relations. For example, they would not make explicit recommendations or provide direct feedback to co-workers or subordinates. Rather, they used subtle ways to make suggestions for other ways of operating and influencing positive change. This was how they blended Western leadership practices and the Chinese culture.

"I'm a bridger."

In its final analysis, this study linked the behavior of the returnees with their learning experiences in the United States. This analysis revolved around the self-definition made by one of the participants, a human resource professional for a multinational corporation. Adopted as an in vivo code, "I'm a bridger" gave birth to the *bridger* concept to describe the leadership practices of US-educated Chinese nationals in mainland China. Becoming a bridger as a form of cross-cultural learning could be traced back to the challenges in social relations that this returnee and the other participants encountered while abroad. This learning, as Rientes and Jindal-Snape (2015) suggested, led to the development of coping skills while during their sojourn, which later evolved into bridge building behaviors. The following two examples of coping skills were provided by this study: (1) a higher education administrator in a joint US-China university learned how to work with individuals with diverse values and (2) a manager in a multinational organization learned how to work with teams. Serving as intercultural interpersonal tools, these skills enabled the returnees to take up an adaptive social behavior in multicultural settings.

Bridging behaviors are actions that reflect one's ability to link perspectives and behaviors in accordance with the cultural and social situation. The bridging behavior adopted by US-educated Chinese returnees is akin to Molinsky's (2013) "cultural retooling". Cultural retooling occurs during one's sojourn away from home while bridging behaviors arise during repatriation. In the case of the Chinese returnees, bridging behaviors facilitate relationship-building between peoples of Eastern and Western cultures. Consistent with the Confucian orientation, the Chinese are motivated by their need to maintain harmony—the ying and the yang--in social relationships and understanding between cultures. Coupled with cultural intelligence that developed as a result of their international education, bridger-returnees are able to function well in multicultural settings. Their expanded knowledge about the West reflects cultural intelligence (CQ) in the cognitive dimension while their increased ease in engaging with Western society lies in the behavioral and motivational dimensions of CQ.

The bridger's adaptive nature is akin to cross-cultural code switching behavior, another concept advanced by Molinsky (2007), but is distinct in its underlying principle of permanently building healthy social relations. The bridger's goal is to accept and understand the other as they are as human beings and similarly, to be accepted as well. Predicated on creating permanent improvements in social relations, I argue that bridgers are transformational and code switchers are more transactional, thus making the latter less of an authentic leader than the former (Bass & Avolio, 1997).

Development of Empathy—A Chinese Leadership Competence

Observations of how complete strangers welcomed them, provided them physical assistance, and helped them overcome their struggles while studying abroad were lessons about empathy for the Chinese student. The Chinese international students became familiar with the neighborly smiles and casual 'hellos' from strangers and were grateful for acts of kindness from faculty or community members. This social behavior was in stark contrast with the closed social networks in China, known as *guanxi* in Chinese, where social interaction and information sharing was limited to those accepted into specific social groups. From their pleasant experiences in their host country, Chinese international students developed the concept of the other and sensitivity to differences in people's perspectives, needs, and ways of being. Most importantly, they developed empathy for those dissimilar to them, because in the United States, they were the foreigners. Empathy, combined with group work experiences in the United States, developed their potential for intercultural facilitative behavior. From their perspective, these international students were developing empathy--the key competence of a Chinese leader (Chen & An, 2009).

Theoretical Propositions from this Study

Theoretical sampling was conducted during the data analysis phase of this study to propel the study toward theory construction. Theories that informed this study's emergent theory included the Model of Chinese Leadership (Chen & An, 2009) and Molinksy's (2007) theory on cross-cultural code switching. The Chinese Model guided this study's understanding of the leadership styles of the participants by providing the ingredients of Chinese leadership: self-cultivation, context profundity, and action dexterity (Chen & An, 2009). The "umbrella of 'great empathy,' which dictates [that] the unity is integrated with diversities, and particularly is identified with universality" (Chen & An, 2009, pp. 200-201) resulted in the conception that development of leadership for the Chinese is a process that involved transformation through self-cultivation.

From the behavioral perspective, Molinsky's (2007) theory on cross-cultural code switching provided a starting point for this study's explanation of the behaviors of the Chinese returnees. Premised upon the need of foreigners to adjust their behavior when conducting business with other cultures, code switching as the "act of purposefully modifying one's behavior . . . to accommodate different cultural norms for appropriate behavior (Molinsky, 2007, p. 623) helped explain the returnees'

behaviors. In its common link to empathy, cross-cultural code-switching conceptually connected with the bridging behavior from this perspective: In order for any behavioral adjustment to be authentic and be congruent with the person's emotional makeup, the action must be based on the person's understanding of the perspective of the other person. As this study showed, the Chinese returnees were capable of cross-cultural code-switching because they learned the concept of the other and were authentically striving for a harmonious relationship with other cultures. This orientation toward empathetic interactions connected back to the Chinese model of leadership as well as to the Western concept of empathy which "makes a leader able to get along well with people of diverse backgrounds or from other cultures" (Goleman et al., 2002, p. 255).

Defined as "how leaders handle themselves and their relationships" (Goleman et al., 2002, p.6), emotional intelligence which includes empathy, enabled the Chinese returnees to operate successfully in cross-cultural settings. The empathy that they developed as a by-product of their acculturation challenges abroad) increased their emotional intelligence. Growth in this area represented the greatest benefit of participation in international education. Because of their experiences as international students, US-educated Chinese returnees became facilitators of understanding between the East and the West. On their own, they were promoting positive professional and social relationships between individuals from these diverse cultures. Using communication strategies that would work well for their organizational context, they strived to clarify uncertainties or eliminate possible sources of disagreements due to cultural differences.

Conclusion

This research provides a rare look into the post-graduation lives of international students who have returned home and poses the question of how learning outcomes of international education affect the practice of leadership in the returnees' organizations. The international education community can glean from this study possible ways to develop academic programs and student services that foster authentic leadership. From the proposition that "international students organically take on the role of bridgers" (Martinez, 2016, p. 178) this study sets the stage for future studies on international education and cross-cultural leadership. In addition to its findings about the leadership practices of repatriated international students, this study also paves the way for future studies on how human behaviors and systems across the globe are possible affected by international education.

Implications of this study extend beyond the business sector where the majority of the participants belong. There are implications in international relations, higher education, and existing theories related to cross-cultural phenomena. As with other studies (Biao & Shen, 2009; Li, 2006), this study links educational exchanges with the development of authentic understanding between countries. To foster positive international relations, university and government leaders must invest in programs that provide positive educational experiences to international students participating in their country's higher education. With respect to the Chinese, their participation in

graduate programs in the United States helps develop ambassadors that foster peace and understanding between the two nations.

In the university setting, administrators of career centers may be able to plan programs that facilitate job searches for international students; alumni associations and/or university advancement organizations may be able to enhance their fund raising abilities by developing strategies for outreach to former international students based on this study's findings. Given the continued growth in the number of international students in Western universities, this study suggests heeding Hudzik's (2011) call to incorporate global approaches in pedagogy and student services in university strategic planning.

US-educated Chinese returnees gravitate toward each other in China. They form informal social groups in the Chinese society. Cognizant of their distinctive set of skills and expanded mind set, US-educated (or Western educated) Chinese nationals share with each other a unique value set not shared by their domestically-educated counterparts. The effect that these coalitions have on the Chinese society is worth examining for possible new trends in cross-cultural relations. The study suggests a need for socio-anthropologists and scholars from other disciplines to research this phenomenon and understand the consequences of the internationalization of education.

Although all study participants came from the same country, the theoretical propositions from this study could apply to other nationalities. The study offers a template for other similar studies. It is also recommended that further research on the bridging behavior include other factors, such as number of years of study abroad, length of repatriation, educational background, and socioeconomic status. It would be interesting to see what sorts of future studies this groundbreaking in-country dissertation inspires. I invite other scholars to expand this research and help inform the work of the academics and administrators in higher education worldwide.

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Development of Internationalization of Library and Information Science (LIS) Programs in Thailand

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Abstract

Internationalization has been recognized as a key strategy to cope with changes and establish the capacity and potential of the programs. This documentary research aimed at studying the development of the internationalization of LIS programs in Thailand. Research instruments comprised a documentary analysis form. Findings showed that 1) Internationalization was found since the founding of library education in Thailand in the year 1951 at Chulalongkorn University, as evening classes for the holders of a bachelor's degree under the auspices of Fulbright foundation of the United States. Fulbright scholars from U.S.A. played active roles in the internationalization of library programs in Thailand, 2) the inauguration of the LIS Ph.D. programs in Thailand was the hallmark of the internationalization as internationalization has been implemented in all missions of higher education: management, teaching and learning, research and academic services, and 3) key driven factors of the development of internationalization included the national policies and quality assurance.

Introduction

Internationalization is a concept in constant development and many different definitions have been proposed during the course of the past three decades or more. The conceptual framework of the word 'internationalization' was varied in the explanation and interpretation in different approaches, perspectives and context. This is supported by Tammaro (2014, p. 315) that alongside the growing importance of internationalization, the concept itself has acquired a vast number of interpretations.

Diverse, often more specific ways, have been used to describe the process, such as, international education. (International Association of Universities, 2015). A new definition of internationalization was proposed by a globally recognized scholar in the internationalization of higher education, De Wit (2015), as "the intentional process of integrating an international, intercultural or global dimension into the purpose, functions and delivery of post-secondary education, in order to enhance the quality of education and research for all students and staff, and to make a meaningful contribution to society." The subject of internationalization has been one of the most discussed issues in academic environment.

Internationalization of higher education has been promoted for several decades. Experts in the higher education believed that this subject is a new paradigm and inevitable approach in the universities and curriculum. (Ghasempoor; Liaghatdar, & Jafari, 2011, p.35). Four broad categories of rationales for internationalization: political, economic, social and cultural, and academic were identified by De Wit (2002), with economic rationales become increasingly motivated and more dominant in the present situation. The rationales of internationalization may vary in importance by program, by institution, by country, and by region and change over the time, but are becoming more and more interconnected. According to Knight (2008: 25), emerging rationales are at the national level (e.g., human resource development, strategic alliances, income generation/commercial trade, nation building, social/ cultural development and mutual understanding) and at the institutional level (e.g., international branding and profile, quality enhancement/ international standards, income generation, student and staff development, strategic alliances and knowledge production).

Internationalization has affected library and information science educational settings and programs primarily in Europe and the U.S.A. (Abdullahi, Kajberg & Virku, 2007), Previous studies on the internationalization of LIS education focused on the western world. "Europeisation," "Bologna Declaration" and "Bologna Process" are some achieved European internationalization experiences of library and information science education in Europe. In Thailand , special efforts have been made to internationalization LIS programs to respond to the challenges of an increasing global world. As internationalization is a global trend that LIS programs and institutions are engaged, and an important research issue of interest to LIS educators and researchers worldwide. This study will highlight the research findings of the "Internationalization of LIS programs in Thailand" (Sacchanand, 2016), focusing on the development of the internationalization of LIS education. This will help to look forward the future, to establish and advance the capacity and potential of LIS programs and institutions especially graduate levels.

Research objectives

This research aimed at studying the development of the internationalization of library and information science education in Thailand.

Research Methodology

This documentary research used a recording form as research instrument.

Data collection A comprehensive literature review related to LIS education and internationalization of higher education in Thailand was conducted.

Data analysis Qualitative data from documents were analyzed using content analysis and synthesized to create a more complete picture of findings and present descriptively to answer the research objective.

Findings and Discussions

1.Internationalization of LIS education in Thailand was found since the founding of library education in the year 1951, at Chulalongkorn University, the first university in Thailand. The evening classes for the holders of a bachelor's degree under the auspices of Fulbright foundation of the United States was conducted in English. A lot of international activities and contribution were implemented by Dr. Frances Lander Spain, the first Fulbright scholar who was honored to be the founder of modern librarianship in Thailand and by the succession of five outstanding Fulbright scholars, each of whom taught library science course for one year. Since then the first undergraduate program, Bachelor of Arts degree program in library science was inaugurated in 1959, following with the offering of Master of Arts degree program in 1964 at Chulalongkorn University, based on the evaluation report of the diploma and B.A. degree program and guideline proposed by Morris A. Gelfand, UNESCO expert, from the United States.

This is as argued by Gorton (1979) that the period 1950-1976 has seen encouraging developments in the field of Thai academic libraries and librarianship. In 1951 there was no trained librarian in the country. During the 1950s and 1960s, in schemes supported by the Thai and American governments and various international agencies, expansion took place and has led to a present situation of great potential. A lot of activities and contribution from LIS scholars and professionals abroad have played active roles in the establishment and development of LIS programs in Thailand. Thus, internationalization of library education in Thailand started at the post-graduate level.

2. The inauguration of the Ph.D. program in Library and Information Science/ Studies in Thailand was the hallmark of the internationalization of LIS education. The first Ph.D. program in Information Studies which started in the year 2003 at Khon Kaen University, was supported by Fulbright Foundation. Professor Robert D. Stuart, Fulbright scholar from United States helped inaugurated and internationalized the PhD. Program. The second Ph.D. program in information science using distance learning was offered in the year 2010 at Sukhothai Thammathirat Open University (STOU).Internationalization of STOU Ph.D. Program was found important and

necessary and research about the internationalization of the Ph.D. program was conducted and laid the foundation for a successful implementation of STOU Ph.D. program in information science. (Sacchanand, Gaikwang & Vipawin , 2011).

The internationalization of STOU Ph.D. program emphasized on policies, strategic planning, specific allocated budgets, curriculum, teaching/ learning, research, teaching faculty and student development, learning resources, international cooperation and network, and academic services to the community. Various recommended international strategies were conducted, e.g. international academic network and cooperation with universities, LIS programs and professors abroad for the teaching/learning activities; international seminar/ conference in the area of library and information science, study abroad program, and joint research.

3.Internationalization of LIS Ph.D.programs in Thailand has been implemented in the management, teaching and learning, research and academic services. Khonkaen University and Sukhothai Thammathirat Open University which offer Ph.D. programs as well as Mahasarakarm University (MSU) and Chulalongkorn University (CU) which plan to offer PhD. Program implemented internationalization in all missions, management, education, research and academic services, and they are among the leading group of internationalization.

Management: LIS graduate institutions in Thailand had the missions, vision, policies, plans, strategies related to the management of internationalization at the university level. MOU with the LIS programs or institutions abroad were conducted at the university levels.

Teaching and learning: LIS graduate programs in Thailand internationalized LIS curriculum; recruited faculty members with degrees and professional experiences abroad; provision of grants to support paper presentation, conference attendance, training and workshop abroad. Issues related to LIS global issues were integrated in the curriculum, teaching and learning to create awareness of the students and faculty members in the international context and perspectives. Some other important activities included English language proficiency requirement for the entrance /graduation of the programs, student mobility, study abroad program, extra curricular activities, and virtual form of internationalization through the web and social networks. No LIS programs in Thailand developed or offered international programs, credit transfer with institutions abroad, off campus provision abroad, English program, joint degree programs or double degree programs with institutions abroad and joint course material production in English.

Research: The research activities that most LIS graduate programs implemented are offering grant for joint research between faculty members of the programs and other LIS programs abroad, research or academic articles publishing in the international journals or presentation at the international conferences.

Academic services: Few LIS graduate programs conducted joint conference, workshops, seminars and training programs. The activities that faculty members of most LIS programs performed are members of editorial board and peer reviewers of

international journals, guest professors, speakers and resource persons of international academic activities.

4. Key driven factors of LIS education internationalization were national policies and quality assurance.

National policies: Internationalization has been first incorporated into the *1nd 15-Year Long Range Plan for Higher Education (1990 – 2004)* formulated by the Ministry of University Affairs (The National Commission on Higher Education (CHE) at present) to respond to changing environments with more proactive roles, and later *the 2nd 15-Year Long Range Plan for Higher Education(2008 – 2022)* which aims at enhancing higher education and country's competitiveness. The Ministry of Education also issued *Guidelines for Academic Cooperation Between Thai Higher institutions and Foreign Higher Institutions* (2007) and *Best Practice in Internationalization of Higher Institutions Under the National Commission on Higher Education* (2013) as part of its implementation. The international strategies for Thai Higher Education by the National Higher Commission on Higher Education were in accordance with the global rationales and trends of internationalization focusing on higher education capability building enhancement, quality enhancement, international standards, student and staff development. In addition, the Ministry of Education also recognized English as an international language and the world's most widely spoken language as an international official language, thus, the English language proficiency became a requirement for graduates as well as new faculty members. These showed that internationalization of higher education has been a prime concern of the Thai government at the high level and a key driven factor to the internationalization of the LIS graduate programs.

Quality assurance: Quality assurance is also growing in importance in the internationalization of LIS higher education as a means to improve the quality of education through collaborative network. Regionalization has been highlighted to promote quality assurance in library and information science education in ASEAN. (Sacchanand, 2015). This is in line with Knight (2012) who emphasized that regionalization is seen as a complementary process to internationalization, a process of building closer collaboration and alignment among higher education among education actors and systems in a designated area or framework, commonly called a region. Knight (2013: 15) also indicated that a notable evolution in the internationalization of higher education in the last decade has been the increasing emphasis on regional level collaboration and reform initiatives.

Recommendations

Library and information Science programs have undergone many reviews and changes continuously over last two decades. The development of internationalization of LIS education is a long process that takes multiple roads. The following recommendations are proposed :

1. As internationalization opens a new horizon and offers an untapped opportunity, internationalization should be strengthened at the university and program levels , so that internationalization will play a more prominent role in LIS education, to prepare globally competitive graduates who can function effectively in the global environment and to enjoy higher standing of LIS education and profession.

2. Internationalization through collaboration or collaborative networking especially in the ASEAN region should be key strategy and a driving force of the internationalization of LIS education and research in Thailand.

3. LIS educators in Thailand should play a more proactive roles nationally and internationally.

4. Quality assurance through the adoption of international standards related to education and internationalization in policies, curricula, teaching and learning, research and academic services should be the key to the development of internationalization of LIS graduate programs.

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Implementation of Problem-Solving Instruction in a Global Education Course and Visualizing Japanese Undergraduate Students' Learning

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Abstract
The world has been globalized at an unprecedented speed in that everything from people to information moves across nations more quickly and intensely than ever before. In order to prepare the young to effectively and responsibly live in such a global society, global education was born in the U.S. in the late 1960s and has developed since then. Global education attempts to develop students' global perspectives consisting of six conceptualizations: perspective consciousness; cross-cultural learning and cross-cultural communication skills; global interdependence; global history; global issues; and participation in a global society. Despite the fact that a number of instructional approaches have been implemented, few have focused on a problem-solving process by applying all the conceptualizations. In order to fill this gap, the study aimed at designing and implementing a course to help Japanese undergraduate students to learn about global issues and how to solve the issues; and attempting to visualize their learning. The data were collected from a course, in which the author taught global education to 12 Japanese undergraduate students from April to July in 2016. The data such as teaching materials, students' academic work, and their reflective notes were analyzed to visualize how they acquired and utilized the conceptualizations. The results showed that the course provided the students with opportunities to develop all the six conceptualizations in global perspectives as it was planned and that visualizing the data was helpful to identify an overall picture of the students' learning.

Keywords: Global Education, Problem-Solving Instruction, Visualization

Introduction

The world has been globalized at an unprecedented speed in that everything from people to information moves across nations more quickly and intensely than ever before. Such global mobility has promoted interconnectedness of events, organizations, and people around the world politically, economically, culturally, ecologically, and technologically (Anderson, 1979). Also, various types of issues or problems such as global warming, overpopulation, and terrorism have become more obvious and serious (Abdullahi, 2010). In order to prepare the young to effectively and responsibly live in such a global society, global education was born in the U.S. in the late 1960s and has developed since then. Global education attempts to achieve this goal by developing students' global perspectives. Although different scholars and educators suggest different elements as components of global perspectives, the six conceptualizations: perspective consciousness; cross-cultural learning and cross-cultural communication skills; global interdependence; global history; global issues; and participation in a global society are the most common (Kasai, 2009). Each definition of the six conceptualizations is as follows:

1. Perspective Consciousness – The recognition that every individual has a perspective that is not universally shared, while the perspective can be continuously formed and reformed by influences over time (Hanvey, 1976).
2. Cross-cultural Learning and Cross-cultural Communication Skills – Knowledge about one's own culture and other cultures, and skills in effectively interacting with people from diverse cultures and countries (Merryfield & Subedi, 2001).
3. Global Interdependence – Interconnectedness of people, events, and issues linked to one another, and the ways in which they affect and are affected by other people, events, and issues (Pike & Selby, 1988).
4. Global History – A history that is interconnected across the world and it may also consist of interrelated regional histories (Anderson, 1979).
5. Global Issues – Persistent worldwide problems that cannot be solved by one nation alone (Alger & Harf, 1986). Global issues include human rights, pollution, poverty, ethnic conflicts, and population problems.
6. Participation in a Global Society – People's actions on a local scale to solve or ease global issues that they learn about (Alger, 1985).

Global education was introduced in the 1970s in Japan and has mainly been practiced in English and social studies courses since then (Ishimori, 2015). Currently it seems to be paid more attention in the education field than before due to the following two events. The first event was that the Global Human Resource Development Committee of the Industry-Academia Partnership for Human Resource Development (2011, June 22) suggested that higher education institutions should educate the young to become *gurobaru jinzai* (global human resources). The second one was that the Ministry of Education, Culture, Sports, Science and Technology (2015, October) strongly recommended higher education institutions to implement instruction enhancing students' active learning. The common goal of instruction for both purposes is to develop one's abilities to solve problems[1]. In this sense, global education can play a major role of achieving this goal. Thus, it is necessary to design a global education course for the purpose of developing students' problem-solving abilities.

Despite the fact that a number of instructional approaches have been implemented, few have focused on a problem-solving process by applying all the aforementioned conceptualizations in global perspectives. In order to fill this gap, the study has conducted to design and implement a course to help Japanese undergraduate students to learn about global issues and how to solve the issues; and attempted to visualize their learning. The data were collected from a 4-credit course (hereinafter called "the Course"), in which the author taught global education to 12 Japanese undergraduate students from April to July in 2016. The 30 lesson plans (90 minutes per lesson) of the Course (See Table 1.) included the contents of all the six conceptualizations in the following order: perspective consciousness, cross-cultural learning and cross-cultural communication skills, global interdependence, global history, global issues, and participation in a global society. The rationales for this instructional framework (See Figure 1) are that the first four conceptualizations overlap in terms of the learning contents and that they are also considered as prerequisite elements to learn about global issues and solutions to the issues. In short, perspective consciousness and cross-cultural learning and communication skills enable students to collect information about global issues from multiple sources including people and to critically analyze it, while global interdependence and global history help them to understand global issues as systems, in which all the issues are interconnected across time and space.

Lessons	Topics
Lessons 1-3	Introduction to Global Education
Lessons 4-7	Seeing the World from Multiple Perspectives (Perspective Consciousness)
Lessons 8-13	Cross-cultural Learning and Experiences (Cross-cultural Learning and Communication Skills)
Lessons 14-17	Global Interconnectedness across Space and Time (Global Interdependence & Global History)
Lessons 18-23	Global Issues (Global Issues)
Lessons 24-27	Think Globally Act Locally (Participation in a Global Society)
Lessons 28-30	Group Presentations

Table 1: 30 Lesson Plans of the Course

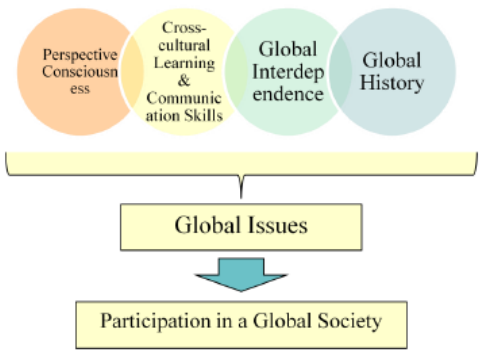


Figure 1: Instructional Framework for the Course

The data such as teaching materials as well as students' academic work were collected and coded based on the definitions of the conceptualizations in global perspectives with two types of qualitative data analysis software called NVivo 11 and KH coder[2].

Conclusion

At first, the effects of the Course on students' acquisition of the six conceptualizations in global perspectives were investigated. The reflective notes, in which students wrote about their learning, thoughts, or suggestions at the end of each lesson, were sorted out into the 27 learning activities and the activities were organized in a chronological order (from Lesson 2 to Lesson 30). Then, they were manually coded. The result (see Appendix 1) was illustrated in a 100 % stacked bar chart (Figure 2) and a contour graph (Figure 3). The 100 % stacked bar chart showed that students were able to learn all the six conceptualizations in global perspectives throughout the Course, while the contour graph demonstrated that they tended to learn the conceptualizations as the Course was planned.

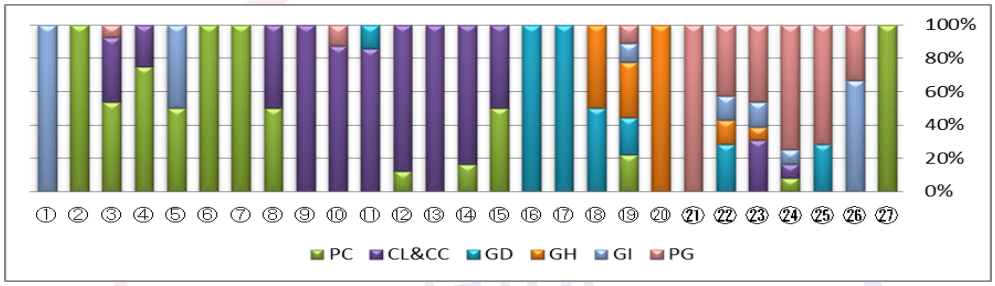


Figure 2: 100 % Stacked Bar Chart

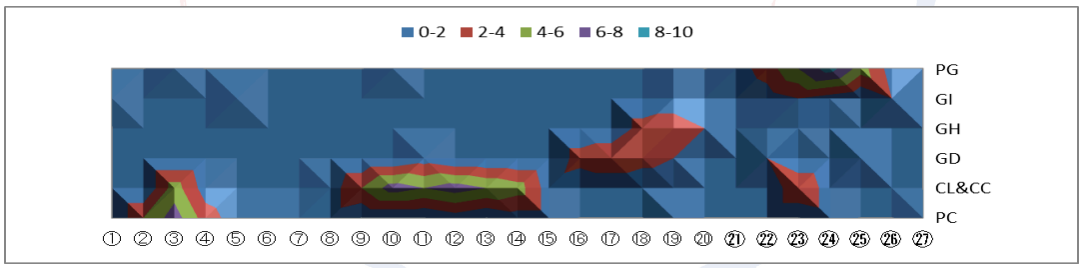


Figure 3: Contour Graph

In order to reconfirm the manually coded result above, the same data were automatically analyzed based on the coding rule[3]. The result was shown in a bubble plot chart (Figure 4). Both the contour graph (Figure 3) and the bubble plot chart (Figure 4) tended to show a similar tendency in terms of students' acquisition of the conceptualizations.

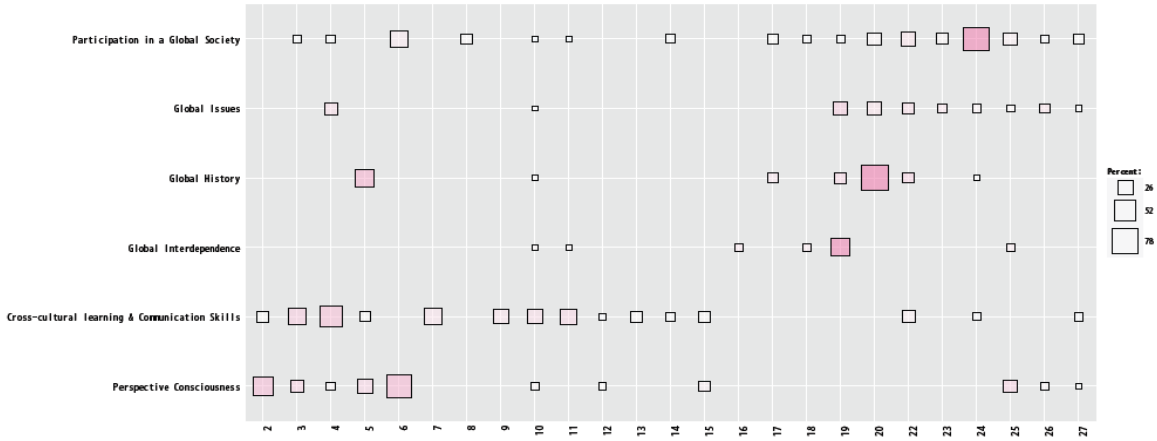
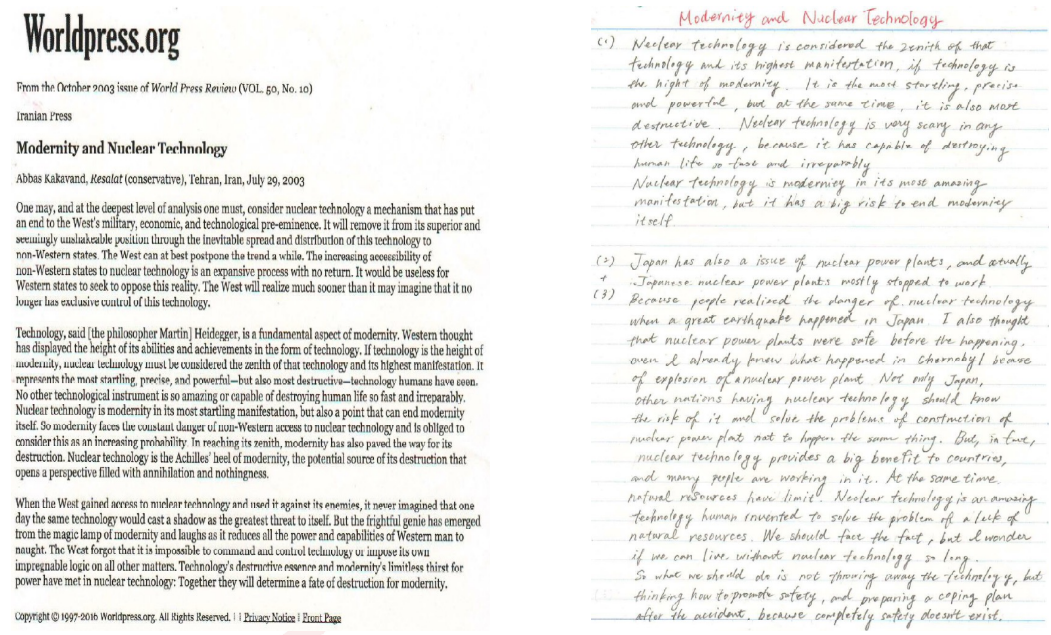


Figure 4. Bubble Plot Chart

When it comes to problem-solving instruction, four relevant learning activities were implemented in the Course: a scrap book journal assignment, a webbing activity, instruction on three alternative futures, and individual presentations. Scrap book journal assignment made the students find and read five English news articles about the global issues that they were interested in and write article summaries, self-reflections, and, if any, solutions suggested in the articles. The texts in the scrap book journals made it possible to identify how much they understood about the articles and what they learned about the global issues. The global issues that they selected were child labor, endangered species, gender issues, nuclear issues, refugees, population issues, poverty, technology issues, and terrorism. For example, student H chose nuclear issues and wrote scrap book journals based on the five relevant articles that she selected. Figure 4 below are an example article and its scrapbook journal. The article (http://worldpress.org/Mideast/1511.cfm) was written by Abbas Kakavand in 2003 and discussed that nuclear technology had been playing a major role of promoting modernity in western states; however, it would have a great potential for destroying the modernity. It was worth noting that in the self-reflection part of her journal she related the contents of this article to Japanese context by acknowledging that although Japanese people have enriched their lives with nuclear power, they have become more aware of its risk and danger since 2011, when there was a nuclear accident in the *Fukushima Daiichi* nuclear power plant and by concluding that we should think about how to promote its safety. At the same time; however, contrary to the instruction on this journal assignment she seemed to misunderstand what to write in a solution section and argue her own solutions to this issue.



Worldpress.org

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Iranian Press

Modernity and Nuclear Technology

Abbas Kakavand, *Kesalat* (conservative), Tehran, Iran, July 29, 2003

One may, and at the deepest level of analysis one must, consider nuclear technology a mechanism that has put an end to the West's military, economic, and technological pre-eminence. It will remove it from its superior and seemingly unshakeable position through the inevitable spread and distribution of this technology to non-Western states. The West can at best postpone the trend a while. The increasing accessibility of non-Western states to nuclear technology is an expansive process with no return. It would be useless for Western states to seek to oppose this reality. The West will realize much sooner than it may imagine that it no longer has exclusive control of this technology.

Technology, said [the philosopher Martin] Heidegger, is a fundamental aspect of modernity. Western thought has displayed the height of its abilities and achievements in the form of technology. If technology is the height of modernity, nuclear technology must be considered the zenith of that technology and its highest manifestation. It represents the most startling, precise, and powerful—but also most destructive—technology humans have seen. No other technological instrument is so amazing or capable of destroying human life so fast and irreparably. Nuclear technology is modernity in its most startling manifestation, but also a point that can end modernity itself. So modernity faces the constant danger of non-Western access to nuclear technology and is obliged to consider this as an increasing probability. In reaching its zenith, modernity has also paved the way for its destruction. Nuclear technology is the Achilles' heel of modernity, the potential source of its destruction that opens a perspective filled with annihilation and nothingness.

When the West gained access to nuclear technology and used it against its enemies, it never imagined that one day the same technology would cast a shadow as the greatest threat to itself. But the frightful genie has emerged from the magic lamp of modernity and laughs as it reduces all the power and capabilities of Western man to naught. The West forgot that it is impossible to command and control technology or impose its own impregnable logic on all other matters. Technology's destructive essence and modernity's limitless thirst for power have met in nuclear technology: Together they will determine a fate of destruction for modernity.

Modernity and Nuclear Technology

(1) Nuclear technology is considered the zenith of that technology and its highest manifestation, if technology is the hight of modernity. It is the most startling, precise and powerful, but at the same time, it is also more destructive. Nuclear technology is very scary in any other technology, because it has capable of destroying human life so fast and irreparably. Nuclear technology is modernity in its most amazing manifestation, but it has a big risk to end modernity itself.

(2) Japan has also a issue of nuclear power plants, and actually + Japanese nuclear power plants mostly stopped to work.
(3) Because people realized the danger of nuclear technology when a great earthquake happened in Japan. I also thought that nuclear power plants were safe before the happening. even I already know what happened in Chernobyl beause of explosion of a nuclear power plant. Not only Japan, other nations having nuclear technology should know the risk of it and solve the problems of construction of nuclear power plat not to happen the same thing. But, in fact, nuclear technology provides a big benefit to countries, and many people are working in it. At the same time natural resources have limit. Nuclear technology is an amazing technology human invented to solve the problem of a lack of natural resources. We should face the fact, but I wonder if we can live without nuclear technology so long. So what we should do is not throwing away the technology, but thinking how to promote safety, and preparing a coping plan after the accident. because completely safety doesn't exist.

Figure 4: Student H's Chosen Article (left) and Its Scrap Book Journal (right)

Next, students made illustrations on causes and effects of global issues, which looked like a spider's web in a webbing activity. After that, the three alternative futures: preferable future, probable future, and possible future (Pike & Selby, 1988) were instructed and the students, then, drew diagrams on historical backgrounds of the manageable problems that they picked up from global issues. The students' webbing illustrations and diagrams with the three alternative futures visually showed their learning about global issues as systems interconnected across time and space. For instance, student H created a web illustration and a future diagram regarding nuclear issues (See Figure 5). In her web illustration she showed that possession of nuclear power would cause some issues such as nuclear disaster, conflicts with nuclear weapons, radiation sickness, desertification, and deforestation, while she presented the past, the present, and the futures of nuclear power plants in her future diagram. In spite of her excellent work, the problem under nuclear issues (an increasing number of nations possessing nuclear power) seemed to be beyond her control.

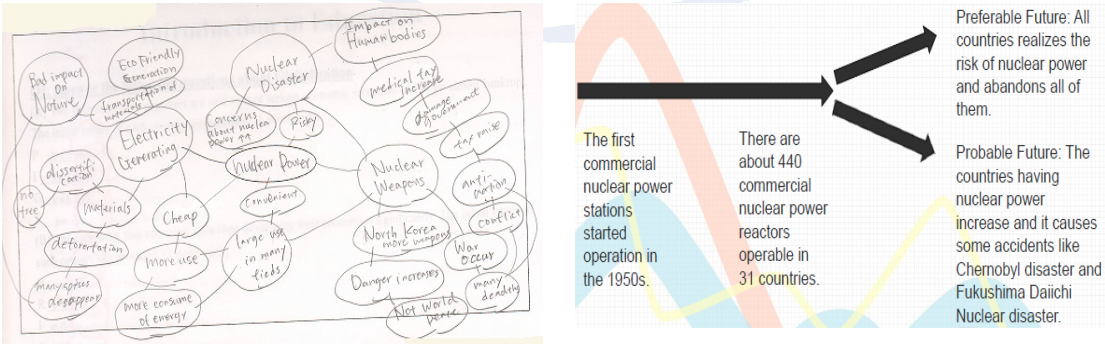

Figure 5: Student H's Web Illustration (left) and Future Diagram (right)

By utilizing what they learned from the previous three activities, they gave presentations about the global issues including solutions to the issues. The texts in their PowerPoint slides for individual presentations were analyzed to identify features of their solutions. The frequencies of the nouns as possible actors and the verbs as possible actions were analyzed and the 10 most frequently appeared nouns (See Table

2) and verbs (See Table 3) were found. These results were illustrated in word clouds (See Figure 6 and Figure 7). In the word clouds, the more frequently the words appeared, the bigger they were presented in size.

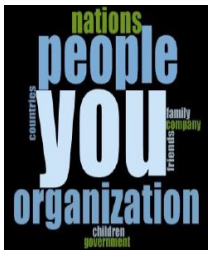

Figure 6: Word Cloud of 10 Most Frequently Appeared Nouns

Table 2: Frequencies of 10 Nouns

Verb	Frequency	Verb	Frequency
you	7	company	1
people	4	countries	1
organization	3	family	1
nations	1	friends	1
children	1	government	1

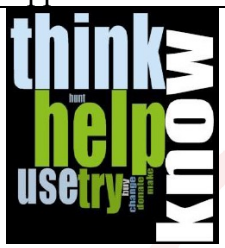

Figure 7: Word Cloud of 10 Most Frequently Appeared Verbs

Table 3: Frequencies of 10 Verbs

Verb	Frequency	Verb	Frequency
help	4	buy	2
know	4	change	2
think	4	donate	2
try	3	hunt	2
use	3	make	2

The results of the frequencies showed that the solutions that the students presented seemed too much dependent upon others and ambiguous, which was congruent with the finding in the student H's future diagram above. To reconfirm this finding, the contents of the solution sections of their PowerPoint slides were manually examined. As a result, this finding was supported by students' solution statements such as "Many people should know the existence of child labor" "Participate in activities to help the developing countries," and "Let your friends or family know about the situation of poverty" to name a few.

In conclusion, the problem-solving instructional framework in the Course seemed to encourage the students to develop all the conceptualizations in global perspectives. In addition, it was possible to visualize the students' learning and the visualization was helpful to identify an overall picture of the students' learning in the Course. Then, one of the findings regarding their learning was that they had a difficulty in finding manageable problems and feasible solutions. Therefore, it is necessary to conduct a future research to find effective instructional approaches to help students to find out such problems and solutions. Furthermore, comparing the illustrations or diagrams visualized based on the same data in different analytic approaches (e.g., manual coding vs. automatic coding) was highly likely to enhance the trustworthiness of the research findings through triangulation. However, the study was limited in that the data were collected only from the Course taught in academic year 2016. Thus, further research for the same purpose needs to be conducted across academic years.

Acknowledgement

This work was supported by JSPS KAKENHI Grant Number JP16K01149.

Footnote

1. Global Human Resource Development Committee of the Industry-Academia Partnership for Human Resource Development suggested "willingness to find and solve problems" as one of the factors as global human resources (2011, June 22, p. 9), while Ministry of Education, Culture, Sports, Science and Technology defined that active learning "nurtures students' abilities to solve problems subjectively by cooperating with various people" (2015, October, p. 12).
2. NVivo 11 and KH are produced by QSR International Pty Ltd. (http://www.qsrinternational.com/) and Koichi Huguchi, associate professor of Social Sciences at Ritsumeikan University, Kyoto, Japan (http://khc.sourceforge.net/en/).
3. The coding rule was set up as follows.

Conceptualizations	Coding Words
PC	perspective | view | critical | power | multiple
CC	diverse | stereotype | prejudice | communicate | miscommunication | opinion | debate | discrimination | discuss
GD	connect | link | depend | rely | web
GH	future | cause | effect | result | consequence
GI	problem | issue | peace
PG	action | solve | change | participate | sort | cooperate

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Appendix 1. Frequency of Manually-Coded Conceptualizations in Learning Activities

No.	Learning Activities	PC	CL&CC	GD	GH	GI	PG
①	"A Village of 100 People" Activity					1	
②	“World Maps” Activity	4					
③	“What do I Value?” Activity	7	5				1
④	Debate	3	1				
⑤	Movie "Dreams"	1				1	
⑥	A Video “The Monkey Business Illusion”	1					
⑦	“Best World or Worst World” Activity	1					
⑧	A Video “Human Planet”	1	1				
⑨	A Video “Arthur in Africa”		4				
⑩	A Video “Eyes of Storm” (Jane Elliot)		7				1
⑪	“Our World” Book Activity		6	1			
⑫	“Multi-cultural Cinderella” Activity	1	7				
⑬	Silent Puzzling Game		6				
⑭	"Barnga" Card Game	1	5				
⑮	A Video “But We’re Speaking Japanese!”	1	1				
⑯	“My Glocal Connection” Activity			3			
⑰	“The World in Your Possessions” Activity			4			
⑱	"Products Made from Oil" Activity			3	3		
⑲	“Webbing” Activity	2		2	3	1	1
⑳	Lecture “Three Alternative Futures”				2		
㉑	A Video “Interview with Hibakusha”						1
㉒	A Video “Malala’s Speech”			2	1	1	3
㉓	Trading Game		4		1	2	6
㉔	“Sort Out” Activity	1	1			1	9
㉕	A Video “Ice Bucket Challenge”			2			5
㉖	Global Issues Presentation					2	1
㉗	Group Teaching Project	1					

PC=Perspective Consciousness, CL&CC= Cross-cultural Learning and Cross-cultural Communication Skills, GD=Global Interdependence, GH=Global History, GI=Global Issues, PG=Participation in a Global Society

Curriculum Enhancement through Learning Partnerships

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Official Conference Proceedings

Introduction

Curriculum enhancement through redesign and innovation have been in focus of HE in the UK recently in order to enable graduates to thrive in ever-changing societies whose economies have become intertwined (Clifford, 2013). This means that universities need to ensure clear progression routes for their students so that they can succeed as global citizens. Furthermore, in the context of higher education internationalization curriculum development has become crucial (Leask, 2015). British Council (2016) highlighted a clear need for recognizing and consulting other HE systems' aims and priorities, and consequently encouraged stronger engagement and multidimensional collaboration, such as mobility of international students and academics, academic programmes, and investing in international research collaborations.

The purpose of this paper is to discuss the case study of curriculum enhancement strategies of Centre for English Language and Communication at Aston (CELCA), in the context of international learning partnerships. It will focus on a model for educational service enhancement through diversification and student engagement in curriculum design (Quality Assurance Agency, 2012) in collaboration with Aston Business School and international partnerships in China.

Background

CELCA is often seen as a small service centre, as it is not an academic unit, although it is part of the School of Languages and Social Sciences (LSS). Due to the Centre's main roles as well as its budget nature, it not only offers English language support to international students and lecturers, but also delivers its own programmes and courses to fee paying students, which means it has the award-giving power. Consequently, it has to attract international students as part of its sustainable development strategy.

In order to meet its current targets and compete with bigger and more established universities worldwide, in particular the ones in the USA, UK and Australia, CELCA staff members need to innovate and collaborate multidirectionally within the university and with its current partners. This paper will discuss its latest developments in the International Year Abroad Programme (IYA) supported by Aston Business School in particular.

In other words, in order to establish its unique position within the University, as an academic-related centre with a relatively independent budget, CELCA needs to address the issue of sustainable relations with its international partners.

The impetus for redesigning the IYA curriculum originated from its partner universities in China that requested access to several Aston Business School modules through this programme, which currently awards students with a Certificate of Higher Education. The aim was to design a more challenging programme so as to accommodate the needs of both average and very talented international students and support them in accomplishing multiple, individually-tailored academic goals.

Therefore, there was an opportunity for a social innovation, which can be assessed against the following criteria:

- quality of the solutions to the identified educational issues (in this case more talented students' needs),

- quality of new capabilities and developed relationships (new level of partners' involvement in the curriculum design),

- better use of assets and resources (ABS and CELCA getting more students on the existing modules),

- new or improved services (richer services to international students), processes (sustainable process of recruitment, delivery and quality enhancement), and

- the model of ensuring social cohesion (In this case, more talented partner university students get a more challenging programme, even though they have the same core module - IELTS tailored to suit individual students' needs).

According to the EU Europe 2020 Strategy - Horizon 2020, social innovation is one of six key themes for HE development.The main research opportunities identified in relation to social innovation are in managing diversity, overcoming health inequalities, supporting rural areas and societies, financial sector and private sector (European Commission, 2016). This also encompases one of the key UN values: "*Strive to deliver a fairer and more inclusive society"* (The United Nations, 2009). Thus, the key question educational service providers need to reflect on is how they can develop not only themselves, but all the clients and other interested parties, and how they can do it well.

As far as CELCA is concerned, the partners' idea about greater inclusion and enhanced provision for more talented students was not developed enough due to different internal and external challenges which created constraints for collaboration and led to somewhat unbalanced relationships. The fluctuating student numbers in 2013 and 2014 clearly showed that a change was needed urgently. Finger and Brand (1999: 136) recognized 'learning organization' as a vision towards which organisations need to aspire so as to be ready to address various challenges and demands. Learning organisations recognize that both self-directed, individual as well as strategic, corporate learning are key.

Although the need for learning through communication with partner universities was recognized earlier, it was affected by the external economic and political factors, such as the UK Boarder Agency's stricter requirements for international students' visas in general. Furthermore, from students' perspective, the UK was not the first choice for studying because of the soaring fees and other costs. Nevertheless, it became more obvious that the IYA programme itself, being seen as a language and culture development route to postgraduate studies, did not meet all the needs of more talented students requiring a more specific path for their academic development. Therefore, a more comprehensive approach was adopted and negotiations within the University, in particular with ABS were reinitiated. According to the model of 'frugal innovation' (Radjou and Prabhu, 2015), both the front and the back ends of innovation must progress in the same direction in coordination, like a convoy, if their aim is to prosper and avoid breaking apart.

Compared to other similar centres, CELCA has not yet undergone any major structural changes and is still investigating its best position within the university. In addition, there is a lot of tasks for the University to accomplish on its way towards a learning organization. Regarding academic language and communication services at other UK universities, three major categories can easily be established: A) International Academies within the universities; B) partnerships with external contractors; C) small English for academic purposes and communication centres.

A) International Academies

Some university English for academic purposes and communication centres have grown into academies, following the major university structural changes, such as The Birmingham International Academy (BIA), which provides the University's

Foundation Pathways, Presessional English programmes for students preparing to study at the University, Pre-Doctoral programmes, and Pre-Masters programmes, in addition to English support for students who are already at the University. The Wolverhampton University International Academy is another example of similar development. It has different preparing-for-study strands (English Pre-sessional Programme, EFL courses, short and summer courses, as well as pre-masters courses, pre-research course / Graduate and Professional English Language Skills Course and International Foundation Year), training courses for practicing English teachers, International Business Communication and modern and community languages.

In the above mentioned cases, the centres have diversified their services and possibly merged with some other centres (e.g. modern and community languages) in order to cut the administrative costs and offer the same services to different types of international students at the same time, cutting the cost by recycling the materials and offering more blended learning opportunities as well. This is a cost effective movement that is usually part of a university plan and it mainly happens across the organisation within the same set period of time. It is very likely that Aston University will aspire for the same model, following the establishment of individual School International Foundation programmes. At the moment, it is clear that CELCA is contributing to the existing Foundation curricula, but it does not own the programmes. In addition, it is just one of its services and without the green light for the growth in permanent staff numbers, it does not have capacity to take too many different modules and programmes.

B) Partnerships with external contractors

On the other hand, some universities use external services, such as INTO (International Transformation), an international educational organisation which develops long-lasting partnerships with HE institutions worldwide to support their students and help the universities achieve their internationalisation ambitions. INTO University of East Anglia was the first partnership which started in 2006 in Brighton and opened the UK's first dedicated, on-campus living and learning centre for international students in 2008. This partnership model provides not only services but "investment and access to resources beyond the scope and capacity of individual universities" (INTO, 2016). Kaplan International Colleges (KIC) (2016) works in partnership with leading universities to prepare international students for studying a bachelor's, master's or doctorate degree in the UK. Their preparation courses equip students with the academic skills, key subject knowledge and English language ability needed to progress to university. They are delivered on campus, but also online. In the first case they are taught at specialised international colleges, run in partnership with the following universities: University of York, University of Aberdeen, University of Brighton, Nottingham Trent University, UWE Bristol, University of Glasgow, University of Liverpool, Bournemouth University, University of Westminster; the University of Nottingham. It is obvious that these universities have taken a different approach to Aston University, where Aston Schools are developing their independent International Foundation Programmes which pay for

CELCA teaching services, but also have free individual English language tutorials and school-specific academic language workshops.

C) Language and communication centres

These centres most often exist within smaller universities, such as Aston University, or Worcester University. They may combine modern languages, English for International students, IELTS preparation courses, CELTA (Certificate in English Language Teaching and Assessment), English for academic purposes, general English classes, Teaching English as a Foreign Language courses and similar. Such centres boast of friendlier atmosphere and closer tutor-student relationships, due to the student numbers and a dedicated and easily recognizable teaching and learning areas, which may not be the case on larger campuses. Although that may be the case, the increasing concentration of students and lecturers in larger universities presents both opportunities and challenges. On the one hand, cooperation with other departments is more feasible and students' adaptation to academic life is more natural due to exposure to more opportunities, such as optional free lectures, various activities and services. There are also more opportunities for work and volunteering. Similarly, Johnson, (2010) referring to Geoffrey West's power laws compares big to small centres and finds that despite all the distraction caused by crowds and noises, the average person functioning in a big centre can be up to three times more creative compared to the one operating in a small centre. Large number of opportunities and exposure to information have agreat impact on individual's and teams' creative capabilities.

We live in an age of accelerated lives where new patterns emerge every day and the intervals between them keep shortening, which makes us experience new products and service patterns, but also become increasingly more willing to embrace them. The frequencies of exposure to various experiences are ever-increasing and, although at the beginning it may take longer to adopt certain new habits, products or services, people become more trained surfers. This means that students as service users tend to demand or search for the latest trends. Johnson (2010) calls this 10/10 rule; it takes a decade to build a new platform and another decade for it to find a mass audience. For small centres, the audience is already available, but with the university's raising capacity, the need for a change is just around the corner.

CELCA's innovative engagement aims to create opportunities for collaborative work in terms of learning organization with ABS and international partners through: a) programme diversification, b) research in student engagement and c) participation in curriculum design and development. These activities have also sparked collaboration with other services, such as Disability Support Services, so as to enhance learning and teaching practices through inclusion and differentiation models.

In order to establish its unique position within the University, as an academic-related centre with an independent budget, CELCA needs to address the issue of sustainable relations with its international partners.

Foreign Universities' Provision

Regarding the foreign universities, out of the four main English-speaking higher education markets (Canada, United States, Australia and the United Kingdom), post-study immigration is accessible in Canada and Australia at the moment. Therefore, an increasing number of students in these two countries in 2016 is likely due to the fact that education has become a gateway to post-study living, as students know they can look for work there after the completion of the studies (Graney, 2016; British Council, 2016). Although Canada and Australia have very strong academic reputation, as well as open, multicultural societies, the above mentioned opportunities irresistibly attract international students.

Literature Review

According to Llopis (2017) the majority of innovative solutions have been results of networking and some forms of partnership, as innovation does not depend on leadership, but can originate from employees who analyse the services offered and know the needs of the company's customers and partners. Competition analysis and the insight into the latest trends in the industry, including brands and the use of technology are therefore crucial. Nevertheless, innovation and development most often originate from multiple internal and external sources, because individual experts cannot come up with the same ideas as groups of people with different experiences and visions, which means that sharing existing and creating new opportunities is necessary.

In CELCA's case, the external sources were partner universities, whereas the internal sources were the Centre's staff and Aston Business School leadership. It was interesting to see that the reiteration of the partners' ideas in waves, through time, made some impact on the partnership development - Elliot's Wave Principle (Prtechter and Frost, 2005)**.** Learning from the previous experiences and listening to the partners' guidelines have rekindled the discussion on the IYA students' access to ABS undergraduate modules and improved the communication channels. Consequently, the new ideas evolved out of continuous negotiation. However, although idea creation does not depend on leadership, innovative ideas still have to be fully supported by leaders; the ideas need to be followed through, and leadership and management need to control the raising financial issues, such as sources and profitability. This means that leaders do need to encourage innovation through collaborative work of teams with different points of view (top-bottom approach). Also, researchers and employees need to be in communication with the leadership to ensure a bottom-up approach as well.

In the latest IYA development strategy, sustainable growth relies on diversification, remodeling for the best fit, addressing the performance gaps and details that potentially create tension, taking ownership and initiating communication that seeks for new opportunities, avoiding complacency and making informed decisions. This coincides to a great degree with the ABS undergraduate and postgraduate programmes strategies, which has allowed initiation of quality enhancement through

collaborative work. Nevertheless, this implies further work on understanding the partner universities' goals and potential students' aspirations, as well as developing true collaboration with them. Some joint research, projects and publications, exchange of staff members, student engagement in curriculum design and service diversification are the basis to maintain constructive negotiations to establish the best fit.

Alliances

Successful cooperative international alliances provide evidence that there are benefits in developing a wider range of solutions in particular to technical problems. Innovative capability through cross-border alliances thus may be one of the most important means for firms to enhance inter-firm partnering in the new age of alliance capitalism (Carlsson, 2006). Nevertheless, depending on the range of collaborations, developing alliances may also have negative effects (Parida et al, 2012) as partnerships outside the value chain can lead to high costs and situations with 'free-riding' unknown partners (Bessant, Kaplinsky, and Lamming, 2003).

In harsh reality numerous partnerships have failed despite their good intentions (Faems, VanLooy, and Debackere, 2005; Sadowski and Duysters, 2008). Some of the reasons are differences in understanding the concepts, opposite interests, irreconcilable differences in time management of resource allocation (Mahnke and Overby, 2008), work ethics, complex risk management in uncertain conditions (Park and Ungson, 2001). Therefore, alliances are not the ideal model of collaboration, as their outcome in the globalised context is not always certain (Pittaway, Robertson, Munir, Denyer, and Neely, 2004), although using inflows and outflows of knowledge is likely to encourage open internal innovation and expand the markets for external use of innovation (Chesbrough et al., 2006).

In the UK HE, like in the USA and Australia, there are various models of transnational education (TNE), as represented in the table overleaf (adapted from WENR, 2012; Knight, 2007).

HIGH

Intensity of resources required for the UK institution

LOW

TNE Models				
TNE Model	**Definition***	**Who awards the degree?**	**Where does the teaching take place?**	**Who teaches?**
Branch Campus	UK university establishes a satellite campus in another country or region that is in a different geographic area from the original one.	Branch campus	Branch campus	Branch campus faculty
Franchise Arrangement (often called "other instructional side" or "off-site location")	UK university authorises partner institution to offer the approved programme of study (as a whole or in part).	UK institution	Partner institution	Partner institution's faculty, who are usually subject to joint approval by both institutions. Sometimes UK faculty flies out to the partner institution to teach courses. UK university is responsible for monitoring.
Joint Degree Program	UK university partners with an existing local institution to provide one collaborative program with periods of study at each location. One degree is awarded bearing often two or more institutions' name, seal, & signature.	UK and partner institutions award one degree	Partner institution, then the home university	Partner and UK university's faculty
Double/Dual Degree Program	UK university partners with an existing local institution to provide one collaborative program with periods of study at each location. Each institution awards separate program completion credentials bearing only its name, seal, & signature.	UK and partner institutions award two separate degrees	Partner institution, then the home university	Partner and UK university's faculty
Twinning Program	UK university collaborates with an existing local institution to develop an articulation system that allows students to take course credits at a local institution and/or home institution. This allows the students to transfer credits for advanced standing.	UK university	Partner institution, then the home university	Partner and UK university's faculty
Distance Delivery	Delivery of courses through independent learning materials or via distance technology (online) directly with the student or through partnering with a local institution.	UK university	Partner institution or worldwide	UK university's faculty

Adapted from WENR. (Aug,2012) and Knight (2007).

Table 1. Transnational education models. Adapted from WENR (2012) and Knight (2007).

The transnational models are examples of learning partnerships in which institutions, mainly universities from different countries either adopt, to some extent learning methods of another institution, or they jointly design new systems and mechanisms, again usually similar to the existing ones.

Cooperation

The benefits of focused, and consistently result-orientated cooperation (Lu and Beamish, 2001) are among others, lower costs, shared market and risk, as well as a broader access to resources (Gulati, Nohria, and Zaheer, 2000). Access to the partner's resources such as capital, equipment, 'network resources' (Gulati, 1998), or other knowledge are the main benefits of alliances, which are necessitated through the need to use the shared sources more frequently.

Nevertheless, finding reliable and stable partners is not easy and it is even more challenging to maintain and develop partnerships.

Networks

Love et al. (2014) indicated that for entering and succeeding in international markets managers need to develop specific managerial skills on which a company's capability

and motivation to internationalise depend. In the first stage of export-import activities, experience in management and commerce is important, but in the processes of internationalisation more Commercial and managerial experience, for example, may assist but as internationalization becomes more refined managerial education will contribute to better outcomes (Ganotakis and Love 2012). The more extensive networks will increase the likelihood of obtaining knowledge databases and technology developed outside the company (Leiponen and Helfat, 2010).

Innovation partnerships (Roper et al 2014) may also allow organisations to access technology developed elsewhere (Niosi, 1999). Moreover, having more extensive networks of partners is likely to increase the probability of obtaining useful knowledge from outside of the firm (Roper et al. 2008). In addition, partnerships may reduce the risks related to any innovation and lead to lower costs due to sharing (Roper and Xia, 2014). According to Veugelers and Cassiman (1999), innovation is increasingly associated with networks of collaboration and information exchange at relational and structural levels.

Nevertheless, Freeman (1995) insists that despite innovative activities within the context of internationalisation, innovation at the national and regional levels are crucial as they provide the necessary initial networks of relationships. For instance, the national education system, technical and academic institutions, policies brought by local governments, national institutions and various local traditions and standards are essential for innovation as they contribute to the uniqueness of the socially constructed systems adopted by organisations through time. In reality, it is very likely that despite cooperation the particular local character of innovation systems will remain unaffected (Carlosson, 2006**).**

Resource Constraints

Resource constraints and resource commitment have been identified as key characteristics of small organisations, in particular during the periods of environmental insexcurity (Erramilli and D'Souza,1993)

Using knowledge and technological advancement obtained from external sources through cooperation (Durst & Edvardsson, 2012), is key for organisations' competitiveness in particular when they have fewer resources. Therefore, it is crucial for them to adopt explorative behaviour, for instance through explorative case studies. They are based on the interviews and aim to explore features of consumer behaviour and business planning related to a particular area of interest. Such companies often lack managerial approaches which contributes to the limited growth. According to Zucchella and Siano (2014) their best solutions are international networking and innovation. Coviello and Munro (1997) claim that it is essential for them to get a deeper insight into the relationship between innovation and international collaboration, which may enable organisations to enhancement of the management strategies and increase the international growth. Also it is beneficial for smaller organisations to participate in marketing and research alliances depending on the sets of tangible and intangible unique resources and capabilities they possess.

Social Network Theory

Social network theory is the study of how different forms of participation within networks may lead to different outcomes (Sullivan and Ford, 2013). It highlights the importance of the business person's contacts in getting access to information and resources in order to assist the successful development of an organization. It is closely related to organization competitiveness and it encourages information sharing, resource exchange, and knowledge transfer (Florin et al. 2003; Hite 2005), which all lead to better financial outcomes. Stam et al. (2014) argue that social capital is essential to success and that personality traits need to be given more attention as they are the key factors in social capital.

According to Granovetter (1973) "strength of ties" predict the effectiveness of networking. These factors describe the intensity and diversity of relationships. For instance, acquaintances have weak ,ties and are less socially involved than friends with strong ties. As for the density, a network with numerous weak ties is a low-density network as it lacks many relational lines. However, weaker ties may open opportunities to access information from a broader perspective, whereas closed and localized relationships are fragmented and less coherent, limiting the resources outside the narrow network and resulting in slow diffusion of innovation and new initiatives (Granovetter, 1973). Therefore, bridging weak ties and enrichment of resources can be achieved through connecting different individuals and groups who can provide balanced skills. This competence in balancing weak and strong ties is one of the key characteristics of successful business people. It is worth mentioning that it is not crucial to have all the necessary skills or the resources in order to seize an opportunity (Garnsey 1998) and at the beginning new entrants to markets often rely on close friends' favours. However, in the later stage of networking they aim to shift towards weak ties (Bruederl and Preisendorfer, 1998), and further down the line, they form ties with seemingly disconnected people and selflessly support others in exploiting business opportunities (Blau, 1977). It has been identified (Shane et al. 2003) that a business person's social capital and networking have a direct relationship with sourcing and access to information, unattainable resources and funding.

Methodology

This paper applies exploratory research methods, which is a useful investigation into a situation aiming to provide more insights to the researcher, in particular where a small amount of information exists. It used various methods such as, semi-structured interviews with students, university leaders and academics, as well as administrative staff, group discussions, mini trial studies so as to gain more information (Business Dictionary, 2016)

The research has also applied the *Grounded Theory* approach (Glaser & Strauss, 2012), to generate a solution model through own data observation and action research in the 'community of practice' (Lave & Wenger, 2002). It demonstrates how the International Year Abroad Programme is being developed in collaboration with Aston Business School and partner universities in China.

A grounded theory approach is based on the seminal work of Glaser and Strauss (1967), which focused on systematic data collection and analysis rather than on proving an existing theory. Therefore, it is an inductive approach. Furthermore, this study is even more closely aligned to the so-called Conceptual Model which is not establishing hypotheses or relationships, but identifying a starting point and defining the area of future study. This iterative process generates concepts instead of establishing new theories. (Bryman 2008).

Data collection and analysis used in this qualitative research began with an intention to analyse the area of interest through previous records and reports about the IYA Programme, partner universities and students ideas which still remained only on paper due to different reasons. A hypothesis was generated based on the patterns that emerged and revisited in interviews and group discussions with the latest cohort of the IYA students, visiting researchers and academics and leadership during the business visits to partner universities in China in 2016. The data collected

showed a clear pattern to be followed. In this inductive approach the results collected from different sources were compared and one of the key principles of grounded theory was applied: building change through a flexible, yet repetitive process which guides the researcher towards exploring the possible avenues to gaining a comprehensive understanding of the situation (Corbin and Strauss, 1990). The analysis is based on constant comparisons of data and feedback from different respondents in order to identify key similarities and differences, which will be used in modelling the bespoke solutions so as to satisfy the customers' needs and provide the most appropriate service.

It is important to mention that the research did not use the customers only to provide the information, but the study aimed to actively engage the customers (partner universities and international students) at the front end of the innovative solution in order to increase their loyalty and reduce the product cycle times and waste. In other words, it aimed to improve the depth and breadth of customer engagement as conclusions and decisions made at this stage can make a considerable impact on the cost and speed of developing and marketing new services.

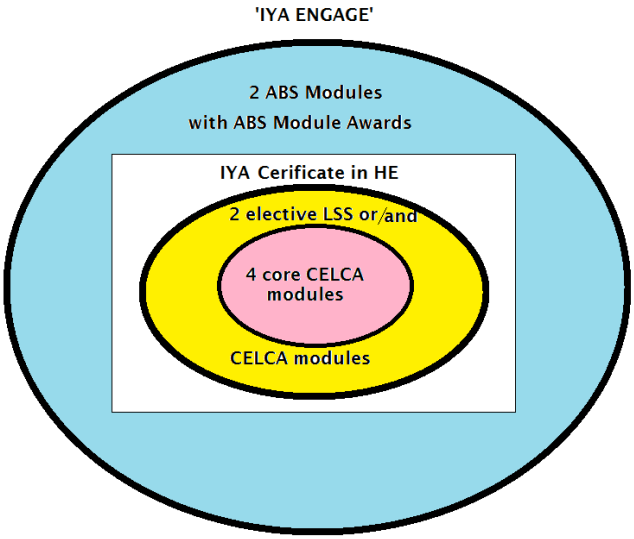
Another important characteristic of the research approach was to examine the different stages of progress and prioritize the regular patterns, taking into account variations which assist in establishing new avenues for investigation. These avenues have eventually led to the programme diversification. Therefore, the solutions and concepts were generated and revisited during the research process until they proved to be acceptable as a result of continuous consultations with the partner universities' leadership and students. These also opened up opportunities to examine the broader social and organisational contexts (for instance, comparison of student engagement in decision making related to programme design and development)

Results

Diversification of the IYA Programme

This section will provide the information about the new services that emerged as a result of the research and active involvement of the partner universities' leaders and academics as external collaborative party and Aston Business School as an internal partner to the Centre for English Language and Communication at Aston. Out of the original IYA Programme, the following modified and new programmes and courses have evolved: IYA Engage, IYA Explorer and in the planning stages are IYA Advantage and IYA Bridge. The design of the programmes and courses has also been informed by QAA Subject Benchmark Statement for Languages, Cultures and Societies, and by the Common European Framework of Reference for Languages (CEFR). There is another broader modified programme in view which will seek to support students from rural regions whose IELTS level is overall 5.0 (with maximum one skill 4.5) and for which the researcher has been enquiring for a grant.

'IYA ENGAGE'



IYA Engage is a combination of the IYA Programme and two, bonus ABS modules for which successful students get special ABS Module Awards. These modules are only for students with IELTS 6.5 (minimum 6.0 in any assessed language skill). In case students find these bonus modules too challenging, they can withdraw with no consequences. The IYA programme must be followed at all times and students taking the free bonus ABS modules will be closely monitored and supported by CELCA.

'IYA EXPLORER'

IYA Explorer is a module designed for students who consider joining Aston University or any other university in the UK and would like to experience both general and academic life in the UK for 4 weeks.

The programme comprises two modules: Academic IELTS and Life in the UK. The programme is run in coordination with other Aston School Summer Programmes and Pre-sessional academic programmes, so that students have access to them as part of Life in the UK module, in particular related to the topics about education, business and politics.

As elaborated in the Literature Review section, the concept of learning organisations has an action dimension, whose aim is to identify, evaluate and further promote sustainable and valid learning processes within and between organizations (Easterby-Smith and Araujo, 1999). Nevertheless, in the globalized world it is not enough to have 'introvert' educational institutions that are not alert to the third parties' needs, and original systems of values. Educational programmes should not be treated as products for sale, nor should the internationals students be viewed as customers whose voices are not heard because they are so far or it is too late to discuss with them the major decisions when they arrive. Educational institutions, as practice has shown, need to learn from each other and develop new, exciting programmes that will suit both students' and faculty needs at least. In HE international learning partnerships, however, curriculum enhancement is just one of the opportunities for cooperation. Much more can be done in the area of collaboration, such as joint research and scholarship, student engagement in decision making mechanisms, free staff and student exchange, joint conference organisation and similar.

On the other hand, although learning partnerships allow the partners to look beyond their individual settings, principles and frameworks, and to recognize the impact of their practices upon others, too often there are building blocks within the systems. One of them is the fact that ever increasingly complex systems and situations are sometimes addressed with narrow frameworks.

In other cases, the internal systems are affected by external regulations, such as changes in the visa system.

Therefore, Senge et al. (2000) propose that it is necessary to move the focus from the individual parts and understand the whole instead, appreciating learning partnerships as evolving dynamic processes. In this context, appreciation of individual systems, in this case a UK university system as well as a foreign partner university regulations and needs, will lead to the overall partnership system thinking; it is much more promising than focusing on the fragmented interests. In this respect, one of the most significant factors, according to Senge at el. (2000) is feedback mechanism of learning organisations and partnerships as part of the free information flow.
Similarly, Finger and Brand (1999) highlighted the importance of the link with the organizational strategic objectives, claiming that individual and collective learning may not bring long-term benefits to the partners if they are not strongly linked to the strategic objectives. For this purpose, there needs to be some form of measurement which will determine the extent to which learning partnerships support and promote organisational strategic objectives.

Cohen and Prusak (2001) argue that it is social capital that encourages people to work in increasingly larger groups. These authors define social capital as active human networks that are ideally based on commitment, shared trust and values, as well as binding behaviours within the communities of practice. Some of the main benefits of such partnerships are support, access to resources, in particular the intangible ones, such as talent and information. Therefore, social capital deserves the consistent necessary support, in particular in terms of the following two aspects: allocation of time and space for partnership development and effective communication of aims; equal opportunities and rewards that encourage genuine participation, not mere presence (Cohen and Prusak, 2001).

Conclusion

This study proved that collaboration is one of the keys to innovative practices, such as curriculum enhancement in HE. Implementation of its solutions brought clear measurable value: greater value for customers, shareholders and indirectly to the society; fewer and cheaper resources due to sharing of capital, time and technology. It also proved that a business needs to operate in harmony with the system that maintains it alive in the first place, and cannot stand on its side-lines.

As far as CELCA and ABS are concerned, the newly developed programmes and courses have multiple benefits: they are flexible, income-generating, cost effective, credit bearing and have potential to increase the number of module users and bolt on to additional experiences. They raise the Schools' profiles and increase inter-School collaboration. To successful students some of them offer direct entry onto ABS Master's programmes and more varied learning opportunities. They have potential to further the collaboration with the partner universities, particularly in research, staff exchanges and development of double degree programmes.

It is essential for organisations to identify their intellectual capital (knowledge with potential value, such as innovative ideas related to services, products, processes and customers), and skillfully manage its transition into intellectual assets (knowledge that provides value).

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The Transport Phenomena Course Teaching Strategies using Comsol Simulation Apps for Engineers and Scientists

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Abstract
Teaching undergraduate transport phenomena fundamentals course in universities worldwide was mainly based on the well-known most useful chemical engineering textbook ever written by Bird, Stewart and Lightfoot, (BSL, 1960). Students in recent years are motivated by real-life examples, but they have limited time to investigate the physics beyond them. This research paper presents the enhanced teaching methods used to introduce undergraduates to Comsol Multiphysics Apps solving research projects. The learning goal is achieved by going through sequent teaching approaches. Normally, the students learn to solve problems in their textbooks analytically and learn to validate their solution with the available numerical techniques. Progressing into solving more complicated 2D problems is a result of building the validation confidence with computer programs that develops students to go beyond their textbooks by removing assumptions. This approach is illustrated in details using the feature of App building; where changes and optimization can be implemented to show the breadth of analysis techniques. Students gain better insight into the interaction between realistic system design geometries, and the role of various Multiphysics. From an educational perspective, students in different engineering and science disciplines can now solve complex problems in a relatively short period of time, which provides new opportunities for strengthening their technical skills. One key result is an acceleration of their development as technologists, which allows them to ultimately provide greater business impact and leadership in their chosen career.

Keywords: Transport Phenomena, Multiphysics, COMSOL Application builder.

Introduction

Transport phenomena is considered one of the major courses in Multiphysics education, which is applicable in many areas of science such as chemical engineering, mechanical engineering, biomedical engineering, physics science and any other fields deal with more than one physics. Teaching this course was mainly based on the well-known most useful chemical engineering textbook ever written by Bird, Stewart and Lightfoot [2]. This book is covering three main parts of the transport phenomena field, where the first part is about "Momentum Transport" , in other words the field of Fluid mechanics properties such as velocity, pressure, viscosity , fluid flow nature and etcetera. The second part is dealing with another physics which is "Energy Transport". This part is investigating the heat transfer phenomena properties such as thermal conductivity, temperature distribution, energy balances and etcetera. The third part is delivering the Mass transport physics terms such as diffusivity, concentration distributions, multicomponent systems.

A transport phenomena course was offered at University of Regina for graduate level and then was taught to undergraduate level at Al-Mergib University deals with fundamentals of transport, such as Newton law, and reactive transport, such as Fick's law coupled with species transport laws. The course addresses students with little or no modeling experience and skills. Here we present the course concept as well as our experiences. There are two main goals. The first goal is to familiarize students with the basic concepts and phenomena of the subject. For that purpose, simple models are set up and examined by the students, hands-on the computer.

The old fashion of teaching this course for undergraduate students was going through simple mathematical hand derivation analysis with limited ability to reach the clear and visual results unless the students perform complex coding using one of the programming languages. Ending up at this point will require advanced numerical techniques education which is usually delivered in the graduate level.
The transport phenomena course is generally divided in two parts, the first part dealing with diffusive transport and the second part is covering the convective transport [1].

Using COMSOL Multiphysics modeling and simulation tools were as a mean of education for transport phenomena course. Newer versions with loaded advanced APP-builder feature allowed us as educators to create teaching apps in this course as well as other mentioned engineering and science courses.
This work will show brief examples of using the apps in teaching many case studies in transport phenomena course and how students can easily navigate through them and explore the visualized results.

Sample of Transport Phenomena APPS "Case Studies"

Image (1) shows a snapshot of a COMSOL APP used to solve diluted species transport / falling film design problem. In this problem, there are two physics involved in controlling the outcomes, and students can enter range of physical values the input data APP section and thus they will get wide range of scenarios.

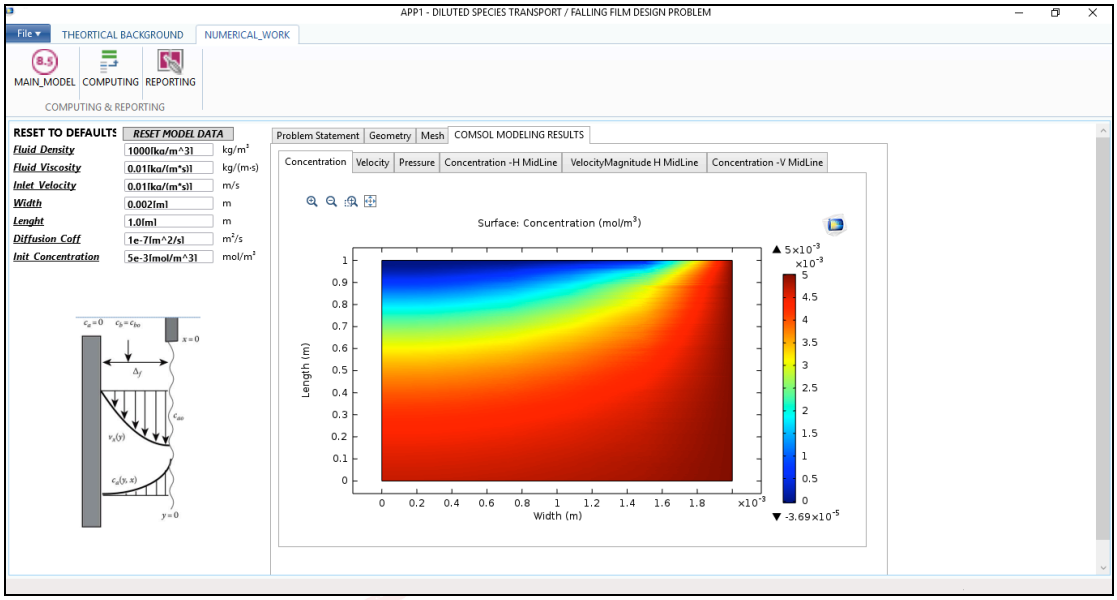

Figure 1: APP-1 snapshot - Solving diluted species transport / falling film design problem

The second image (2) displays the diluted species transport / turbulent flow design problem APP which can be used to investigate the effect of turbulent flow in distributing the fluid concentration. In the image snapshot, we see an example of one result for pressure contour inside the problem domain.

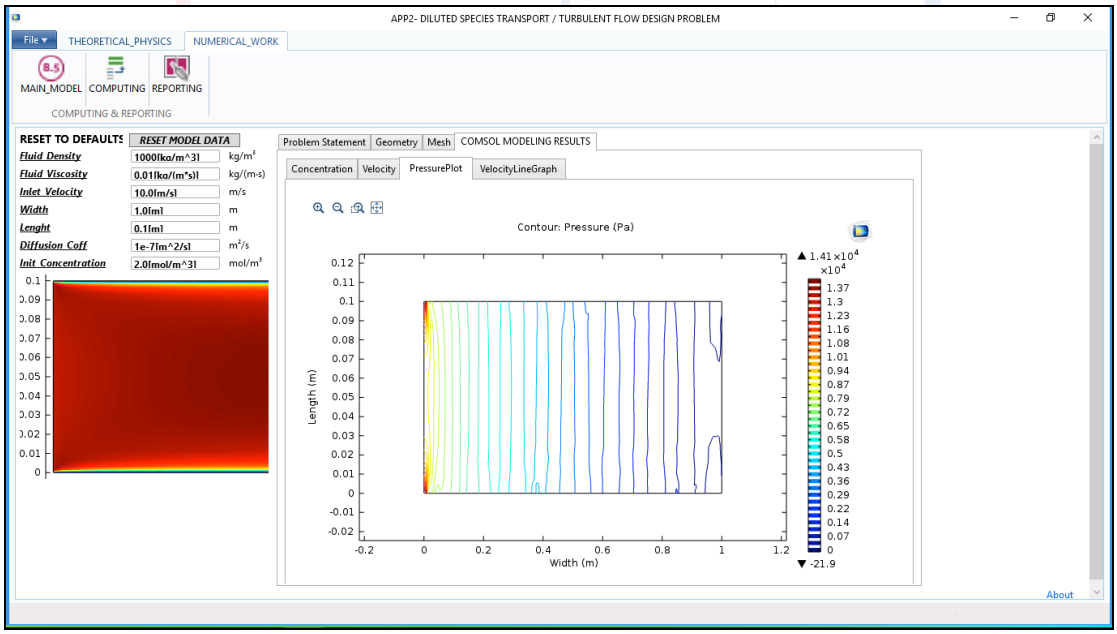

Figure 2: APP-2 snapshot – Solving diluted species transport / turbulent flow design problem

The third sample of using COMSOL APPS in transport phenomena course is shown in figure 3 which studies diluted species transport / laminar flow design problem.an expanded investigation was designed in this APP to cover in details all the possible outcome profiles at different positions.

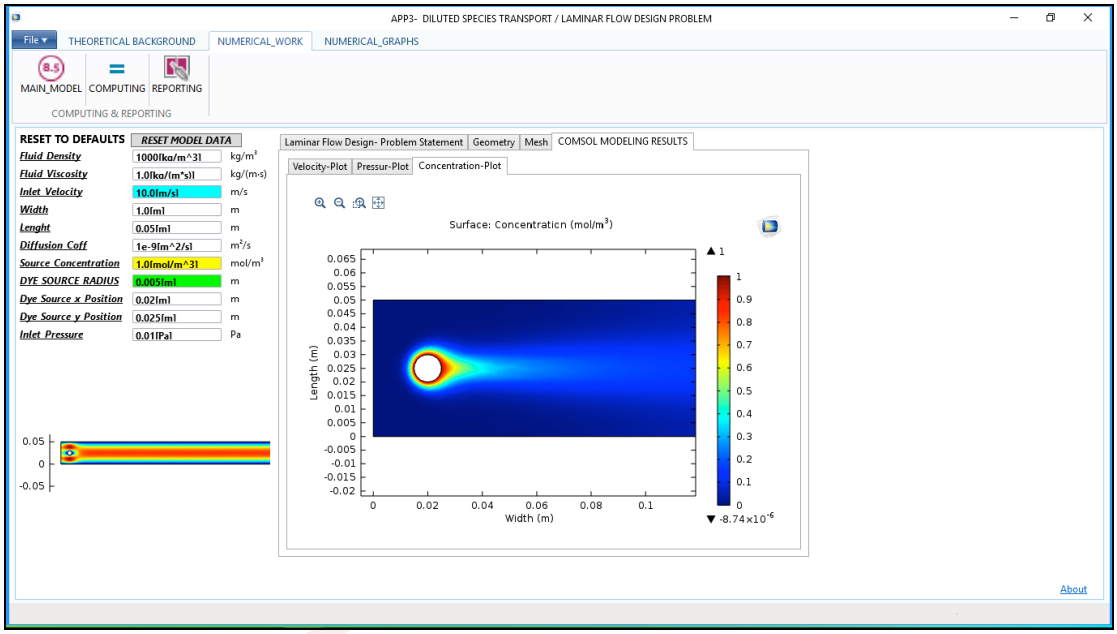

Figure 3: APP-3 snapshot - Studying diluted species transport / laminar flow design problem

APP-3 Navigation

APP number-3 was chosen to describe all the navigation steps in a brief student manual. The APP was organized in three main drop down ribbons as follow (see Figure 4).

Figure 4: APP-3 Main navigation ribbons

1. Theoretical back ground ribbon: where all the governing equations were outlined in two tabs one for laminar flow physics and the second one for transport diluted species. This ribbon will allow the students learn about the fundamentals used to build the solving model.
2. Numerical Work ribbon: We see all the numerical procedures are distributed in tabs (geometry, meshing, velocity plot, pressure contours, concentration plot).in addition, the students will be able to perform computing and reporting buttons so they can extract their results to a final technical report.
3. Numerical Graphs (Outcome graphs). This ribbon sows in details all the visualized results for (velocity profiles, concentration profiles, Pressure profiles)

Navigating and using the APP outcomes "Results of the 1st study APP-3"

Controlling the problem inputs must be done in "Numerical Work" ribbon where we see the default data are displayed in the main window at the left side (Figure 5). If the

students change these data, they will get new scenario outcomes. For example, scenario#1 for default data will produce 5 velocity graphs, 5 concentration graphs and 5 pressure graphs and they can export the graphs data to other CSV or text softwares such as MS Excel and this will allow them to perform further analysis with other data sources such as experimental data collections.

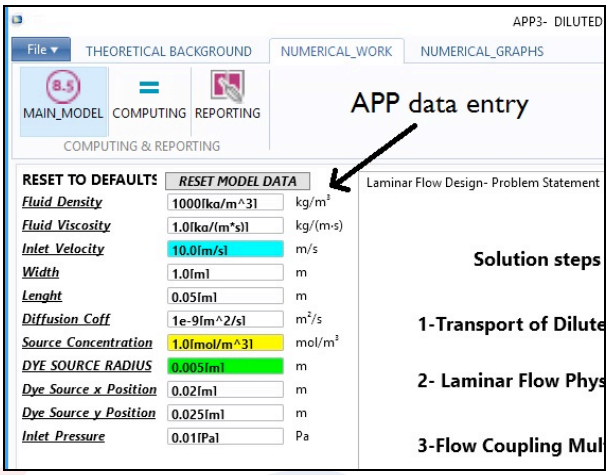

Figure 5: APP-3 data entry section

First scenario input "default' data:
The app is designed to show series of input data as shown below in Figure 6.

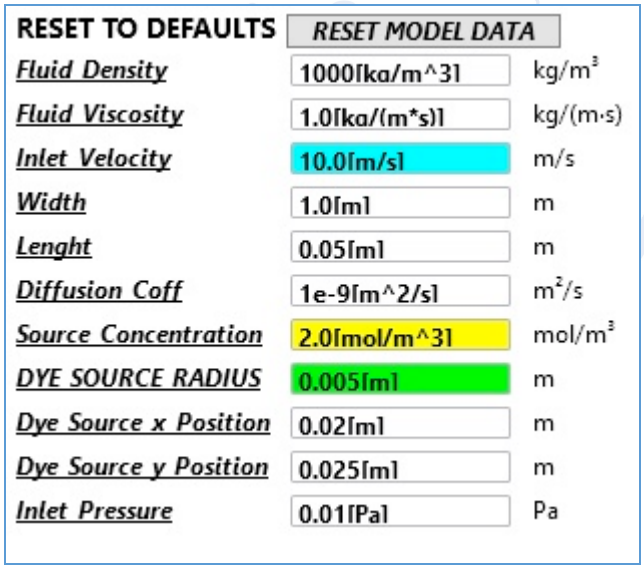

Figure 6: APP-3 Default input data panel

To start navigating the results of this scenario students must run the "computing" command to execute all the background numerical analysis. Once the computing process is finished a completion sound will indicate that. The Figures 7, 8,9 & 10 show the visualized plots for the mashing, velocity magnitude, pressure contours and concertation gradient around the dye source.

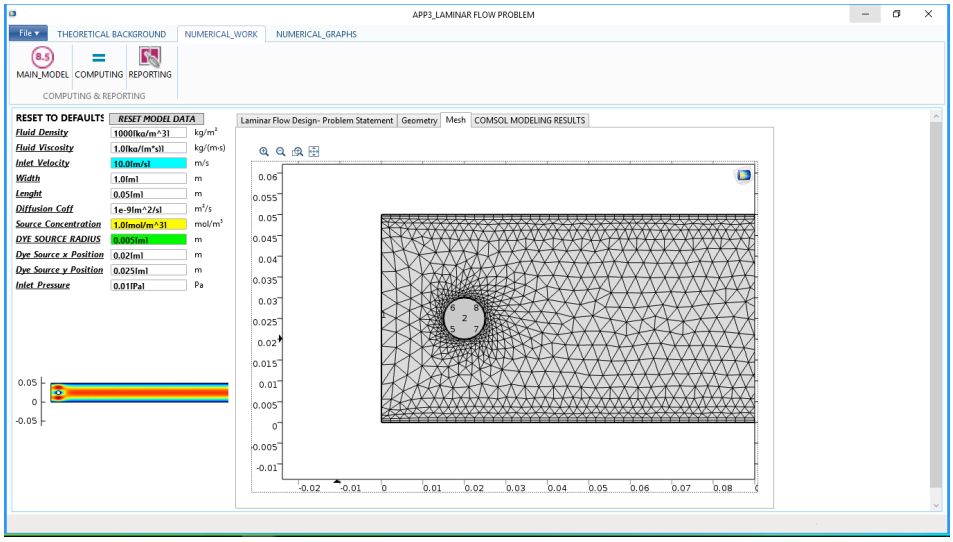

Figure 7: APP-3 Meshing organization inside the main domain

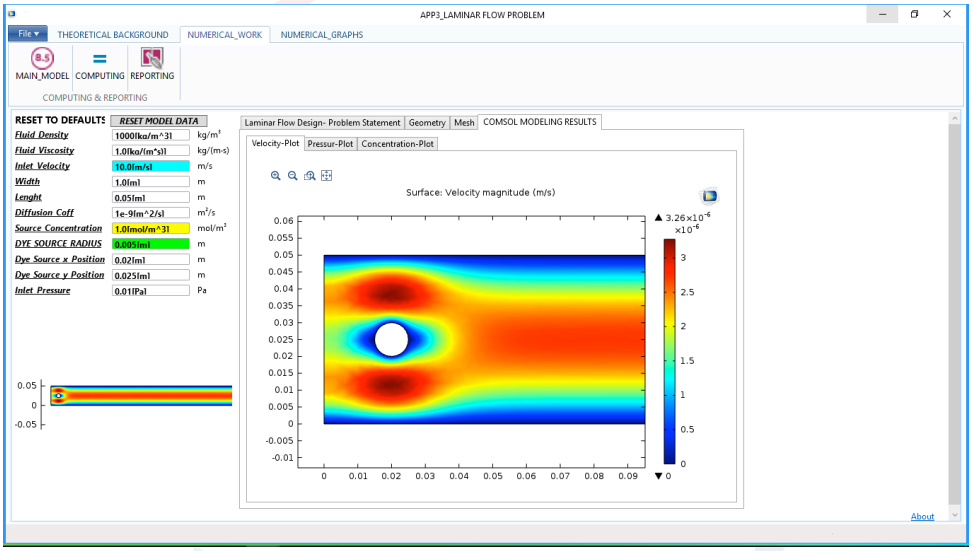

Figure 8: APP-3 Velocity magnitude colored plot

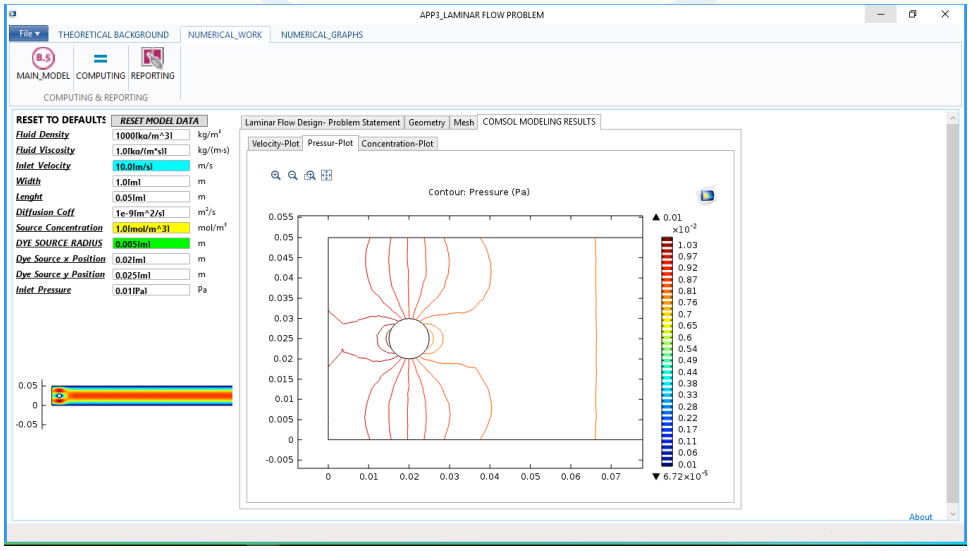

Figure 9: APP-3 Pressure contours around the dye source

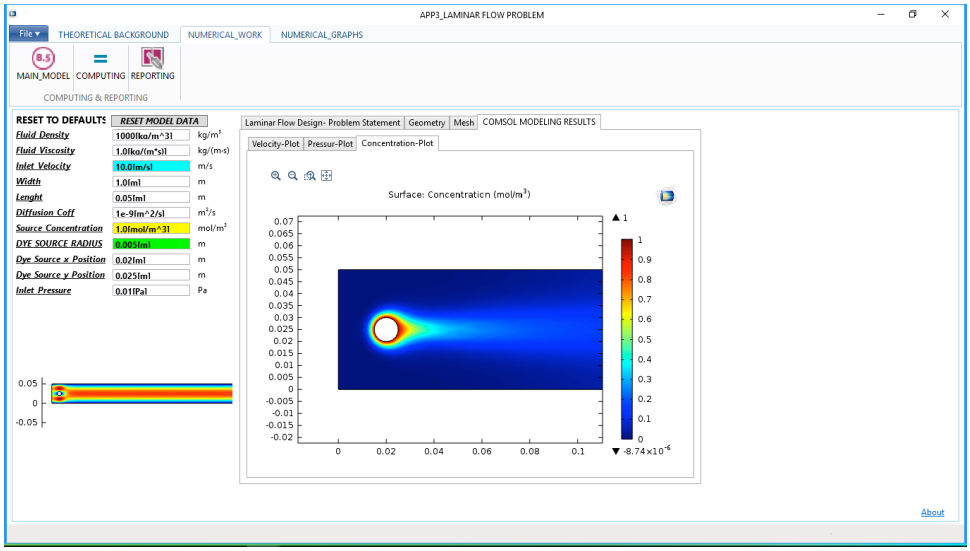

Figure 10: APP-3 Concentration visualized gradient around the dye source

To examine all these outcome profiles in details, students should go to the third ribbon "Numerical Graphs" where proposed four vertical cut lines across the domain as follow (see Figure 11 for illustration):

- 1st cut line at (0.02m)
- 2nd cut lint at DYE source X position + 0.01m
- 3rd cut lint at DYE source X position + 0.015m
- 4th cut lint at DYE source X position + 0.025m

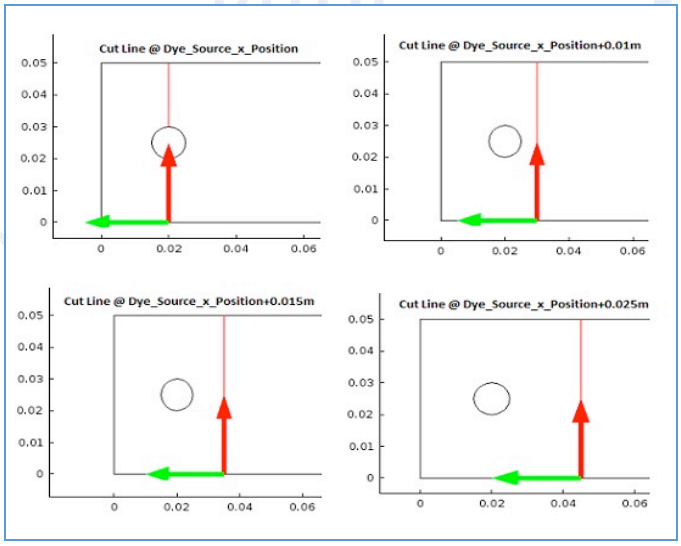

Figure 11: APP-3 Proposed cut-lines for in-details outcomes investigation

For each of the outcomes the app will produce four graphs and one collective graph for all cut lines to display the profiles development as the flow runs away from the dye source position. Figures 12,13 and 14 show the collective graphs for velocity, concentration and pressure profiles at four vertical cut lines.

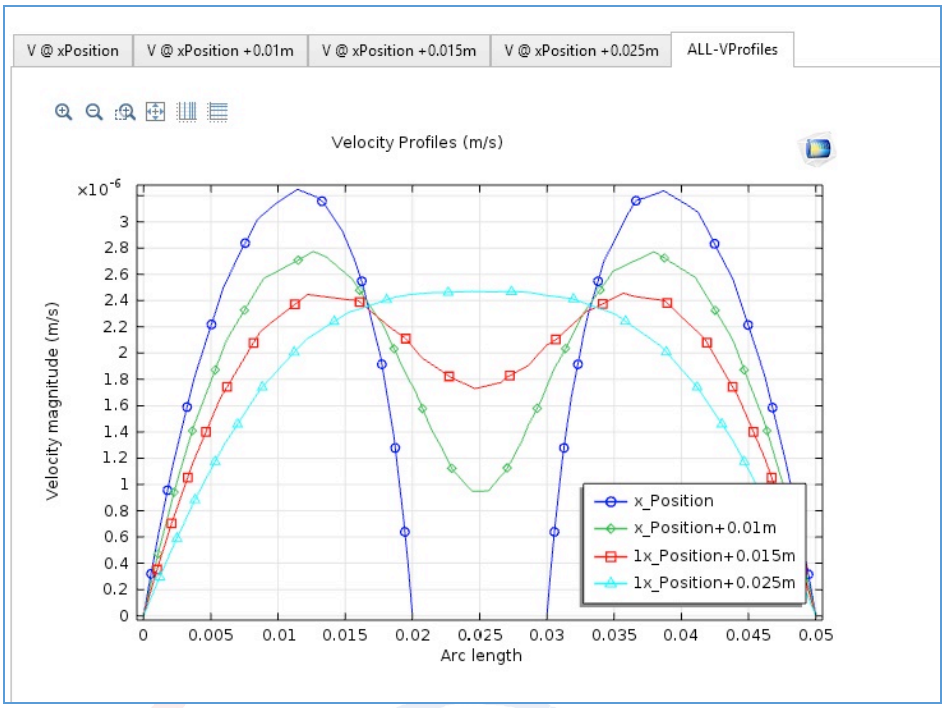

Figure 12: APP-3 Collective graph for velocity profiles at proposed cut-lines

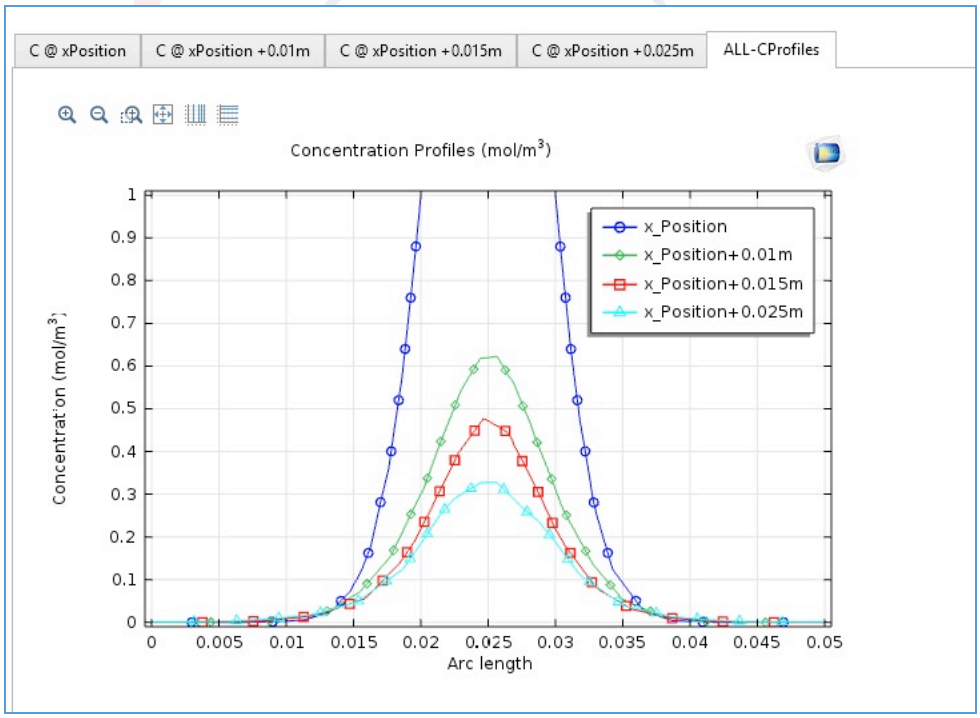

Figure 13: APP-3 Collective graph for Concentration profiles at proposed cut-lines

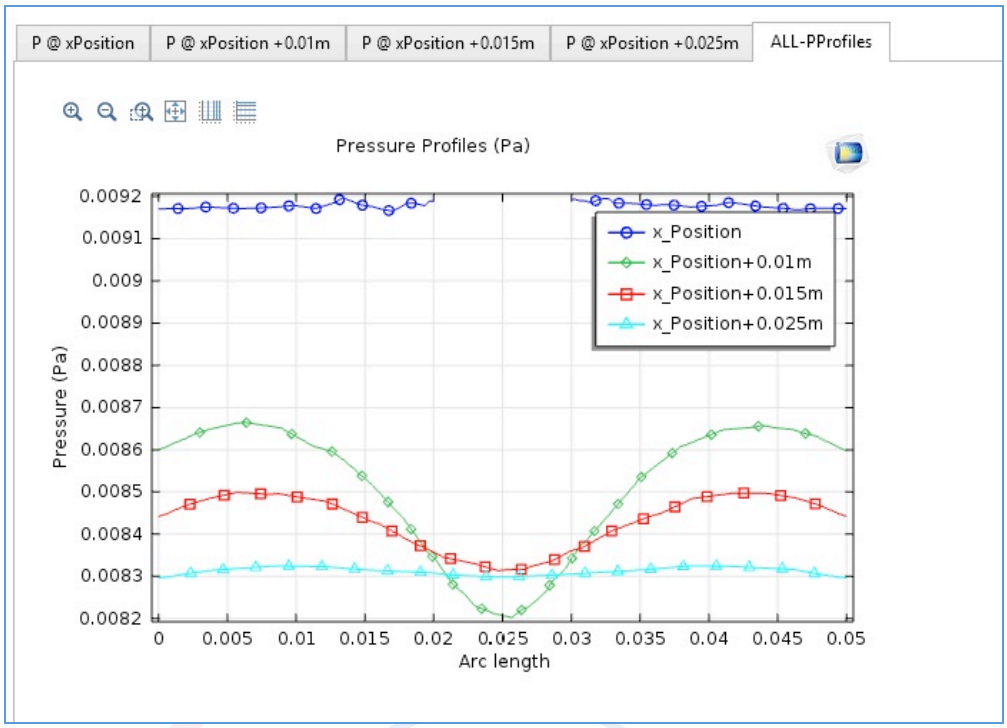

Figure 14: APP-3 Collective graph for pressure profiles at proposed cut-lines

Comparison of two case study scenarios

As discussed in previous section, the APP can produce different scenarios once the students change the input data values. In this paper, we will discuss only one change in the input values, which is the dye source radius (changed from 0.005m to 0.008m). By applying this change, we will get a new set of results for velocity, concentration and pressure profiles. Since the APP has an "Export" feature, all the individual graphs can be extracted to a data files where can be used in MS excel for further analysis.

A sample comparison between the default input data results with the new scenario outcomes is displayed in Figures 15 to 20. Note that this sample is only for two cut lines (Dye source X position + 0.01m) and (Dye source X position + 0.01m).

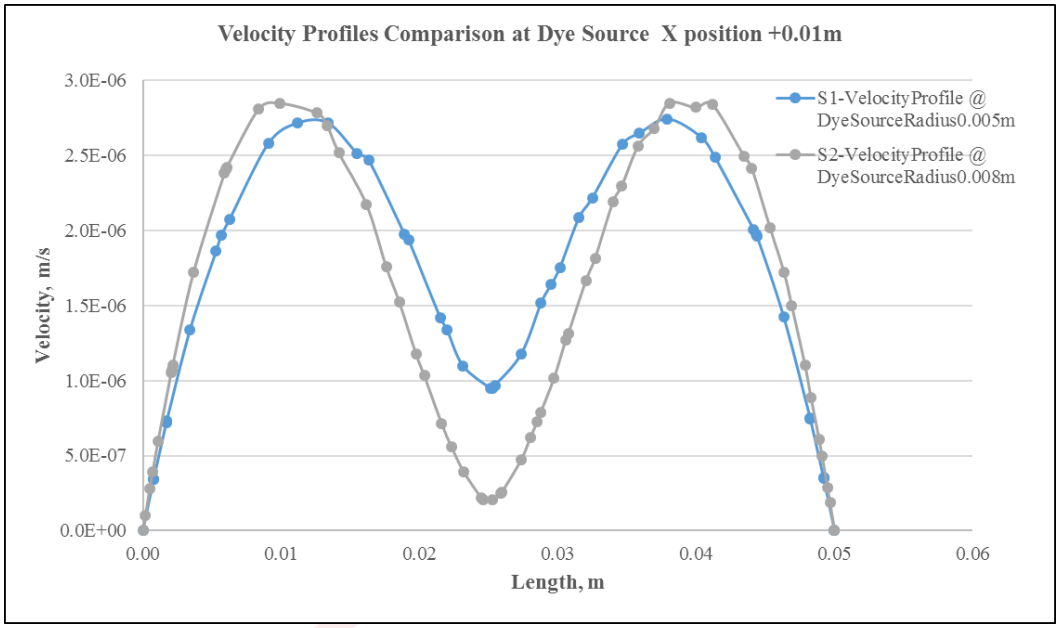

Figure 15: Velocity profiles comparison at proposed cut-line (Dye source X position + 0.01m)

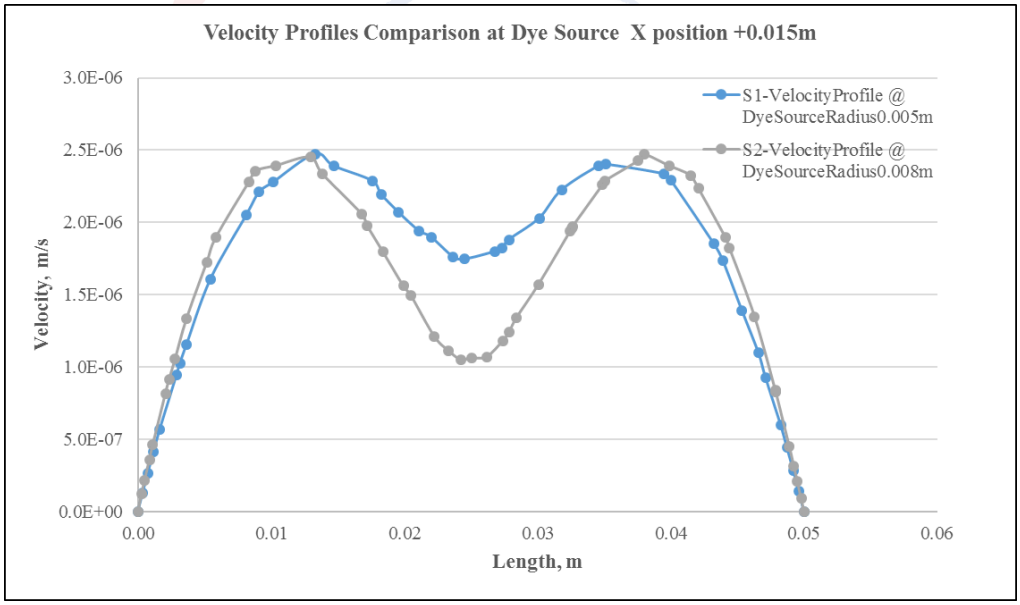

Figure 16: Velocity profiles comparison at proposed cut-line (Dye source X position + 0.015m)

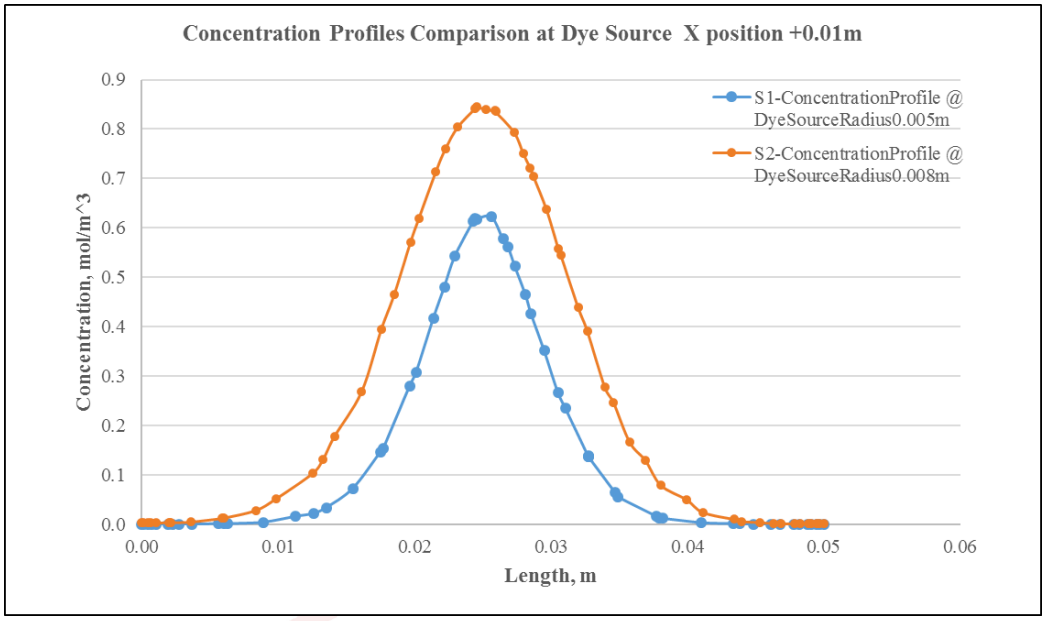

Figure 17: Concentration profiles comparison at proposed cut-line (Dye source X position + 0.01m)

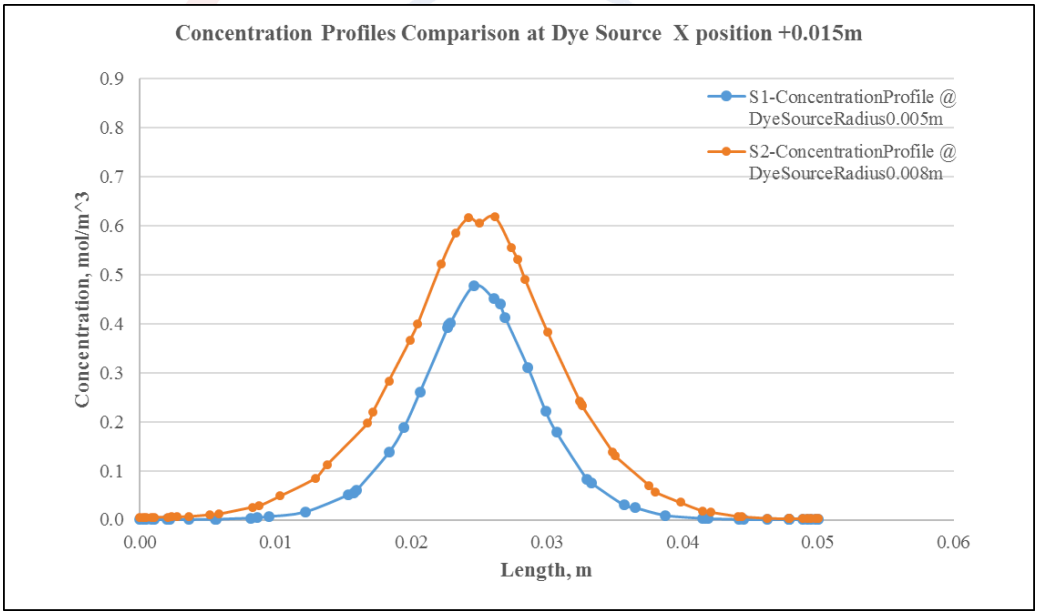

Figure 18: Concentration profiles comparison at proposed cut-line (Dye source X position + 0.015m)

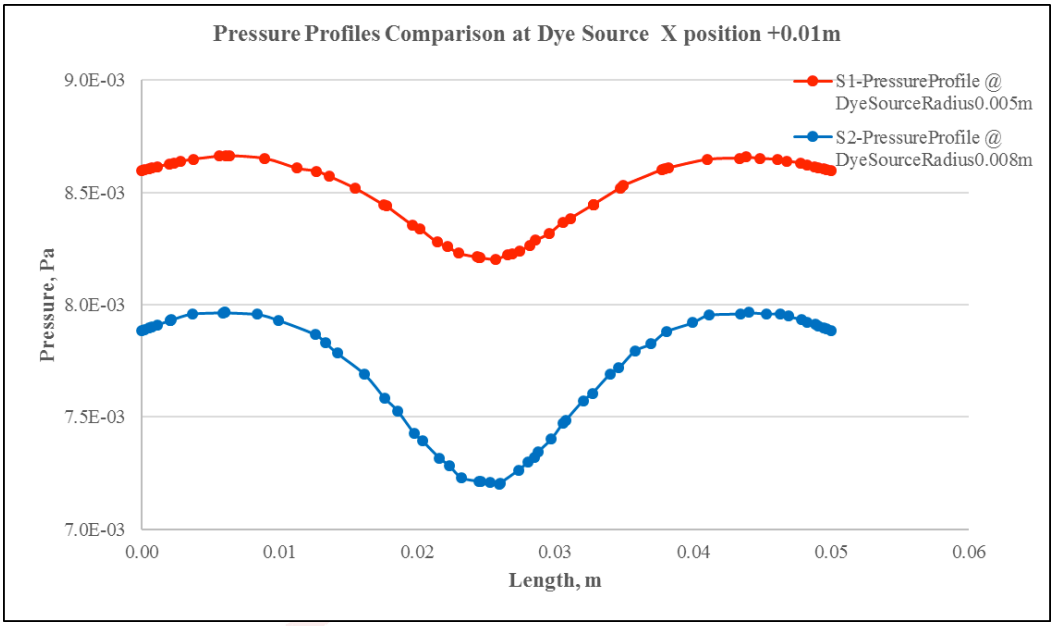

Figure 19: Pressure profiles comparison at proposed cut-line (Dye source X position + 0.01m)

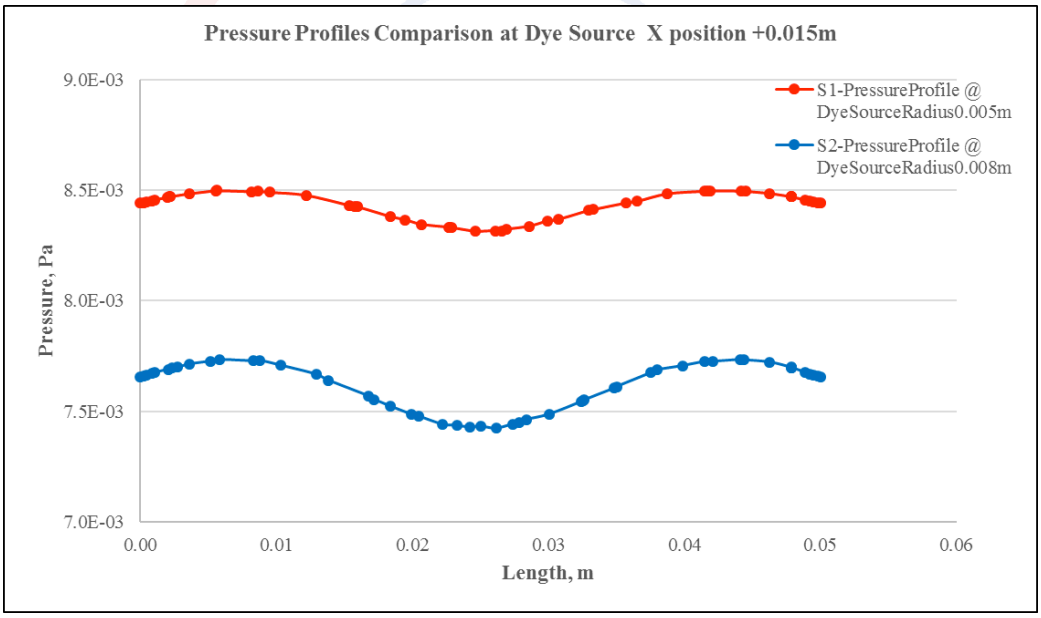

Figure 20: Pressure profiles comparison at proposed cut-line (Dye source X position + 0.015m)

Conclusion

COMSOL simulation APPS were created to cover the transport phenomena course. The APPS were developed to allow students review, investigate, analyze and apply as many case studies as they want. Subsequently, this technique will advance their vision and understanding of the topics. Visualized results in the APPS are changeable once the student control the input data. These results can be exported to be used in other packages such as MS Excel where they can collect all results for further analysis.
This APP builder feature was added to the regular COMSOL package to allow educators enhance the teaching approach and as result this will develop students deeper understanding for the course.

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COMSOL Multiphysics website, http://www.ecedha.org/ece-media/ece-webinars/comsol-webinar-9-8-16

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Cognitive Behavioural Therapy through Karate for Sustainable Development in Education

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The IAFOR International Conference on Education – Hawaii 2017
Official conference Proceedings

Abstract
Karate has a long and established history as an effective means of unarmed combat, incorporating techniques for self-defence. These centuries-old techniques have in recent years been analysed scientifically and refined for maximum efficiency. Significant progress has also been made in recent years in our understanding of neurobiological basis of mental disorders and cognitive behaviour. Core beliefs are individuals' most central beliefs about themselves, their world, and others. These beliefs begin to form in childhood and become so deeply ingrained that individuals normally do not articulate them and are regarded as absolute truths. They influence the development of a person's attitudes, rules and assumption. For many parents who have a child diagnosed with a mental health disorder like incompatible behaviour, competitive behaviour or low response behaviour, choosing an appropriate treatment can be a struggle.
Cognitive behaviour is individual's emotions and behaviours influenced by the child's perception of a situation which compels them to react the way they do. It was crucial for researchers and practitioners to identify what sport activities are able to improve the development both in motor and cognitive domain. Karate revealed to be the only physical activity able to stimulate memory abilities and executive functioning during training sessions. With concern to cognitive abilities, it has been observed that children executing karate appear to improve sustained attention, reduce impulsivity, hyperactivity, loss of focus, forgetfulness and showing emotions without restraint and have better cognitive abilities like working memory, attention, executive functioning.

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Introduction

"Nearly 150 million Indians, aged 13 and above, are likely to be suffering one or more mental health problems and need treatment, as per a survey done by Nimhans. The survey team interviewed nearly 40,000 individuals, including 1,200 adolescents, from 12 states across 6 regions of the country. As per the survey most of the mentally ill patients were in the age group of 30 to 49 and those above 60." (The Deccan Chronicle, Dec 28, 2016)

One of the main neurobiological disorders responsible for the learning disabilities that affect the ability to acquire, organize, retain, understand and use information. Although the impact of learning disability is primarily in the academic domain, the affected youth also experience social difficulties and psychological disturbances. Cognitive impairments and developmentally inappropriate or excessive behaviour is the root cause of Attention Deficit Hyperactivity Disorder (ADHD), a neurological syndrome whose classic, defining triad of symptoms includes impulsivity, distractibility, and hyperactivity or excess energy, which associates with learning disabilities (LD). Although it is generally accepted that LD and ADHD are distinct disorders, research suggests that a common deficit in executive functioning explains the high degree of executive function refers to the set of cognitive processes that control goal-directed behaviour. These processes include goal setting, organization of behaviour, response inhibition, cognitive flexibility, working memory, attention and progress-monitoring. Students with LD and ADHD often exhibit impairment in one or more of these processes.

Regular and sustained martial arts activity has been found beneficial for students who have been diagnosed with Attention Deficit Hyperactivity Disorder. Martial arts training, under certain conditions, can help students deal with AD/HD issues without resorting to aggressive and harmful drug therapies, which are currently in practice for the treatment approach to the disorder. ADHD is a host of issues, such as reductions in educational funding, classroom discipline, decrease in cultural tolerance, marked difference in student's behaviour etc. The ever increasing fields of special education and the aggressive pharmaceutical marketing strategies are keeping the parents restless of a solution for the behavioural problems of their children.

Treating mental disorders with karate can be more time-consuming and, sometimes, more costly, than automatically treating the disorder with the available medications. It requires considerable commitment and work from the parents, and the active participation of the child in the process. Additionally, it requires a good karate instructor and program. Most karate programs take place in a dedicated facility rather than at home or in school. The potential benefits of training for the child with mental disorders will be unlocked only if the instructor teaches karate with an understanding that the benefit results are not just from the exercise, but how the exercise is taught and the philosophy that underlies the teaching. It seems that karate training may help AD/HD children improve their overall behaviour and lead to better school performance (i.e., higher grades). AD/HD manifests itself through short attention spans, excess energy, and inability to control impulsive behaviour. Together, these symptoms adversely affect the performance of children with AD/HD in schools. Their inability to adequately concentrate on school tasks translates into poor academic performance, which results in frustration, on part of children, parents, and educators, compounding the original problem. Karate training emphasizes concentration in a

number of ways, not the least of which is the necessity to perform one technique or set of techniques over and over again in order to perfect it.

It seems self-evident that for any behavioural or physiological changes to manifest themselves it is necessary for the student to habitually attend to their training for a period of time; therefore it is no surprise that a number of researchers found that there is a positive correlation between length of time practicing, and associated attainment of belt rank, and increases in self-confidence independence, self-reliance, and self-esteem. The advantages of practising karate can be :

a) **Self Esteem & Confidence** : It has been established that karate practice also leads to more easy-going and warm-hearted individuals, and remarkable increase in self-confidence, self-esteem, self-control and a reduction of feelings of vulnerability to attack with increased feelings of confidence. Karate training can be effective in teaching children of parents with mental illness to self-manage behaviours and emotions and be better able to focus and concentrate on daily life. It is evident that involvement in interesting social and leisure activities has provided opportunities to improve self-esteem.

b) **Reduced Aggression** : A number of researchers have found that karate practices cultivate decreases in hostility and decreased feelings of anger. Furthermore, a number of researchers have presented descriptive, cross-sectional data showing lower scores on hostility and aggression and/or higher scores on self-esteem and positive outlook for traditional karate students when compared to students of non-traditional karate or other sports. Not surprisingly, these positive characteristics increased with greater length of training in traditional karate. Further investigation demonstrated that the improvements were not due to natural attrition of more aggressive students.

c) **Relieved Tension** : Scientists have pointed out that karate training enabled participants to diffuse emotions and relieve tension, which resulted in decreased level of aggression. They also found a link between ag-gressiveness levels being affected by the specificity of the training and instructor qualifications.

d) **Reduction of Aggressiveness** : In reference to the reduction of aggressive tendencies it has been observed that the strong emphasis on mastering techniques in karate, repetition in training and the delaying of participation in competition involving combat are considered to be devices towards achieving this goal.

e) **Self-Acceptance** : The traditional karate students showed significant increases in scores for self-acceptance which were not reported for the students with a modern emphasis in training. Most research supports the hypothesis that it is the training environment and style of instruction influencing these differences.

f) **Engaging At Risk Youth** : The use of karate training and programs to engage and teach youth and achieve positive outcomes has been well documented. Traditional karate provide exactly the experience that will engage young people who are at clear risk for delinquent acts or impulsive violence, and even start them on positive life paths. Karate training “can be an extraordinarily helpful, ego-building

form of psychotherapy" and noted that this was particularly true for control of aggressive impulses and reducing juvenile delinquent tendencies.

g) **Engaging Children with ASD** : Research has found that children and youth diagnosed with Autism Spectrum Disorder (ASD) with some modification and consideration for sensory processing issues, karate training can be tremendously beneficial with its structure, hierarchy, predictability and kata. Kata training is effective for reducing stereotypical behaviour and social dysfunction in children with ASD, and improving baseline behaviours in children with ASD as evidenced in dramatic gains in social skills, physical ability, respect, and overall attitude.

h) **Helping Strategic Plans** : The results of these studies may help educators working with students on the autism spectrum to establish effective strategic plans under which karate training will be provided and utilised to engage children with ASD.

i) **Engaging Children with ADHD** : In addition to the benefits of karate for students with ASD, children with Attention Deficit Hyperactivity Disorder (ADHD) have been found to benefit from karate training and the benefits have been investigated by researchers.

j) **Improving discipline** : Karate training two times a week yielded improved homework completion, improved classroom behaviour, reduced inappropriate callouts in class, decreased leaving seat in class, and improved academic performance with overwhelmingly positive psychosocial benefits in boys diagnosed with ADHD.

k) **Spiritual Benefits** : True achievement in karate is not gaining the force and skill to smash bricks, cement blocks, baseball bats, and blocks of ice. Neither is it the privilege of wearing different colours of belts nor the prestige of winning sparring championship titles or tournament trophies. The real value of karate is in helping individuals harness their natural physical strength and innate goodness of character. The spiritual side of the karate does not point to any religion in any sense,

l) **Other Benefits** : Karate practice improved cognitive self-regulation, affective self-regulation, prosocial behaviour, classroom conduct, and performance on a mental math test with demonstrated greater benefits for boys than for girls.

Although a positive picture is painted by the researchers, on the application of karate as a psychotherapeutic intervention alongside conventional psychotherapies, a lot of work is still needed in this area. The basic principle employed by these methods is that emotional and interpersonal maladjustments are reflected in bodily sensations, and can be corrected through appropriate physical movements.

The Martial Art Therapy :Traditional karate offer the prospect of positive psychological change to their students and produce beneficial psychotherapeutic effects when practised outside their original culture but how much of the original teachings are correctly understood and interpreted remains an open question. The

more we move forward in time with breakthroughs in technology, the more we need to understand how to use and build on ancient wisdom as well. The Indian and Oriental cultures have contributed much to healthy living, rehabilitation and pain management. Martial Arts Therapy (MAT) utilizes this wisdom to help people keep optimum health, and manage and heal those with serious illnesses and disabilities.

Martial Arts Therapy is the use of century's old wisdom with modern education techniques to train our brave student/patients that they can be in control of their bodies thereby controlling their pain and their emotional and physical difficulties. MAT has its roots going back to 1979 where students of Applied Martial Arts had to volunteer time to receive training in helping sick kids with cancer and those who had disabilities to receive their promotion in rank. The philosophy is simple, once you empower yourself then you must empower others especially those who often are the most vulnerable in society.

Martial arts philosophy stresses that people should live in peace and harmony. It also emphasizes respect for self and others, compassion, and a high regard for physical and moral excellence. In its purest form, the martial art is practiced to achieve strength and enlightenment of the mind, body, and spirit.

Today, martial arts therapy is used as an unconventional treatment for children or adults with social anxiety disorders. Also known as social phobia, this condition refers to excessive, long-lasting anxiety due to various fears, worries and apprehensions. In general, people with social anxiety disorder have an intense fear of being judged or ridiculed by others. People with this condition may often be found in isolation or may only have very few friends. Through karate training, people with anxieties may be taught to improve their social skills at the same time as they learn self-defence. These individuals are also taught to develop self-respect and respect for others. By attending self-defence classes, people with anxieties slowly gain confidence and develop healthy relationships with other people in and outside the class. Regular karate practice not only provides skills in self-defence. More importantly, it restores or improves the self-image of the practitioner.

Behaviour is the aggregate of the responses, reactions or movements made by an organism in any situation or learned from the environment through the process of observational learning. In society, children are surrounded by many influential models, such as parents within the family, characters on TV, friends within their peer group and teachers at school, which provide examples of behaviour to observe and imitate. The first is a case of the internal stimulus created in the brain by observing a particular behaviour of the peer, followed by a response—whether to imitate it or not. The capacity to copy the behaviour or not, comes from within, which can only be explained scientifically-may be genetic, due to deficiency or disease. It all depends how well or how quickly the child pays attention to a particular behaviour, how long it can retain, how well it reproduces and what motivation it is getting—whether a reward or a punishment.

In the second case, the child normally encodes the behaviour of these people and then start imitating them till such time that it is punished, in the case of a negative behaviour. In the case of a good or appropriate behaviour, as perceived by the person(/s) around, the child gets a reward or appreciation for such behaviour , which

is reinforced in the child. The child will also take into account of what happens when their peers exhibit a particular type of behaviour to others and also observe closely the consequences of such behaviour, make it decide whether or not to copy someone's actions.

The scientific explanation to the imitation process is the firing of mirror neutrons. Karate is an excellent example of firing mirror neurons social learning where it fires.

Children with behavioural, emotional and social difficulties (BESD) can benefit in a lot of ways from their physical training but the true advantage for using karate as an intervention for these children lies in the psychotherapeutic nature of the arts.

The psychotherapeutic benefits of karate have been the focus of a lot of research in the past years that has brought to light some very interesting findings, which show that long term training causes positive psychological and social adjustments. From a psychotherapeutic viewpoint, karate may be viewed as formalized, refined systems of human potential training which provide interesting, practical models of intervention.

Karate can be used as a tool for avoiding hostility and aggression, focusing instead on avoiding conflict and impulsive actions. This peaceful attitude of course takes some time to develop but it is taught from the first day to new students, affecting them positively. Other psychological benefits include higher self-esteem and a more optimistic and confident response to daily challenges, which can help children that feel 'not good enough' or 'inadequate' cope with their stress and anxieties much more efficiently.

Children with behavioural, emotional and social difficulties can benefit the most from the cultivation of their concentration ability through their training. During their classes they are taught how to set their mind on one thing only, such as a technique or a 'kata' and perform it without distractions. Children with BESD can also benefit from the controlled environment of the class. Inside the training hall there are no noises, pictures or other external stimuli to distract the child, who has to focus and pay attention. With proper, long□term training children can learn how to master this skill in the dojo (training hall) and then transfer it to their everyday life.

Behavioural disorders, also known as disruptive behavioural disorders, are the most common reasons that parents are told to take their kids for mental health assessments and treatment. Behavioural disorders are also common in adults. If left untreated in childhood, these disorders can negatively affect a person's ability to hold a job and maintain relationships. Someone who has a behavioural disorder may act out or display emotional upset in different ways, which will also vary from person to person.

Behavioural disorders may be broken down into a few types, which include:

- Anxiety disorders
- Disruptive behavioural disorders
- Dissociative disorders
- Emotional disorders
- Pervasive developmental disorders

An emotional behavioural disorder affects a person's ability to be happy, control their emotions and pay attention in school. According to Gallaudet University, symptoms of an emotional behavioural disorder include:

- Inappropriate actions or emotions under normal circumstances
- Learning difficulties that are not caused by another health factor
- Difficulty with interpersonal relationships, including relationships with teachers and peers
- A general feeling of unhappiness or depression
- Feelings of fear and anxiety related to personal or school matters

Oppositional Defiant Disorder is a behavioural disorder characterized by hostile, irritable and uncooperative attitudes in children, according to Children's Mental Health Ontario. Children with ODD may be spiteful or annoying on purpose, and they generally direct their negative actions at authority figures.

Anxiety is a normal emotion, and all people feel anxiety at some point in their lives. However, for some people, anxiety may get to a point where it interferes with their daily lives, causing insomnia and negatively affecting performance at work or school. Anxiety disorders involve more than regular anxiety. They are serious mental health conditions that require treatment. Examples of these types of mental conditions include:

- Post-traumatic stress disorder
- Obsessive-compulsive disorder
- Generalized anxiety disorder
- Panic disorder

Obsessive-Compulsive Disorder is characterized by fears and irrational thoughts that lead to obsessions, which, in turn, cause compulsions. If you have OCD, you engage in compulsive, repetitive behaviour despite realizing the negative consequences of your actions, no matter how unreasonable they are. Performing these repetitive acts does nothing more than relieving stress temporarily.

A behavioural disorder can have a variety of causes. According to common belief, the abnormal behaviour that is usually associated with these disorders can be traced back to biological, family and school-related factors. The biological causes may include:

- Physical illness or disability
- Malnutrition
- Brain damage
- Hereditary factors

Other factors related to an individual's home life may contribute to behaviours associated with a behavioural disorder:

- Divorce or other emotional upset at home
- Coercion from parents
- Unhealthy or inconsistent discipline style
- Poor attitude toward education or schooling

The emotional symptoms of behavioural disorders can be easily getting annoyed or nervous, appearing angry, putting blame on others, refusing to follow rules or

questioning authority, arguing and throwing temper tantrums, having difficulty in handling frustration etc.

The physical symptoms of behavioural disorders will have mostly emotional symptoms, with physical symptoms such as a fever, rash, or headache being absent. However, sometimes people suffering from a behavioural disorder will develop a substance abuse problem, which could show physical symptoms such as burnt fingertips, shaking or bloodshot eyes.

If left untreated, a behavioural disorder may have negative short-term and long-term effects on an individual's personal and professional life. People may get into trouble for acting out, such as face suspension or expulsion for fighting, bullying or arguing with authority figures. Adults may eventually lose their jobs, marriages can fall apart due to prolonged strained relationships, while students may have to switch schools and then eventually run out of options. The most serious actions a person with a behavioural disorder may engage in include starting fights, abusing animals and threatening to use a weapon on others.

Mental health professionals and treatment centres can evaluate people to determine if they a behavioural disorder. Tests called functional behavioural assessments offer problem-solving help to address behavioural problems in students. These assessments are based on many techniques and strategies for identifying problem behaviours. Individualized educational program teams use these assessments to choose interventions that address specific behavioural problems. These teams are involved in the education of students, and they may include parents and teachers.

A person may receive prescription medications to help manage a behavioural disorder. Though medication will not cure the disorder, it is effective in assisting with treatment to control and modify behaviours.

Many drugs are available for behavioural problems, and the type of drug that will be prescribed depends on the specific condition being treated. Most of the children suffering from ADHD are subjected to administering Ritalin (methylphenidate), a psycho-stimulant that has a host of side-effects and behavioural problems associated with its use. Other types of medications in this group include Concerta, Methylin ER, Methylin CD, Focalin, Metadate ER and Dexedrine as short-acting medications for the treatment of ADHD. They may help a child focus better, reduce impulsive behaviour and reduce motor restlessness. These medications may also be effective against ADHD. Concerta may prevent drug abuse, as can Vyanase and Daytrana. Some professionals recommend Wellbutrin as a primary ADHD treatment.

Such drugs may develop depression, delusions, hallucinations, paranoid fears and other drug-induced reactions in some children. Such side effects are often diagnosed as schizophrenia, clinical depression or bipolar disorders necessitating further treatment by antidepressants, mood stabilizers, and neuroleptics, finally ending up with psychoses and tardive dyskinesia. Further, it has been proved that persistent usage of psychostimulant drugs suppresses creative, spontaneous and autonomous activity in students, making them more docile and obedient. However, they conclude that the best way to treat the disorder is through monitored drug therapy and a comprehensive behavioural modification treatment. They suggest that medication

itself may not be the best thing for most children. Medications alone may not necessarily be the best strategy for many children. For example, students who had accompanying problems like anxiety, stressful home circumstances, social skills deficits, etc., over and above the ADHD symptoms, appeared to obtain maximal benefit from the combined treatment.

People with an anxiety disorder, OCD or ADHD may benefit from antidepressants, including Paxil, Tofranil, Anafranil, Prozac, Luvox, Celexa, Zoloft and Norpramin. Other medications that may help include Daytrana, Biphetamine, Dexedrine, Adderall XR and Strattera. These medications are aimed at decreasing impulsivity, reducing hyperactivity, decreasing obsessive-compulsive actions and reducing feelings of depression.

Medications for behavioural disorders may have side effects. They can increase emotional issues, increase suicidal thoughts and aggravate seizure conditions. Some of the possible side effects include insomnia, appetite reduction, tremors, depression, abnormal heart rhythms. An individual may become addicted to the medication taken to treat a behavioural disorder. As a result, the person may need professional help with weaning off that medication. One may experience withdrawal symptoms certain medications are abused. People who are depressed ore have suicidal thoughts; also have a high risk for overdose, according to the medical literature.

Depression and Behavioural Disorders may trigger depression. It is not uncommon for people with a behavioural disorder to also have an addiction to drugs or alcohol. Persons with ADHD also may be at a higher risk for developing a substance abuse or alcohol dependence issue if the condition carries over into adulthood,

Intellectual disability, usually defined as when an IQ of a person is 75 or lower, is fairly common and it occurs in approximately 1 to 2 percent of people. Psychiatric and behaviour problems occur three to six times more in these individuals than in the general population, so the assessment of these patients is important in treating these issues.

Because of the severity of these mental health issues, getting help for a behavioural disorder is crucial. Cognitive behavioural therapy along with medication is an effective way to treat disorders such as ODD.

Dysthymia or chronic depression is characterized by a persistently sad disposition, as though the person is always in a bad mood. Many potential causes for depression exist. It can be genetic, meaning the patient has a family history of depression. Personal trauma and sources of stress, such as a failed relationship or a lost job, can also cause depression. Social isolation as the result of conflict with family and friends can be a contributory factor, and certain medications, such as high blood pressure medication, have depression listed as a possible side effect. Emotional symptoms of depression can be withdrawal from socializing, loss of interest in previously enjoyed hobbies, constant irritability or sadness, constant pessimism etc.

The depression can be of the following types :

- Atypical Depression : Atypical depression can be hard to diagnose and it often lasts for years. Some of the common symptoms of depression, such as decreased appetite, are reversed; the person may have cravings for chocolates or sweets.

- Bipolar or Manic Depression : Bipolar disorder is characterized by cycling between depressive periods and manic periods in which the person engages in a lot of activity and feels extremely empowered and positive. The time between phases varies from person to person.

- Seasonal Affective Disorder (SAD) : SAD often strikes people during the winter months. A lack of sunlight, exercise, and fresh air causes irritability and lethargy in people who suffer SAD.

- Postpartum Depression : Postpartum depression occurs often with women who have recently given birth. The time of onset varies; it can occur as early as three months or as late as a year after delivery. It is moderate to severe.

- Psychotic Depression : Patients who suffer psychotic depression exhibit psychotic symptoms along with the depression, such as delusions or hallucinations. The hallucinations can affect any or all of the senses. Usually, the delusions involve feelings of unwarranted guilt or inadequacy.

Several drugs are available for depression like selective serotonin reuptake inhibitors. These help the brain to regulate the release of serotonin and dopamine; these are brain chemicals thought to be responsible for creating feelings of happiness and satisfaction. Common brand names are Paxil, Prozac, and Zoloft. These drugs have the side effects like fatigue, dry mouth, vision problems, dizziness, irritability and constipation. If someone becomes dependent on antidepressants, addiction is a possibility. Abuse of antidepressants may not lead directly to death, but it can and will have adverse effects on the brain's chemical balance, as well as the heart and respiratory system. Withdrawal, when weaning off the antidepressants, can send someone spiralling back into depression.

Many experts agree that physical activity can help people with depression. Often, engaging physical activities like karate gives you a sense of control and decisiveness that you can surpass the obstacles in your life. With this psychology at work, karate can help you to overcome depression. Here is how karate can come to aid against depression:

- Life skills: Karate teaches you many lessons about life. You can develop the ability to deal with the problems of life through karate.

- Being happy: Karate quickens the healing process by teaching you how to recover and be happy. Studies show that karate have been instrumental for many people in recovering from the trauma of abuse, dysfunctional families and eating disorders.

- Self-confidence: The sense of achievement that you gain from karate is unmatched. It is not just for health and fitness - it imparts the ethics, self-awareness and mental strength to be confident.

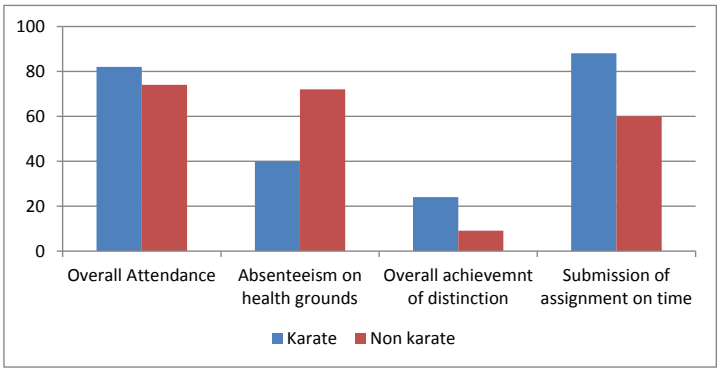
- Discipline: Discipline, in the context of karate, means that it tempers excessive emotions and helps you to restrain yourself. If you want to get out of depression, you need to learn to control emotions.

- Strength: Karate also makes you stronger – both in your body and mind. This enables you to face the problems of life effectively.

A study was conducted consisting of a comparative analysis on the performance of 4 batches of engineering students between those who enrolled for karate classes, and those who did not enrol themselves. The study period was 5 months of rigorous training in karate for about 2 hrs a day, consisting of basic karate: kata and kumite. The average performance of the students was compared in the areas of general attendance, academic performance, discipline and creativity in assignments and health issues. A remarkable difference in the cognition levels was noticed as indicated by the higher percentage of distinctions which can be attributed to the karate exercises. A substantial difference in the punctuality and attendance was also observed, partly because of better physical and mental health of those who practised karate. Improvements in general behaviour, emotion control, attentiveness in the classroom were also observed which could not be quantified. Further studies are necessary in the behaviour areas like EQ, anger management, boosting of self-confidence etc. to assess the efficacy of karate practice among the school/university students. The observations are tabulated below :

Year	Total Students	Nos enrolled in Karate	Nos. Not enrolled in Karate
4th Year	360	100	260
3rd Year	360	130	230
2nd Year	360	150	210
1st Year	360	170	190

Criteria (% age)		Karate	Non karate
Overall Attendance		82	74
Absenteeism on health grounds		40	72
Overall achievemnt of distinction		24	9
Submission of assignment on time		88	60
Grooming and general behaviour (could not quantify)		Better	Average



Concluding Remarks

Asian karate has traditionally emphasized self-knowledge, self-improvement, and self-control. Unlike Western sports, Asian karate usually teaches self-defence, involve philosophical and ethical teachings to be applied to life, have a high degree of ceremony and ritual, emphasize the integration of mind and body, and have a meditative component. While exercise and physical fitness has a role in producing psychological benefits, advocates of karate claim that the karate has a direct bearing on morality, disciplined ritual, and knowledge of man in the universe and gradually, permeated karate practices encouraged non-violent attitudes and behaviours.

It is likely that inclusion of the non-physical aspects of the karate during training or the instructor acting as a positive role model or both play a role in promoting long-term changes. A goal for future research will be to design experiments to determine which specific aspects of the karate affect these positive changes. Despite the unanswered questions about how these changes occur, the karate is finding a niche in the treatment of psychological disorders and will likely prove to be a useful complement to verbal therapy. It is gratifying to know that research is beginning to support the claims of the old masters: the karate can help develop both better bodies and better minds and may lead to a better, more peaceful society.

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Instructor Experience Affects Perception of Student Technology use as a Sign of Engagement

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Abstract
Devices such as cell phones, tablets, and laptops have become commonplace in the classroom. Students can use these devices to disengage and distract others or to take notes and collaborate with others. Recognizing the difference is now a critical skill for university instructors. Assessing student engagement and responding to disengaged students are learned skills that develop with experience. This case study, conducted at a large public university, supports the idea that an older, more experienced instructor is better able to assess engagement in the classroom than a younger, less experienced instructor. Interestingly, the experienced instructor used student technology use, as a behavioral cue of engagement while the inexperienced instructor did not. The younger instructor was unsure whether student technology use was a sign of engagement or disengagement. However, the experienced instructor used cell phone use and the noise of student typing as signs of positive engagement. Initiating discussions between experienced and inexperienced instructors on the cues they use to measure in-class engagement could increase the rate at which instructors develop this critical skill.

Keywords: Student engagement, Professional development, technology use, case study

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Introduction

Educational policy and practices have been on the forefront of political debate as we seek to educate the next generation. Conversations regarding how to best teach students and what makes a teacher effective have been developing for decades (Boettcher, 2007; Braskamp, Brandenburg, & Ory, 1984). Persistence, however, is a factor most agree is highly correlated to effectiveness (Rovai, 2002). Science technology engineering and mathematics (STEM) and STEM education has become a fixture in American media and politics recently. Our science classrooms are critically important to the future of the country (President's Council of Advisors on Science and Technology, 2012). Jobs related to the STEM workforce fuel the economy and are instrumental in creating jobs in other sectors of the workforce. Colleges and Universities in the United States need to produce over one million more STEM graduates over the next decade to maintain a healthy economy. Essentially, colleges and universities need to become more effective over the next decade.

A sense of belonging or engagement are factors strongly associated with persistence in academics (Tucker, 1999). It is easy to see this from the student perspective, and it is most realistic to measure the students' perception of their learning environment (Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008). Methods have already been established to measure students' sense of belonging and engagement (Rovai, 2002). In this regard engagement refers to the time and energy students invest in academically purposeful activities. Academically purposeful activities include participating in study groups, taking notes, joining social groups, or developing relationships and rapport with instructors. When students are actively involved in their learning, and participate in experiences that increase their sense of belonging they are more likely to persist in college. Because these activities are correlated with persistence and graduating, there is a need for instructors whom can encourage these experiences. Not only should instructors encourage engagement, they should also know what engagement looks like and know how to leverage their resources to influence student engagement wherever they can. The problem, however, is instructors are not always trained consistently or not trained at all to assess engagement.

University professors and instructors begin as novice teacher while in graduate school as graduate teaching assistants (GTAs). These early days of an instructor's career are not always nestled in a nurturing environment. GTAs often don't have a definitive job description, and must excel in a variety of capacities (Dudley, 2009). GTAs are required to teach, perform novel research, as well as take classes. Which aspect of their graduate life is held with the most emphasis varies wildly (Muzaka, 2009; Park, 2002). Often, GTAs are encouraged to spend the most amount of time with their research, while staying up to date with their coursework. This inevitably leaves teaching responsibilities and professional development to be neglected. Developing college instructors does not have to work this way. In a nurturing environment and under the guidance of more experienced instructors GTAs can develop into excellent university instructors (Kendall et al., 2013; Kendall, Niemiller, Dittrich-Reed, & Schussler, 2014). But, because of the priority teaching holds at many institutions while instructors are in graduate school, many instructors are left to learn teaching skills on their own. But how do instructors learn how to assess their classroom skills? Does longevity in the field establish an instructor that is set in their ways, or are experienced instructors staying up to date with new practices and techniques? And

what can we take away from what current instructors are doing and use it to help train new instructors?

Methods and Procedures

The purpose of this case study was to investigate instructor perceptions of student engagement in a normal college biology lecture. We observed instructors while they taught and followed up with interviews about those observations to learn what instructors notice while they are teaching, and how they react to students' displayed level of engagement. For this case study, we found a small sample of male and female instructors whose experience in the classroom ranged from less than five years to over twenty-five years. After contacting instructors and consent was granted one researcher would observe a normal lecture class given by the instructor. The researcher would try to stay incognito to not distract the students or the instructor. Observations focused on student behaviors pertaining to or indicating engagement in the lecture and instructor responses. The observer took field notes on the classroom environment including student actions and instructor reactions as well as lecture hall architecture. Following observations interviews were conducted. Interviews lasted approximately twenty minutes and questions were focused on what was observed but were also very flexible. Instructor perceptions of engagement and explanations to things that were observed were also studied. Data from the study came from both observation field notes and transcripts from interviews.

Analysis

Throughout the methodology we observed a cycle that was reinforced to varying degrees by each of our instructor participants (figure 1). Instructors were observed teaching or introducing a concept during the lecture. After teaching for some time or following the introduction to a concept the instructors needed to assess the engagement in the lecture hall. The assessment either led to the instructor seeing students display what was described as engagement behavior or students displaying behaviors consistent with not being engaged with the lecture. The room was usually a mixture of the two types of student behavior. After assessing for student engagement, the instructor then responded accordingly. If the instructor perceived a widespread lack of engagement, the instructor would try various techniques to re-engage students with the lecture. This cycle would continue throughout the lecture. Each instructor used their own creative ways to navigate this cycle of engagement. However, one theme emerged among all the instructors, the use of technology. Furthermore, in regards to technology, many comparisons worth investigating were discovered. In addition to technology use, instructors also indicated student location in the lecture hall was important to assessing and managing engagement during lectures. The analysis walks through the cycle instructors displayed. At each stage comparisons are made between veteran instructors and the younger instructor. All numbers coincide with the numbers in figure 1.

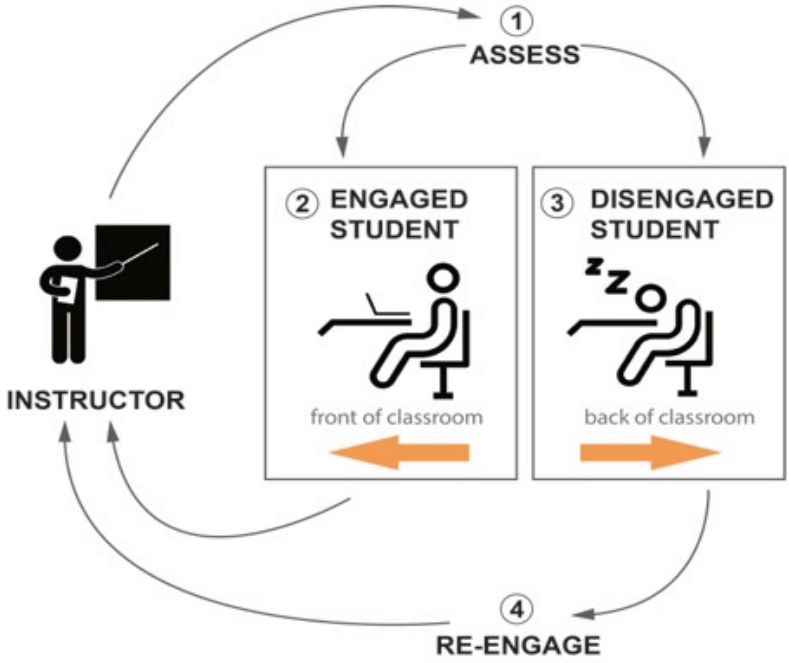

Figure 1. The instructional cycle observed in lecture classes

1 The instructors each had a personalized style of instruction as one might expect in any college course. Two of the instructors preferred and taught from PowerPoints with abbreviated notes for the students. Another instructor preferred lectures to be more interactive and instead used dialogue intermixed with discussion and drawings on the board. When assessing student engagement a few key points emerged. First, technology was a usable indicator of engagement; however there seemed to be a difference in instructor perception of technology use. Veteran instructor A has been teaching for over two decades and claimed "you constantly have to monitor" the level engagement during a lecture. He claims he would "read faces", and even said "he has certain barometers" he uses to assess the level of engagement in the class. One clear indicator for him was the sound of typing notes on laptops. He claimed that he could tell when students didn't understand a concept based on the speed and irregularities in the rate of typing. Instructor A mentioned the sound of typing clued him in to engagement as well as the student level of understanding. He claimed if he's "reviewing something [he] delivers it faster"; using the sound of typing he understood whether students recognized it as review and whether students are understanding that piece of information. Instructor B enforced a no laptop use policy in the back of the lecture hall because of the difficulty assessing engaging technology use. Instructor B has over fifteen years of teaching experience, and has learned from experience how to manage technology in the classroom as a way of managing classroom engagement. In addition to many of the same techniques to assess engagement as the other veteran instructor (Instructor A), Instructor B would also ask the class assessment questions when she saw individuals' attention and engagement starting to fade. Instructor C, the novice instructor, had not yet learned to notice subtle clues students display that indicate their engagement. He did mention he observed students on their laptops, but made comments suggesting he did not know whether they were actively participating with the lecture or using their devices to distract themselves.

2 Instructors seemed to agree that engaged students generally sat toward the front and within clear eyesight of the instructor. Instructor A made comments suggesting that those in the front of the classroom were reliable to assess student engagement because they had a rapport of consistent engagement. During the interview Instructor A mentioned he viewed engagement as a function of "real estate" in the lecture hall. He continued by saying he enjoys the moments "when from the back portion of the class that starts working their way forward without you saying anything to them". He used this as an indicator of the student engaging themselves with the class and lecture. Instructor B's classroom policy that students in the back could not use laptops for note taking because students in the back generally use them for nonacademic purposes. Instructor C also acknowledged being able to assess those in the front of the lecture hall more readily.

3 Students located further toward the back of lecture halls were noticed to be less engaged. Either instructors directly observed them distracting themselves on their computers or other devices or could perceive based on their body language they were not engaged. This was consistent with the researcher's classroom observations. For example, in instructor B's classroom the students in the back did not attempt to take notes and some were even observed to be sleeping. Instructor C mentioned the back of the classroom in the lecture hall was too far and out of his sight line that it was difficult to see what any of the students were doing. He even mentioned it was hard to hear any noise or talking coming from the back of the lecture hall.

4 Redirecting the lecture varied based on instructor experiences. Instructor A commented he would overtly re-gain students' attention by asking for student attention. During observations, Instructor A would make concept related jokes to perk students up and regain their attention. As mentioned previously, Instructor A relied on typing noise to help him pace his lectures. If students were out of sync with their note taking based on his expectations of how they should be taking notes he used it as a cue to adjust his teaching and re-engage students. Interesting to note, instructor B managed engagement by utilizing her own unique technology devices. Instructor B was observed to re-engage students using a "magic pen" stylus and tablet to model highlighting important content for students. Instructor C managed re-engagement similar to Instructor A, however instead of an overt method he would provide a summary of the concepts just covered in the lecture. Instructor C would also ask students questions relevant to the concepts just covered as a method to bring students back to the lecture.

These experiences and varying perceptions of student engagement represent what needs to be examined further. Instructors A, B and C were very consistent for items 2 and 3, however instructor C had a noticeable difference for items 1 and 4. Instructor C was aware of the possibilities of measuring and managing engagement using technology, but was not as skilled in these areas. By learning how current instructors assess engagement and more importantly how they manage it we can help future faculty members (GTAs) with strategies to increase their classroom engagement. Further studies should examine more perspectives of instructors with various backgrounds. In addition, the perspective of the student should not be ignored; how students perceive their own engagement should also be examined.

Discussion and conclusions

This case study revealed interesting perspectives on instructors' perception of student engagement. Each instructor was observed to approach teaching differently, and each instructor managed engagement in their own way. Technology was an important theme that emerged with each instructor. Instructor A, the most veteran instructor in this study, used subtle nuances derived from technology use to assess student engagement. It was interesting to see how adept Instructor A was at assessing student engagement using technology being he was the oldest instructor. The technology and resources available today were not available when he was learning to teach. Instructor B was an expert at leveraging technology as a method for capturing and maintaining student engagement. Her methods were driven by her experiences, and they led her to expertly managing engagement. Instructor C is a novice instructor. It is clear he is passionate about students and their learning needs, however he had the least amount of experience in the classroom. This led him to not having as many skills to assess student engagement as his veteran counterparts. What makes the technology use an interesting theme to emerge in this study is because the older more veteran instructors not only better at using it to assess engagement, but they were also more knowledgeable about how to use technology as a leverage to manage engagement. The younger instructor was tacitly aware of the potential to help assess engagement technology could hold, but had not yet developed those skills yet.

Student location in the lecture hall was also an impactful theme for all instructors. Each instructor was aware of the benefits and risks related to engagement associated with where students sat in lecture halls. The most veteran instructor was also aware of how to leverage certain cohorts of students based on their location for purposes related to managing engagement. He observed areas of the classroom where the most engaged students sit, and he would routinely use their displayed level of engagement to assess the engagement throughout the whole class. The other veteran instructor used her classroom policy to manage engagement in areas of the classroom not readily accessible to assess. The novice instructor was aware of how to assess the students within eyesight and knew of the challenges related to assessing engagement of students in the back of the lecture hall.

The instructors with more experience were aware of various methods to assess and manage engagement. The novice instructor was aware of most opportunities however; he had not developed the skills or had not learned techniques to leverage these opportunities. These finding present an opportunity for professional development. We are beginning to learn instructor perceptions of the classroom, and how they developed those perceptions. The more experienced instructors were more skilled with assessing the classroom in many ways including by leveraging technology. It was surprising to learn the instructor was not as skilled in this area. Common perception would lead many people to believe a younger instructor would be on the cutting edge of technology use, however this was not the case. The most valuable information gained in this case study were the perspectives on developing instructional skills of the more experienced instructors. The experienced instructors were aware of their own maturation as instructors, and could bring those perspectives and lessons to younger instructors. Having experienced instructors help novice instructors develop skills necessary for engagement would have an impact on instructor development and the development of more effective instructors. Limitations

from this case study result from the information coming from one university in the Southeastern United States. Although each instructor was trained in other locations around the U.S. investigating perspectives of instructors from many other institutions would be beneficial. Future directions for this research will include many more college and university instructors with varying degrees of teaching responsibilities and experience.

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Using Social Network Analysis as a Tool for Improving Teaching Effectiveness

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Abstract
Social network analysis (SNA) is an excellent observational tool for understanding community formation in the classroom. Students engaged in the classroom community might be more likely to persist in a major or discipline. Classroom community structure, therefore, could be an indication of effective teaching practices that help retain students. However, SNA is largely untested as a tool to identify disengaged students who could benefit from instructor intervention. A pilot study of undergraduates in biological sciences laboratory classes at a public, southeastern, land-grant university demonstrated a statistically significant negative relationship between self-reported likelihood of changing disciplines and formation of ties with other students. We propose that SNA could allow instructors to identify disengaged students that are at risk of leaving their discipline and make recommendations for re-engaging such students.

Keywords: Social Network Analysis, Persistence, Classroom Community, STEM, Biological Sciences

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Introduction

Now more than ever there is a high demand for graduates prepared for STEM fields (Graham, Frederick, Byars-Winston, Hunter, & Handelsman, 2013). One way to meet that demand is to retain more undergraduates in STEM degree programs by providing them with the academic and social support networks they need to persist in their programs (Tinto, 1998). Social and academic support networks are often intertwined, but need to be considered individually (Ibarra & Andrews, 1993). Social support networks consist of individuals (*i.e.*, acquaintances, friends, family, mentors) that provide emotional support and advice, while academic support networks consist of individuals with whom one can exchange information and co-construct knowledge (Tomás-Miquel, Expósito-Langa, & Nicolau-Juliá, 2016).

At university, a student's social and academic support networks may overlap substantially and both are critical for academic success and persistence (Dawson, 2008). In one study, first-year undergraduates with more school-affiliated friends in their support networks (Skahill, 2002) were more likely to persist. Social/academic networks such as residential learning communities can also increase persistence (Brewe, Kramer, & Sawtelle, 2012) and increase performance (Jo, Kang, & Yoon, 2014). For example, physics students that were most active in their residential learning community were more likely to persist (Brewe et al., 2012). Fostering a sense of belonging in the classroom should therefore increase persistence and retention.

However, with increasing class sizes common at many universities, especially introductory courses in STEM degree programs, the task of creating a sense of community and forging connections among students might seem daunting. Time and effort spent developing student support networks must be spent efficiently. Therefore, we need a tool to measure the complex structure of student social and academic networks in order to determine the most effective teaching practices to provide students with the social and academic support they need.

Social network analysis is a methodology that can be used to extract valuable information from a complex web of student connections (Carolan, 2014; Luke, 2015). A network is the term used to describe the set of ties (social connections or academic interactions) between actors or nodes (individual students). Through social network analysis both an actor's position in the network and the overall structure of the network can be quantified. Social network analysis also encompasses the statistical methods necessary to analyze network data, which often does not meet the assumption of independence of data that must be met for many standard statistical tests (Carolan, 2014; Luke, 2015).

The purpose of this pilot study was to determine whether student centrality in a network predicts their self-reported likelihood of persisting in the sciences. An actor's position in a network can influence their access to resources as well as their behavior (Carolan, 2014). Students with low centrality might have limited access to the academic and social support of their peers and suffer a decreased sense of belonging or self-efficacy. Low-centrality students, therefore, might be more likely to consider

changing majors or disciplines. Social network analysis could be an effective tool for instructors to identify students at risk of leaving the major and intervene in time to increase retention in the sciences.

Methods

The participants in this pilot study were undergraduate students enrolled in a single introductory biology laboratory at a southeastern, land-grant university in the Spring of 2016 (N = 28). Students self-reported ties to other students via an in-class survey. The survey asked respondents to identify the students in their lab groups as well as those they "engage with, about course material, inside and outside of class." Because students might be more likely to report academic ties with lab group members, regardless of the quality of the connection, these ties were used as a covariate in our analyses.

The survey also asked students how strongly they agreed or disagreed with the statement, "I feel confident I will pursue this discipline." Due to limited variation in student responses and small sample size, responses to this persistence question were recoded. "Strongly agree" and "somewhat agree" were both coded as "likely to persist" and "somewhat disagree" as "unlikely to persist." No students chose the response "strongly disagree."

We used reported academic ties to create and visualize the network (Figure 1) in R (R Core Team, 2016) using the *statnet* package (Handcock, Hunter, Butts, Goodreau, & Morris, 2008). We used exponential random graph models (ERGM) to determine whether there was a relationship between self-reported likelihood of persistence in the biology discipline and the formation of academic ties between actors. ERGMs predict the probability of forming a tie between any two actors, conditional on the rest of the network (simulated from predictor and covariate estimates) (Luke, 2015).

We fit three ERGMs in R using the *ergm* package (Hunter, Handcock, Butts, Goodreau, & Morris, 2008) and compared AIC scores to determine the best fitting model. We fit a "null" ERGM without predictor or covariate (m0) for comparison. We then fit an ERGM that only included the covariate lab group ties (m1). Finally, we fit an ERGM representing our research hypothesis, which included persistence as a predictor and lab group ties as a covariate (m2).

Although an ERGM analysis can determine whether node attributes such as persistence influence the formation of ties, it does not provide a straightforward means of identifying the actors (*i.e.*, students) that are less likely to persist. Centrality is a broad term for an actor's position within the network structure and is measured in different ways (Luke, 2015). Degree centrality is measured as the number of ties an actor forms directly with other actors and is generally interpreted as an actor's activity in a network. Betweenness centrality measures the extent to which an actor is situated between and connects via ties pairs of other actors. Betweenness is interpreted as the degree to which an actor connects different cliques of actors within a network.

We tested for an association between student centrality and self-reported likelihood of persistence. Because individual centrality scores are interdependent, we performed a non-parametric comparison of the median centrality scores of students likely to persist and unlikely to persist in biology. Using parameter estimates from m1, we simulated 10,000 networks to estimate a null distribution of differences in median centrality between the two groups. We performed this test for both degree and betweenness centrality.

Results

All 28 students responded to the survey. 60.7% of respondents were female. 27 students were enrolled in one of four majors in the field of biology: Biological Sciences, Microbiology, Genetics, and Biochemistry. Only one student was enrolled in the non-biology, but still STEM major of Physics. As might be expected for a majors biology course, only 4 (14.3%) of respondents reported that they were unlikely to persist in biology.

The classroom network is visualized in Figure 1. The density of the directed academic network was 0.066. Network density is the ratio of observed ties to total possible ties. Degree centrality ranged from 0-8 with a median of 3.5 and interquartile range of 3. Betweenness centrality ranged from 0 to 20 with a median of 0.5 and interquartile range of 9.125.

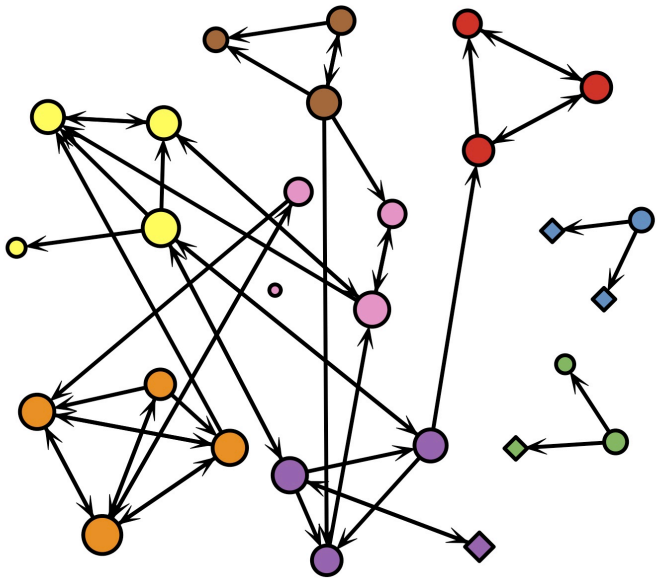

Figure 1: Directed network graph of the academic ties among students. Double-headed arrows indicate reciprocally reported academic ties. Node color indicates lab group; node size is proportional to degree centrality. Circular nodes represent students reporting they are likely to persist in biology; square nodes are those unlikely to persist in biology.

The ERGM with both self-reported likelihood of persistence as a predictor and lab group membership as a covariate (m2) was a substantially better fit to our data than other the simpler models based on both AIC and BIC scores (Table 1). The results of the ERGM analysis are displayed in Table 2. The covariate of lab group was important for determining the probability of two students forming an academic tie (log odds 3.807, $p < 0.001$). For example, the odds of two students likely to persist in biology forming an academic tie were 45.017 times greater for students in the same lab group to those in different lab groups (95% CI = [22.153, 91.481]).

Model	Dependent Variables	Degrees of Freedom	AIC	BIC
m0	Edges	1	370.22	374.85
m1	Edges + Lab group	2	248.02	257.28
m2	Edges + Lab group + Persistence	3	240.15	254.03

Table 1: Comparison of ERG models based on information criterion.

Variable	Estimate[1]	Std. Error	p-value
Edges	-6.3252	1.0093	< 0.001*
Lab Group	3.8070	0.3618	< 0.001*
Persistence	1.3828	0.5099	0.00684*

Table 2: Summary of the ERG model fit for model m2. [1]Estimates are reported in log-odds. *Denotes statistical significance at the α=0.05 level.

Self-reported likelihood of persistence was also important for predicting tie formation (1.383, $p < 0.01$). For example, for students in the same lab group, the odds of forming an academic tie between two students both of whom reported they were likely to persist were 3.986 times greater (95% CI = [1.467, 10.828]) than if one student was unlikely to persist and 15.888 times greater (95% CI = [2.153, 117.251]) than if both students were unlikely to persist.

Students reporting they were unlikely to persist in biology had a median degree centrality 3 units (*i.e.*, ties) lower than students likely to persist ($p = 0.0035$). There was no significant difference between median betweenness centrality for the two groups of students ($p = 0.7082$).

Conclusion

The ERGM and non-parametric analyses both provide evidence that network structure and self-reported likelihood of persistence are related to each other. Based on ERGM analysis, the odds of forming an academic tie increase by about 1.38 for students who plan to pursue biology. Consistent with Skahill's (Skahill, 2002) findings, students with more academic ties (greater degree centrality) reported they were more likely to

persist. It is unclear from this observational study whether students feel less likely to pursue biology because they failed to develop as many academic social connections in class as their peers, or the converse. If the development of academic social connections is important for retaining students in STEM degree programs, then instructors need to spend time and energy building a sense of classroom community fostering the trust that is necessary for academic ties (Jo et al., 2014).

The ERGM analysis also provided evidence that laboratory group membership increased the probability of academic ties. The odds of two students forming an academic tie in the classroom increase by about 3.81 for students in the same lab groups. Taken together with the observed close association between network structure and likelihood of persistence, we make the following teaching recommendations.

1. Increase the amount of group work to form social ties that may become academic ties.
2. Vary group membership to increase the density of the network.
3. Encourage student-to-student discussion of course content and concepts.
4. Learn student names in order to better facilitate student-to-student interactions.
5. Assess student social networks via repeated social network surveys.

Limitations

Our conclusions may not be generalizable for several reasons. First, this was a pilot study that only examined social network data from one laboratory course. The demography of this laboratory section was similar to that of the biology field majors at the university. However, undergraduates enrolled in an introductory biology course for biology majors are likely not representative of all STEM undergraduates. Second, student attitudes regarding persistence are subject to change and are influenced by many factors. Student responses might also reflect their pre-existing certainty in their academic and career goals rather than the influence of social connections in one particular class.

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Exploring the Impacts of Race, Culture, and Language on African Refugee Students in Ontario Secondary Schools

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Abstract
Identity threat, or perceived identity threat, in school settings has been linked to decreased academic engagement and performance among minority group members. In particular, among secondary school students, discrimination based on culture, race, and/or language can contribute to drop out rates and a lack of meaningful academic engagement. This paper is part of a larger study which explored the challenges and barriers faced by young adult African refugee students in Ontario high schools. It will focus specifically on the explorations and discussions of race, culture, and language, as found as part of that larger study, looking at how discrimination affected the participants' academic engagement, achievement, and integration into their new schools. Using in-depth interviews, the findings of the study are expressed in the participants' own voices. Participants recounted that instances of both implicit and explicit discrimination and difficulty fitting in with peers created a lack of academic achievement and academic engagement, although these were barriers that all participants were able to overcome with time. They discuss the important roles of school administration and teachers in working to decrease discrimination and build more inclusive classrooms and schools.

Keywords: refugee youth, discrimination, academic achievement, academic engagement

Introduction

The number of refugees entering Western countries is increasing. Specifically, the number of African refugees has been drastically increasing in western countries such as Canada, Australia, and the United States (Anders, 2012; Dooley, 2009; Kanu, 2008). While estimates tend to differ slightly amongst organizations, Canada typically accepts and resettles between 25,000 and 31,000 refugees each year, with 23,286 being resettled in 2014 (Citizenship & Immigration, 2015). From 2004 to 2013, of the Top 10 Source Countries for refugees to Canada, two were African nations: Nigeria and Zimbabwe (Citizenship & Immigration, 2015).Also, in 2014, of the Top 25 Source Countries, seven countries listed were African nations (Eritrea, Congo, Somalia, Ethiopia, Nigeria, Burundi, and South Sudan), accounting for more than 26% of the total refugees accepted that year (Citizenship & Immigration, 2015). Not only does Canada, and Ontario in particular, take in large numbers of refugees each year, but the number of refugees accepted is expected to increase by 20% each year (Citizenship and Immigration Canada, 2013). These numbers are quite significant and indicate that refugee students are becoming more common in our schools and classrooms. In fact, Simbandumwe (2007) reports that in the province of Manitoba, 69% of recent immigrants from African countries have come as refugees. However, while the numbers of such students are increasing, school programming has not adapted to be able to effectively meet the needs of this group (Cassity & Gow, 2005; DeCapua & Marshall, 2010; Keddie, 2012; Naidoo, 2009; Onsando & Billett, 2009; Tangen, 2009).

Refugee students face many challenges that are not commonly experienced by non-refugee students, such as a lack of social capital, a lack of English proficiency, a lack of family and/or community support, and/or backgrounds that include little, no, or interrupted formal educational experiences. However, the literature tends to group immigrants and refugees as one homogenous group (Davies, 2008; Matthews, 2008; Segal & Mayadas, 2005; Taylor & Sidhu, 2012), overlooking certain challenges and leading to refugee students often being underserved by teachers and school systems. Because high school graduation remains an elusive goal for many refugee students (Kanu, 2008; Magro, 2009; Naidoo, 2009), educators and educational administrators need to gain a better understanding of factors that affect the academic achievement and success of refugee students, as well as which supports and methods tend to lead to better academic achievement results.

This study sought to uncover some of the common challenges experienced by African young adult refugee students in their quest for academic success. Because these experiences are shared in the participants' own narratives, it is the hope that teachers, school administrators, and community support services will be able to modify their services to better accommodate these students. Specifically, the following questions were explored:

1. What are some of the common challenges faced by African young adult refugee students in regard to their academic achievement?

2. What can educators and school administrators at the secondary school level do to help these students overcome challenges?

Theoretical Framework

Equity, in general, is the idea, or the quality, of being fair and impartial. In education, the concept of equity represents fairness and impartiality in schooling (Havighurst, 1974; Fiske & Ladd, 2004). In this paper, educational equity is relevant in ensuring that African young adults with refugee status receive equitable and equal treatment in the education system, allowing them to achieve academic success, and later, success and equal opportunities in all aspects of their lives.

Methodology

This study used narrative research design, in an attempt to place importance and emphasis on personal experiences, as well as on collaboration between the researcher and the participants. Researchers in the field discuss narrative research as a collaborative endeavor in which the participants and the researcher interact dynamically to learn and produce purposeful and meaningful stories (Holstein & Gubrium, 1995; Pinnegar & Daynes, 2007). Since narrative research relies upon this collaboration and interaction, both the researcher and participant may ask questions and provide answers in the research process (Holstein & Gubrium, 1995). While there are many types of narrative research forms, this study used personal experience stories, which are studies of the experiences of individuals "found in single or multiple episodes, private situations, or communal folklore" (Creswell, 2012, p. 504). Experiences and challenges were discussed with and retold by participants in the interview process, and as such, are presented in this paper in the words of the participant, who is marked by a pseudonym to protect their identity.

Method

Three semi-structured interviews were conducted with young adults of African origin who entered Canada with refugee status. Two more responses were received, but these potential participants did not fit the criteria, as they had entered Canada as young children, not as young adults. Interviewing a small number of participants allowed for a greater degree of exploration (Glesne, 2006). All interviews, approximately an hour in length, were conducted face-to-face, and audio-recorded and transcribed to allow for more thorough examination. Since the interviews were semi-structured, an interview guide was created, but participants decided the direction that the discussion ultimately took. Participants were provided with a copy of the interview guide prior to the interview to give them a chance to reflect on their experiences and answers. Due to the nature of the interview and questions, participants were required to be proficient in English.

Findings

Language. The level of English on arrival differed between participants, but two participants frequently named language as one of the largest challenges they faced. For example, Abasi claimed that his level of English on arrival was average, saying:

> I could understand and... I was afraid to speak a little bit, but I could clearly understand what people were saying. It's just that I couldn't speak.... I couldn't use my thoughts and then speak up because I was afraid I would say things differently, or I wouldn't say it right, and you know, in high school, and you don't know if somebody's going to laugh at you or whatever, so I was very cautious when it comes to speaking up.

Habimana also self-identified at an intermediate level on arrival, but focused on the difficulty he had in understanding English speakers, specifically with pronunciation and vocabulary:

> I wouldn't say it was good English. I would say maybe I was intermediate... African English is totally different from the Canadian English or British English. Back home, we speak in English mixed with, you know, our mother tongue as well. The English which was spoken here in Canada was different. Some words, I couldn't hear them. So communication was a big part of a problem.

Both Abasi and Habimana had backgrounds in English learning before arriving in Canada, although neither spoke English as a mother tongue. While both of them felt somewhat confident in their English skills entering Canada, that confidence seemed to fade as they entered their new high schools and began adapting to their new lives. For instance, when I asked if he found it easy to make new friends, Abasi recounted:

> Not in the beginning. Again, the language thing, you know. I wanted to talk, but they talk too fast or too loud.. And I'm like hmmmm... you know what I mean, I want it slow, like let's talk slowly. So I was friends with people who were the same. They weren't really that comfortable with English yet.

Similarly, Habimana, said it was not only the English level that made making friends challenging, but also that he did not share the same interests as his peers, which made communication difficult. At the same time, he also said that, "I believe that they taught me big lessons which kept me pushing to go back to school because hanging out with them, really, whatever English I'm speaking today, I believe I got from them." Here, Habimana acknowledges that while difficult, communicating with peers helped him learn conversational and colloquial language that was not taught in the classroom.

Joseph was the one participant who had very few difficulties communicating in English. Initially struck by his level of English proficiency, I inquired further, and learned that he had attended an English secondary school and also self-taught himself

English. Upon arrival in Canada, he was at an advanced level of English proficiency and was never required to take any ESL classes. Because of this, did not speak of language barriers in adapting to his school life and personal life in Canada.

Abasi often spoke of a fear of speaking, especially in the beginning, and how teachers can be an important factor in improving confidence and comfortability when contributing in class:

> Maybe the teachers can persuade them a little bit more, maybe once in a while just have conversations with the students after, especially if you feel like they're shy. That they're reserved. And especially if they're new and their English is not that great. Because it could be... you're just shy to speak up. Like I said, you know things, you want to engage, but at the same time you're kind of like, "oh man, I'm not sure," so if you can get teachers to just give just that little bit of spark or confidence, it could be a whole lot different in a way.

Habimana also said that teachers need to be mindful in *how* they encourage new students to speak in the classroom. Some of his classes required participation and teachers often chose students to speak, causing Habimana a lot of stress because his classmates seemed to listen very intently:

> My communication wasn't good and when I'm speaking, everybody is paying attention. Maybe that was a good thing... but to me, it was a little bit challenging because it everybody will be, you know, paying attention to me... And sometimes, I used to think, maybe she's [the teacher] picking on me... why doesn't she ask so and so? The student who was sitting in the back?

When I asked more about how his classmates, Habimana responded:

> When we are hanging out outside... you hear the kids bringing up the words which I was using in class... Some of them were trying to be funny, yes... I didn't think it was funny.... I thought this guy, you know, they're trying to make me miserable.

Habimana acknowledges that at the time, he thought his classmates were being unfriendly, but in hindsight, they may have been trying to welcome him into their peer group by joking around with him. Inside the classroom, Habimana also spoke of challenges when it came to keeping up in school and improving his English simultaneously. As he came to Canada unaccompanied, Habimana also worked to support himself while in high school, which added to the challenges:

> Oh it was a massive workload because I had to spend, you know, besides going to work, I had to spend most of the time on the library, on running grammar and reading... the dictionary, you know, grammar books, and whatever book we were using at school. Cramming them, cramming words. And what words mean. Reading... because remember at that time, I could read a chapter and I could not

> understand a thing. So I had to check in a dictionary, you know, every single word in the chapter.

Abasi, on the other hand, discussed difficulties when it came to speaking. He spoke of how he relied on sports, specifically soccer, to help him meet new friends and improve his language:

> I started opening up more and then that changed me a little bit, in a way, to be more comfortable. And, from then on, then I started getting, you know, that's when I started meeting new Canadians and stuff, once I started playing soccer with them. I started becoming more comfortable talking to them because you can say something to them after
> that, right?

Culture. Discussions of culture largely centred on academic culture. All participants spoke of numerous, and significant, differences between their schooling in Ontario and in their home countries, which were sometimes unsettling. However, they seemed to have found the Canadian academic culture much more inviting, positive, and productive. Abasi said that:

> The teaching methods there [in Tanzania]... it's like you're a robot basically. They just want to jam things into your head and you don't really study things, you memorize things, which is useless in my opinion. I'm not learning. It's useless to me. Here, it's different. You study things and teachers will tell you, 'Make mark of this because it might be in the test.' Not like a whole book, you study the most important things. And I like that system. It was much better that way, makes it so much easier.

Joseph echoed these thoughts when describing the differences between teaching methods in Rwanda and Canada:

> School in Rwanda is more difficult than here I would say, because it's less practical. We took a lot of notes, a lot of writing. But we lacked practical, like we didn't have labs as we did here, so it was really more like they give you a lot of information and you have to go on your own and figure out what information's important to you. While here, everything is practical. Like for example chemistry, we took our chemistry classes in labs. Everything was there. Back home in Rwanda, it was in a classroom, so it was just writing and drawings. We didn't really see the actual apparatus.

The participants also all separately discussed differences in student-teacher relationships and interaction. For example, Habimana said:

> In Rwanda, the students will find they don't have any relationship... the teacher, they call them professor in high school, so they're in the high position... there's not any communication besides showing up in class, teach, give you an exam.

> That's what I thought when I came to high school [in Canada]. I thought that's what the same things, but I found it's different. They, you know, communicate, you approach them. Tell them whatever you want. Whatever's in your mind.

Joseph also talked about relationships being different than what he was used to in Rwanda, saying:

> Back in Rwanda, you fear your teachers. You were afraid of them. Like, you don't say anything unless they ask you … but here, students are, they're outspoken, you know, they chat with their teachers about anything. You can ask questions and all that. We also could ask questions but we actually feared our teachers because they could, you know, give you spanks and all that stuff. Regardless, even in high school, we could still get spanked, so… [laughing]

Abasi echoed this experience, saying that in Tanzania, the emphasis was on "being on time, grades. So if you're not that smart and you fail all your subjects, your butt is gonna hurt." He claimed that relationships with teachers in Ontario were much friendlier. However, while the participants spoke this way in hindsight, they also discussed how this new student-teacher relationship model was confusing at first, and that they did not approach teachers for help or conversation. This led to some issues when it came to certain assignments and misunderstandings. Perhaps the most poignant was with Habimana, who had never even seen a computer before arriving in Canada. Yet, upon arrival, he was expected to type and submit assignments for his classes. One math teacher math teacher even required students to use a special software program to complete assignments. Habimana said:

> It was my first time to use a computer. For them [the other students], it was quick. They know whatever is going on. To me, even typing... the teachers in high school, they expect me to hand in typed material, and I don't know how to type. And again, I'm learning how to use a computer and how to turn on a computer.
>
> Like I remember this math class which they... the teacher, she expected us to use computer. I had no clue whatsoever, and she gave me a zero. I solved it on the paper. But she didn't want paper because she didn't know that I'm computer illiterate... and she don't want to know why. She should've asked "Why didn't you use computer?" But she didn't want to know.

This was an extremely telling example of the ways in which Habimana was failed by his school and his teachers, who instead of trying to understand his background, assumed that he had the same knowledge and skills as the other students in the class.

Joseph described a similar lack of resources back home in Rwanda that impacted his schooling here in Canada, though not as significantly as in Habimana's case. For example, Joseph said that chemistry classes were taught in the classroom, whereas in Canada, students have access to labs and materials to better teach chemistry concepts. In addition, Joseph said that they relied mainly on textbooks and rarely had access to a

computer at school. He said, "We went to labs like once a month 'cause we had to take turns. We barely did experiments. It was like one experiment each month." While Joseph did not face the same difficulties as Habimana, and specifically did not describe these differences as challenges, these statements show the importance of teachers recognizing the various backgrounds and experiences of students in assigning tasks and especially in using new technologies or methods in the classroom.

Speaking more in terms of Canadian culture, rather than academic culture, Joseph discussed how he found it difficult to relate to peers at first:

> When you first get here, because you don't understand certain things, it's kind of hard to fit in, so I would say maybe my first week, I was nervous and paranoid. I'm like "How can I possibly relate to these kids?" because their whole life, this is what they know, but me, this is new to me, so… but as time went on, I was getting along with kids. Because we didn't watch the same TV shows, we didn't eat the same food, we didn't dress the same. But then after some time, as time went on, the things start to change.

Race. Habimana attended a school where he was not only the only African student, but the only black student. He recounted that "in my school, there was just so many kids who would show up anywhere I am standing and kids have much interest in me." He saw this interest in him as a positive thing because he was able to meet his peers. Joseph also had similar experiences that he also described as positive, as it helped him meet new students and make new friends. He said that despite some "ignorant questions here and there,"

> They seem to be open, wanting to know more about me and where I come from. Basically wanting to know how it's like where I come from, so it wasn't really that hard for me [to meet new people] because most kids were really interested in knowing basically what it's like where I come from.

While Habimana had positive experiences with classmates, his experiences on the school bus were much more negative. Most students at his school took the bus, and many students had never met him, which seemed to make some students nervous. He remembered that while these students on the bus were not verbally or physically aggressive, they always avoided him:

> [They] Just avoid me and they could tell that... ok, it makes sense because I was 20 years old. Those kids were, if they were high school, kids of 17, 18, usually 15, 16... so to see a 20 years old sitting in the bus was kind of strange. And plus he was a black boy who doesn't speak much English.

Similarly, when asked about the approachability of his peers, Abasi said:

> If people were friendly to me, then I would have been friends. But people weren't. Like, the Canadians, people that could speak English, that were here for a while, they have their own kind of crew, and there was no approaching.

> They were just doing their own thing, so basically, you find people that you have common things with, and then you start doing things with them.

This particular statement from Abasi demonstrated that if students have difficulty relating to their new peers, they tend to gravitate towards those most like themselves. In Abasi's case, those most like him at his school were also refugee students, students new to Canada, and/or ESL students. Abasi also mentioned that some teachers also tended to gravitate towards students who were most like them. He found it easier to connect with teachers who were immigrants themselves, many of whom he said still had accents, and said that Canadian teachers "would kind of ignore... like if there was another Canadian, they'd hang out with the Canadian students." Habimana also suggested that perhaps teachers may have been afraid to speak to him about certain things. For example, when talking about the math teacher experience, Habimana said that the teacher should have asked him why he completed the assignment on paper instead of on the computer, but that "it's a sensitive case. Because the other kids... sitting there in the classroom... if she could've come to me asking me a bunch of questions, some people they could see it as a racist or something. It's probably because she didn't want to get involved in sensitive cases."

Discussion & Recommendations

Despite the numerous and varied challenges faced by these participants, they were all able to complete their secondary school education. One aspect that was cited as contributing to their success was support. In all of the interviews, across all topics of discussion, the importance of support in the classroom, and in the school, was a prevalent theme. The experiences and challenges outlined in this paper, with regards to language, culture, and race, could all be mitigated, or at least managed, if there were some level of school-wide support effort. For example, Abasi spoke about a need for mentors from the community who have had similar experiences, as he thought that hearing about the experiences of others would have helped him, especially in gaining confidence in his language use. Abasi said he needed that push and for someone to say, "Listen, don't be afraid that you're going to say something wrong... so just speak up. Don't worry about it and nobody's going to laugh. People will correct you, if anything. And you're going to benefit from that." This recommendation for mentors is something that is strongly supported in the literature. For example, Whiteman (2005) describes the importance of mentorship programs in which veteran students are paired with new students to help them adjust to the new school culture and expectations, as well as build their confidence in their English language skills. Interestingly, this was something that was repeated very closely by Abasi, who talked about how Canadian student mentors would help with the adjustment to Canada, while former refugee students could offer a more personal and understanding mentoring relationship given that they have been through a similar situation.

Joseph actually had access to these peer mentors who had experienced similar backgrounds and had already adapted to life in Canada. These mentors helped him adapt to school, encouraged him to participate extracurricular clubs and activities, and

provided his first friends in Canada. Joseph thought that peer mentors were even better than community mentors, saying:

> I think it's better a student because you can relate to them. If they bring you someone older from the community, you won't feel comfortable talking to them about certain things, so someone your age, maybe your gender as well... That would be perfect because you have the same mindset except maybe you might have different backgrounds, but you pretty much are on the same level of, you know, knowledge and all other things… because you can relate to them.

While Abasi's and Joseph's opinions may differ on exactly *who* to have as mentors, the overarching theme was that mentors are extremely important in the adaptation to both school and life in Canada.

A concerted, school-wide effort is also important in supporting African refugee students. This effort was apparent at Joseph's school, and acted as an excellent support system. For example, when Joseph and his brother first arrived in Canada, they relied on social assistance, which meant that they could not afford class trips or school uniforms. To help, these things were paid for by the school, indicating support even at the administrative level. In addition, the school provided the opportunity for Joseph to educate not only his schoolmates and community members about his life experiences, by giving motivational speeches. By encouraging Joseph to educate others, the school was also attempting to educate the community and other schools in the area about the experiences and lives of refugee students. This was an excellent example of a school-wide effort that even expanded into the community.

While the ideal is a school-wide effort, the literature indicates that the onus is placed on one teacher or one principal (Opoku-Dapaah, 1992; Virtue, 2009). This was seen in interviews with Abasi and Habimana. First of all, when I asked Habimana if the school knew his background, and specifically the fact that he had never used a computer before coming to Canada, he said, "Yeah, because that's the reason they put me in grade 11, and they know I couldn't." While the principal was aware of his background since he was responsible for testing, he did not inform Habimana's individual teachers of the situation. Habimana required, and would have benefited strongly from, a school-wide effort in promoting his academic transition and ultimately, his academic success.

Abasi also spoke of the onus being placed on one teacher. He described how as a refugee student, he found it easier to connect with teachers who were immigrants or ESL speakers. To illustrate, Abasi spoke of one male teacher, an immigrant himself, who went out of his way to connect with him. Abasi said that many Canadian teachers would "hang out with the Canadian students," but this particular teacher acted as a strong support system for Abasi, especially with regards to improving his confidence level when speaking English. The lack of support from other teachers was demonstrated when Abasi said that because this one teacher was so influential and helpful to him, he took classes with this teacher simply to be in his class, even though "some classes I really didn't care for." Instead of choosing classes of interest, Abasi

chose classes when he could with the only strong support system that he knew within the school.

A school-wide effort does not only include a concerted effort between teachers and administration, or the provision of peer mentors, but may also include academic help (Davies, 2008; Dooley, 2009; Dooley & Thangaperumal, 2011; Naidoo, 2009) and teaching academic skills such as handwriting (DeCapua & Marshall, 2011). Joseph's school was the only one of the three participants that did provide additional academic help outside of classroom hours. As for teaching skills, Habimana in particular would have benefitted from additional support in teaching academic writing skills and general computer and typing skills. In addition, Joseph mentioned that cultural orientation classes, perhaps as soon as he arrived, would have been very useful in helping him adjust to life in Canada. While these classes would not be academic in nature, they would be part of a school-wide effort that looks to support refugee students in all aspects of their new lives, in an overall attempt to increase their chances of success at school. As such, the experiences, challenges, and ideas shared here call for the need for teachers and school staff to work together both within the school, and in the community, to best support young adult African refugee students. This school-wide effort should include extra academic support, culturally relevant pedagogy and teaching, professional development for teachers, and the provision of guidance counsellors and/or peer mentors. In addition, this school-wide effort should include diversity and sensitivity training not only for teachers and principals, but also for students. This type of effort would enable students to excel and overcome some of the most common challenges faced by young adult African refugee students. Without a concerted and joint effort from the Ministry of Education, school boards, teachers, and students, African young adult refugee students may not be able to meet their full potential at the secondary school level.

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Teaching Generation Z at the University of Hawai‘i

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Abstract

New generations of students are not the same as prior generations and they respond differently to instruction. The University of Hawai‘i must change its ways of teaching to align to the values and learning styles of these new learners, specifically Generation Z (Gen Zers). Teaching methods, course content, and objectives must be relevant and engaging to this new generation of learners.

Gen Zers were born in 1995-2010. They follow other generations, who also impacted society in various ways, such as the Veterans (1925-1944), Baby Boomers (1945-1964), Generation X (1965-1980), and Generation Y (1981-1995). Each of these groups is extremely distinct when considering values, goals, and ideals. These associated characteristics are based on the economic conditions, cultural norms and mores, technological advances, and world events.

Gen Zers will become an important generation for the university. This report examines the learning style and thinking process of Gen Zers, the technology that Gen Zers have adopted, the ways Gen Zers approach information, and professional development models the university may employ to effectively respond to Gen Zers.

Also, important to consider is that though Gen Zers bring different characteristics and traits to our university. Their learning needs reflect a changing world, especially in view of new technology. For faculty to have the knowledge and skills of up-to-date education technology, the university needs to be proactive in making this happen. This paper presents methods to achieve this goal.

Keywords: Media, Technology, Teaching methodology, Student surveys, Faculty surveys

Introduction

New generations of students are not the same as prior generations, and they respond differently to instruction. While the University of Hawai‘i (UH) considers its mission to provide high quality education to students, it must change its ways of teaching to align to the values and learning styles of these new learners, specifically Generation Z. Teaching methods, course content, and objectives must be relevant and engaging to this new generation of learners, for the UH system to advance its mission. As explained below, Generation Zers (Gen Zers) are not only different learners, but they also have different values and goals. Thus, traditional teaching methods may no longer be effective.

Gen Zers were born between the years 1995-2010. They follow other generations, who also impacted society in various ways, such as the Veterans (1925-1944), Baby Boomers (1945-1964), Generation X (1965-1980), and Generation Y (1981-1995). Each of these groups is extremely distinct when considering values, goals, and ideals. Each new generation has been associated with various characteristics and traits that loosely define them as a cohesive group (McCrindle, 2016). These associated characteristics are based on the economic conditions, cultural norms and mores, technological advances, and world events, all helping to shape the thoughts and views of each generation.

Gen Zers will become an important generation for the university. Whether we expect the growth of entering high school students to increase or not, they still will be a large population of the college. From this perspective, the university needs to change its approach to meet the learning needs and other characteristics of this generation. This report examines the learning style and thinking process of Gen Zers, the technology that Gen Zers have adopted, the ways Gen Zers approach information, and professional development models the university may employ to effectively respond to Gen Zers.

Also important to consider is that though Gen Zers bring different characteristics and traits to our university, they are not an unconnected entity, just a product of our evolving society. Their learning needs reflect a changing world, especially in view of new technology. For faculty to have the knowledge and skills of up-to-date education technology, the university needs to be proactive in making this happen. This paper presents methods to achieve this goal.

THE CHARACTERISTICS AND TRAITS OF GENERATION Z

Gen Zers are currently between five and twenty years of age. They have been called “Digital Natives,” the “Internet Generation (IGen),” and “Screensters” since they are the first generation born in an Internet-connected environment and are extremely tech-savvy (Renfro, 2012). They are used to multimedia and various forms of technology that comprise a seamless part of their daily lives. They use various electronic devices simultaneously and/or switch between smart phones, iPads, tablets, and laptops. For example, a recent study found that more than half of teenagers do not wear wristwatches because they use their smartphone to tell time, get directions, or take a picture (Rothman, n.d.). Another source estimates that more than 52 percent of a Gen Zer’s day is spent indulging in a significant amount of “screen time” (Hawkins, 2015).

Gen Zers obtain information and answers immediately from any source available on the Internet (e.g. Wikipedia, YouTube videos, blogs, etc.), many not reliable. They are used to instantly connecting with others online, across all geographical lines, and at any hour through social media such as Facebook, Snapchat, Instagram, Vine, Twitter, etc. (Renfro, 2012). However, Gen Zers have increasingly embraced platforms that provide anonymity, such as Snapchat. They also seek social validation, but at the same time want to differentiate themselves from others causing a struggle between maintaining a personal brand via social media and resisting being defined by it (Higa, 2016).

Growing up in an always-connected cloud-based environment of data, friends, and entertainment is what distinguishes Gen Zers from generations before them. As Darla Rothman summarized in her article "A Tsunami of Learners Called Generation Z":

How is Generation Z different from previous generations?

- They have never known a world without Internet, cell phones, or iPods.
- They are tech savvy and in constant contact with people 24/7 using Facebook or Twitter.
- They want technology that is easy to use and will solve their problems, help coordinate their activities, or provide them with relevant people or information.
- Their brains are affected by Internet use. They find answers to questions in Google and YouTube, but they lack the critical thinking skills to evaluate sources.
- They have low/no tolerance for being without digital resources.
- They have never had to use a library card catalog or rummage through shelves to find a specific book.
- They don't use a wristwatches or alarm clocks because they use their smartphones for that.
- Instead of reading an article, they want to watch a video (YouTube) that summarizes it.
- They may never send an email: [that is "so yesterday"]. Why email when you can text, instant message, tweet or FaceBook?
- They use a texting "slanguage." Examples: Cray Cray (when life is too crazy for one word), Probs (other generations say probably), Totes (used to show agreement—totally), XOXOX (used to end any text. For Baby Boomers it means sincerely yours), V (very) and I (because I am the center of everything).

Gen Zers use of fast-paced multimedia technology has had an impact on their learning expectations and values in several ways:

First, there is a noticeable difference in the shortened attention span of these learners. This generation has been exposed to a constant stream of short segments of information and clips not more than 6 seconds including Facebook posts and you-tube videos. As described by Darla Rothman, "With online text, learners now spend about eight seconds picking hyperlinked keywords to find answers instead of reading the whole text, which calculates to 4.4 seconds per 200 words of text" (Rothman, n.d.). As a result, they often exhibit what John Raley of Harvard Medical School coined as "acquired attention deficit disorder" (Fudin, 2012). A related noticeable impact is on

the ability of these learners to concentrate and focus on longer, more complex or involved problems.

Second, the use of multimedia devices has resulted in an increased development of the visual ability portion of these learners' cognitive functions. Visual forms of learning, such as picture, video games, and videos seem to be more interesting to these learners and more effective. Rothman, again, details this observation: "Auditory learning (lecture and discussion) is very strongly disliked by this age group. Interactive games, collaborative projects, advance organizers, challenges, and anything that they can try and see are appreciated (Rothman, n.d.).

Third, Gen Zers' easy access to information creates an expectation of instant results and constant feedback. They expect answers immediately and may often not want to spend the time to ensure the legitimacy or reliability of the sources they find (Fudin, 2012). Yet Gen Zers' familiarity with technology has also provided them with positive traits. To this group of students, technology is not something to be feared, but an accustomed tool to embrace. Gen Zers are not afraid to try new things, experiment, or explore. They take opportunities to research whatever interests them, often online. They do not fear connecting globally with others, and are more tolerant of cultural differences (Fudin, 2012).

ASSESSING TECHNOLOGY USE IN GENERATION Z IN HAWAIʻI

Hawaiʻi Gen Zers (n = 280) were surveyed for their technology use from a First-Year-Experience (FYE) community college program (131), three Early College program high school classes (57), four private high schools (49), a public middle school (31), and a public high school (12). All students attend schools either on the islands of Oahu, Kauaʻi, or Hawaiʻi. Many of these students are in college or destined for college since the Early College program is "an initiative designed to allow more high school students to earn six or more college credits before they graduate from high school" (Early College, 2013). Students were born between the years 1995 and 2005 with 224 (83%) in the 16 to 21 year old range, and 47 (17%) in the 11 to 15 years age bracket.

The survey was developed by the authors and included questions such as "What social media and devices do you use?" and "What types of technology is used in classes?" Because students surveyed were from only a few public and private schools, the results may differ from the majority in socioeconomic status, ethnicity, cultural, and other factors such as low versus high technology use and types of devices being used.

Hawaiʻi students showed a preference for use of technology that echoed the sentiments of Gen Zers in general. In response to the question, "Where do you go to find information?" it was found that 77% of participants use the Internet, 30% use applications, and only 23% use the library. Not surprisingly, 38% of students feel it is very important to use technology to complete class work, while another 41% responded it is somewhat important. Of the 280 students surveyed, 48% responded it is somewhat important for instructors to use various technologies to effectively teach, with another 32% indicating it is very important.

As Rothman (n.d.) mentioned, Gen Zers use of multimedia technology impacts their learning expectations and values. When asked the question, "What would help to increase learning in the classroom?" Hawai'i students provided various answers. However, their responses could be grouped into two distinct themes: technology-based learning and non-technology-based learning. Many of these students mentioned that they valued teacher-student engagement, teachers who had command over their subject areas, and interactive teaching styles.

Thirty-six percent (76 students out of 213 students) who responded also inferred that active participation was preferred over passive listening/lectures. Hands-on activities, group exercises, interactive activities, and field trips were notably mentioned as tactics that would increase learning in the classroom.

Overall, the results from this survey indicate that professional development for faculty, particularly in higher education, is essential to responding to the learning needs of Gen Zers. However, the fact that effective teachers bring much more than their technological knowledge and skills to the classroom must continually guide us.

FACULTY and GENERATION Z: PROFESSIONAL DEVELOPMENT

One of the greatest challenges facing higher education is the digital knowledgeable students being taught by faculty who use limited technology. The traditional approach of didactic lectures and blue-book exams is not how Gen Zers want material presented to them or to be tested. There is no doubt that faculty must be prepared and equipped to teach using an array of software, hardware, digital tools, technological platforms, and social media. They will need professional development to support them to move from a traditional approach to a transformational learning and teaching model.

There is no clear cut or "magic" answer to teaching Gen Zers. Researchers are still discovering the nuances and idiosyncrasies of this generation of students. Albeit, there are common themes of teaching strategies that are effective in engaging Gen Zers in learning in the classroom and beyond. This section introduces five of them to help faculty prepare for the challenges and changes steadily permeating the higher education arena.

Go with the flow and go virtual. Gen Zers are not in tune with traditional, passive instructional sources, like printed textbooks, nor do they have the patience for long, drawn out explanations of concepts and theories.

"Going virtual" allows Gen Zers to disengage quickly from anything 'boring,' like slow-paced lectures or memorization assignments, and to re-engage just as quickly if it becomes worthwhile. This can be easily incorporated in a class period, since in today's world content can be accessed through technology anywhere, and often in very visual, engaging forms. But this can also pose a challenge for faculty who do not see the value of virtual platforms and are not willing to give up part of their class time for collaboration. Finding creative ways of embracing technology inside and outside the classroom will make it easier for Gen Zers to flourish in college.

Tap into your "rock star" qualities. Successful faculty, like rock stars, have the natural ability to incite students' passion, captivate their attention, and intrigue their

minds. A rock star "seamlessly exploits the affordances of digital tools, weaving them into their highly interactive and unpredictable performances" [1]. Faculty can utilize today's technology to work in their favor.

Faculty need to figure out and architect new and exciting ways of learning and doing that are "hands on, minds on" that teach students to rigorously seek and apply knowledge beyond their potential and not just rely on what is taught (McWilliam, 2015). Seely (2006) ten years ago called this "learning to be" rather than "learning about." This new generation of students identify themselves as creative intellects and problem solvers but only if they can see the relevance of the subject as it relates to their everyday lives. They thrive on relevant, applicable, active learning and project-based tasks.

Surrender the soapbox. Lectures and independent/isolated work are steadily becoming dying methods of instruction. Given the characteristics of Gen Zers articulated in the first section of this paper, the faculty member who prides him/herself as a "sage on the stage" will undoubtedly pose a real problem with this generation of students. Similarly, the approach of giving students independent work that heavily reiterates what was covered by the "soapbox" lecture or involving the completion of printed exercises and problems will put this generation to sleep. These types of teaching methods have been coined by Bowman (2001) as "death-by-lecture" and "death-by-worksheet."

Meddle in the middle. In this very complex landscape of teaching Gen Zers, faculty need to shift their mindset and role of "sage-on-the-stage" to "meddler-in-the-middle." In the meddler-in-the-middle teaching approach, the faculty is learning and doing, making mistakes, and engaging in trial and error, alongside students. Meddling deviates from the traditional roles of instructors and students to co-partners in teaching and learning. Student-faculty partnerships are defined as a "collaborative, reciprocal process through which all participants have the opportunity to contribute equally, although not necessarily in the same ways, to curricular or pedagogical conceptualization, decision making, implementation, investigation, or analysis" (Cook-Sather, et. al., 2014).

Revalue the notion of "play." Traditional teaching practices are obstacles to meeting the teaching and learning needs of Gen Zers. Kane (2004) defines play as the "dominant way of knowing, doing and creating value in the 21st century." If we embrace Kane's definition, then higher education institutions and faculty will need to "play," and create educational milieus where students can once again be curious, energetic, creative, dynamic, synergistic, imaginative and fearless in the face of an unpredictable, competitive, fast-paced, technologically-demanding, emergent world. For example, faculty can start by awakening the curiosity, creativity, and imagination of Gen Zers, and asking questions such as: 'How would you explain biotechnology to Shakespeare?' The inherent value in such a question: (a) moves faculty away from their expertise within their disciplines, (b) is not researchable on Google, and (c) elicits a multitude of ingenious interpretations and responses. In this instance, "play" combines two conflicting concepts to create an unforeseen erudition, activating, engaging, and building upon the innovative capacity of Gen Zers (Egan, 2008).

TECHNOLOGY USE PROFILE

Devices and Computers: Gen Zers prefer handheld multi-functional mobile devices with the ability to watch a video, snap a photo, connect to the Internet, play games and listen music (Renfro, 2012). According to an Educause report *Undergraduate Students and IT, 2014.* Of those polled, while 90% owned a laptop, 86% owned a smartphone and 47% owned a tablet. Interestingly the reports states that 7 out of 10 students use a laptop in class compared to 59% using Smartphones and 35% using tablets. While the consumerization of mobile devices is prevalent with Gen Zers, there seems to be a slight preference for using laptops in the classroom over smartphones and tablets.

Information Access Anytime Anywhere: Unlike previous generations, Internet search capabilities at your fingertips is as natural for Gen Zers as using a remote control to find your favorite TV channel. This generation takes for granted the amount of data they have access to and the speed at which they can get it - which is a natural part of their lives (Renfro, 2012). Gen Zers think little about how search engines can sort through petabytes of information in just a few seconds.

Social Media: The term "Digital Native" is often associated with Gen Zers as they were first generation to grow up with smartphones in their hands and ready access to the web, blogs, chats, pins, tweets, music, photos, videos etc. Social Media is not only the #1 reason for Internet use by Gen Zers, but it has allowed them to keep in touch with their friends with a platform to support causes, seek answers and to have a voice. "Likes" matter to Gen Zers when it comes to their online presence and products so the quest to accumulate "likes" and/or to master games can take up much of their time and attention (McWilliam, 2015).

TRANSFORMATIVE TECHNOLOGIES

Learning Management System (LMS) is a comprehensive suite of teaching, assessment, analysis, reporting and collaboration tools for online learning, course management and program administration. An LMS is considered a critical tool used at 99% of all higher education institutions providing the ability to extend their reach to learners across the world (ECAR, 2014). At UH, our LMS is built on an open source platform and aptly named Laulima which means "cooperation or working together" in Hawaiian. Laulima is widely used for traditional, hybrid and online courses administered by instructors and lecturers across all University of Hawaii campuses and community colleges. But soon there will be an evolution in the LMS design. Instructors can start to use a core set of functionality in one institution wide system with "best-of-breed" technologies strategically incorporated into the online or hybrid learning environment.

Massive Open Online Courses (MOOC) provides courses of study for free to anyone with a computer and steady Internet access. Through instruction videos, self-directed learning, MOOCs are designed to reach hundreds if not thousands of participants across world. While online models are challenging universities to assess how traditional classrooms will be used in the future, MOOC provider edX CEO, Anant Argawal said in a 2014 U.S. News article: "In blended classrooms, the on-

campus university course can leverage the power of MOOCs to free up classroom time for interactive collaboration and discussion, testing and problem-solving."

Gamification: Innovative ideas are causing a shift in the learning environment such as "flipped classrooms, simulations, serious gaming" that is changing the paradigm of higher education (Mintz, 2014). Gamification in education uses video game design and elements to motivate students to learn. This innovative approach started to gain traction and attention over five years ago and is seen a viable alternative for teaching. Students taking "gamified" courses are increasingly motivated and stay engaged and remember more of what they have learned. Instructors at different schools are beginning to see gamification as an effective way to reach online students as interest is retained and personal interaction is limited or absent (Friedman, 2016). Although it will be sometime before we can truly determine the impact of gamification in higher education, the gaming lifestyle of Gen Zers offers an opportunity to explore if "gamified pedagogy" can be a solution for student initiative, involvement and commitment (Carnes, 2014).

FACULTY PREPARATION FOR GENERATION Z

To generate change that addresses Gen Zers' unique characteristics and learning preferences, faculty must adapt to new methods of instruction. Adequate training of faculty to use new software, new programs, and new hardware is essential. Just like this new wave of Gen Zers, faculty must learn, not from reading a manual or hearing someone talk about it, but by working with the technology, acclimating to it, and eventually embracing it.

However, there are issues that need to be considered and addressed to be able to incorporate new technology into our teaching:

1) Instructors prefer to stay with their old methods and rarely take the initiative to learn something new. Faculty members are more comfortable with familiar methods.
2) Many resist adopting technology such as moving to online exams from antiquated card scanners, transferring to the Laulima grading tool from printed records, converting to PowerPoints from paper handouts, or moving to electronic submission of papers from printed copies.
3) Some instructors have difficulty dealing with simpler technology, such as classroom equipment or programs commonly used by students.
4) When training is offered, instructors do not attend because they do not understand how it can help them or why there is a need for change.
5) Instructors who are not technology inclined tend to stick with costly textbooks instead of online materials available from libraries or websites.
6) Although the Information Technology groups are keen on providing new software and hardware to help faculty teach, it takes a long time for faculty to adopt them.
7) Faculty may just be scared of technology.

Properly preparing faculty to successfully teach Gen Zers may also include the following challenges:

1) New hardware or software provided to faculty is not accompanied by appropriate and adequate training.

2) Some faculty members in a department may be trained, but they do not feel they have the time or proper resources to train others.
3) Faculty might learn about new software or hardware, but cannot make the connection for effectively applying it to teaching.
4) Because of steep learning curves, instructors do not want to spend time learning new software or hardware.
5) Many times technical experts are unavailable or unwilling to conduct training, and if they are willing to train, they may not understand the best approaches for instruction in the classroom.
6) Although Information Technology may have dedicated staff to work with faculty, changes may not be forthcoming. One issue may be that faculty are unaware of what technology is available. IT staff too may have difficulty figuring out what technology would be the most useful and cost-effective.
7) When new hardware or software is implemented, the training provided by outside contractors is often costly and limited. Faculty too may not be available for training for scheduled days or times.

The following are possible solutions for bringing faculty up to speed with meeting the learning needs of Gen Zers:

1) **Provide assigned time to a teaching faculty for the purpose of training others in workshops and one-to-one sessions to implement new technology.** The advantages:
    a. Faculty members will know how the technology can be implemented in their disciplines.
    b. Faculty members will use the technology for their own classes, so they will be able to provide examples as well as smooth out any kinks in how the technology is used.
    c. Faculty tend to feel more comfortable learning from other faculty. Thus, if faculty prepare written guidelines, then directions may be clear to other faculty.
    d. Faculty would have a go-to person for technology questions, minimizing calls to the technology group.
    e. When campuses have to cut courses because of low enrollment, they may be able to assign a willing faculty to work with the technology in lieu of teaching a class. This initiative could avoid added cost to the campus.

2) **Organize a system-wide Teaching Technology Day at which faculty can share their unique ways of using technology in classrooms.** The one-day event might start off with a speaker and then break off into workshops. The advantages:
    a. Faculty are more likely to learn teaching technology when devoting a day to it, rather than trying to make time during their daily routines.
    b. The focus of the event would be on teaching with technology, so attendees will come expecting to learn from the workshops.
    c. Faculty tend to have interest in how other faculty teach and what methods they employ.

3) **Gather together IT personnel and instruction designers from the system to share ideas and come up with new approaches for the campuses.** The advantages:
    a. The UH system can work on improving instruction technology as a whole, instead of each campus attempting to do separate approaches. It is easier to work together than separately.
    b. All the instruction designers can learn from each other. Each of the designers can bring the perspective of his or her campus.
    c. The discussions could help prioritize implementation of technology for all the campuses.
    d. Collaborative efforts can be made to assess and remedy any resource challenges to providing professional development opportunities system wide.

4) **Incorporate short technical workshops to be part of scheduled departmental or other regular meetings.** The workshops can be on discrete technology tools, such as how to use Google Classroom, and can be taught by IT or knowledgeable faculty. For this option to work, the campus administration needs to play a role in endorsing it. The advantages:
    a. Most departmental faculty attend these meetings so it provides a good opportunity to train many on technology.
    b. A number of workshops can be held because departmental meetings occur often during the academic year.

5) **Provide incentives for faculty to attend workshops and integrate technology into their instruction.** An incentive may be the promise of new classroom software, equipment, or device. This approach can work in conjunction with other solutions or could be a "last resort" strategy.
    a. Faculty tend to be willing to do something if they think they can receive something in return.
    b. The strategy could include time off from teaching or overload pay as an alternative to new classroom tools.

6) **Adopt a faculty-student collaborative strategy for professional development and hire student workers to assist training.** Provide rich learning opportunities for students by allowing them to teach technology commonly used by them and their peers to faculty members. The students should be mentored by a staff or faculty member on their campus. The advantages:
    a. This represents a significant investment in our students and provides opportunities to acknowledge their expertise in the area.
    b. It is more cost effective than hiring staff personnel.
    c. Faculty are respectful of students and are likely to be receptive to the information they present.

7) **Develop online instruction that focus on teaching faculty how to integrate technology into the classroom.** Being a multi-island educational system presents significant challenges to ensuring equity in training and professional development opportunities for all employees. This approach provides advantages in the following areas:

a. Accessibility to training across all islands and campuses.
b. The self-paced nature of online instruction provides the flexibility for faculty to select when and how they engage.
c. Consistency in the types of technology being recommended and strategies for incorporating them in the classroom.
d. With the right software, there could be no limitations on the number of participants.
e. Eliminates the need for travel funding.

Further considerations:

1) For a campus to make major strides in changing its instruction methods there must be buy-in and promotion from administration. Faculty must be convinced that we must change the modes of teaching to best educate Gen Zers. If we are not teaching students the way they learn, we are not educating them properly.
2) When new technology is introduced, the software or hardware needs to be available to the target faculty. Otherwise, they will be learning something they cannot use.
3) If faculty members become trainers, system-wide workshops should be held to inform them of new technology, unless a Teaching Technology Day is organized.
4) If faculty members become trainers, they must adhere to a plan and assessment.
5) IT personnel and instruction designers cannot overlook the importance of training faculty for both new and current technology.

Conclusion

The University of Hawai ʻi is facing a new generation of students who have unique learning characteristics. These Gen Zers have a shorter attention span for learning, use multimedia for learning, and require instant results and constant feedback. To adjust to the needs of these students, the university must move from its traditional method of classroom instruction and incorporate new teaching technology.

This change is unlikely going to occur without a concentrated effort to train faculty to use new software applications, new hardware platforms, and new teaching methods that support the way Gen Zers learn. Faculty need to understand why the changes are necessary, what is required to do, and how to do it. Faculty must become accustomed to the technology to be able to implement it into their teaching. Nonetheless, to develop a well-rounded professional, training must also integrate affective, “high touch” skills, which goes along with "the meddler in the middle" approach, "re-visiting the notion of play", and utilizing "rock star" qualities that do not rely solely on using technology in the classroom.

The authors realizes the importance and scale of this issue and recommends the following possible solutions:

- Assign time for teaching faculty to train others in workshops and one-to-one sessions to implement new technology.
- Organize a system-wide Teaching Technology Day so faculty can share their unique ways of using technology in classrooms.

- Gather IT personnel and instruction designers from the system to share ideas and come up with new approaches for the campuses.
- Incorporate short technical workshops to be part of scheduled departmental or other regular meetings.
- Provide incentives for faculty to attend workshops and integrate technology into their instruction.
- Adopt a faculty-student collaborative strategy for professional development and hire student workers to assist training.
- Develop online instruction that focuses on teaching faculty how to integrate technology into the classroom.

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The Origin of Marine Defense Concept in Pre-Modern Japan

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Abstract
The author analyses the main tendencies in the latter part of Pre-Modern Japan (1603–1867), which led to the origin of Marine Defense Concept (*kaiboron*). Since 1639 Japan held national seclusion policy (*sakoku*), limiting its trade contacts to China and the Netherlands.
However, the situation changed in the latter part of the XVIII century, when Russian trade ship arrived to Hokkaido (1778), and a report from a Hungarian adventurer Maurice Benyovszky claiming about possible Russian naval assault against Japan, was published. These events gave an impact to Marine Defense Concept with the idea of protecting Japanese northern borders against foreign ships.
The paper describes two main documents of that period – «The Inquiry into Customs of Red Ezo» (*Akaezo Fusetsuko* 赤蝦夷風説考, 1783) by Kudo Heisuke and «A Discussion of the Military Problems of a Maritime Country» (*Kaikoku Heidan* 海国兵談, 1791) by Hayashi Shihei, analyzing the defense measures by these scholars and their influence on Japanese official policy. Regarding the further development of the Concept, the author also makes a research on Edicts against foreign ships.

Keywords: Marine Defense Concept, seclusion, Russia, Dutch Studies, Ezo, Tokugawa

Introduction

Marine Defense Concept (*kaiboron* 海防論) was a military concept, which originated in Japan under the rule of Tokugawa Shogunate 徳川幕府 (1603–1867) in order to protect Japanese borders against possible invasion of European ships. Analysis of this Concept includes the study of such fields as economy, politics, ideology and foreign relations, mainly covering the period since the latter part of the XVIIIth until the middle part of the XIXth centuries, which is author's main field of study.

The study of this Concept has been made by Japanese historians Kosaka Masaaki (1958), Kitajima Masamoto (1968), Tsurumi Shunsuke (1975), Hara Takeshi (1988), Sato Shosuke (1993) etc, whereas modern research has been carried out by Tanaka Hiroyuki (2011), Yokoyama Yoshinori (2013) etc. Concerning Western scholars, works by J. Murdoch (1925), H. Gowen (1927), G. Sansom (1963, 1965), M. Jansen (1965, 2002), Bob Tadashi Wakabayashi (1986) etc. can be outlined, where as in Russia the basic research on the Concept was fulfilled by V. Shchepkin (Shchepkin, 2011) and partially by A. Galperin (Galperin, 1958). In many cases the Concept has been studied in context of an ideological struggle between various philosophical groups on the eve of economic and political crisis of Tokugawa Shogunate, with emphasis upon Confucian Learning (*shushigaku* 朱子学) and National Learning (*kokugaku* 国学), thus providing an ideological background.

In this article the author focuses specifically on different backgrounds such as Dutch Studies, foreign relationship concept, the situation at Japanese borders which led to creation of Marine Defense Concept, analyzes the sources by prominent Japanese scholars Kudo Heisuke and Hayashi Shihei and their influence. Besides, issues regarding the development of this Concept in its connection with military science in Japan as well as Edicts against foreign ships are also touched.

Dutch studies

Prior to 1637, Japan maintained intensive contacts with such European countries as Portugal (since 1543), Spain (since 1587), the Netherlands (since 1609) and England (since 1613)[1]. However, the Shimabara Rebellion (Kyushu) in 1637–1638 marked the turning point in Japanese attitude towards connections with the West and led to seclusion policy – *sakoku* 鎖国, incorporated in 1637–1641 and resulted in limiting Japanese interactions to China, Korea and the Netherlands[2].

However, the VIII[th] Shogun Tokugawa Yoshimune 徳川吉宗 (1684–1751) gradually relaxed restrictions on cultural contacts with the Netherlands – from 1720 the restriction on the import of European practical books was relaxed and the study of Dutch was highly encouraged (Sansom, 1963, pp. 188–189; Van Sant, 2012, p. 208), thus contributing to a high interest towards Dutch (Western) science and culture – *rangaku* 蘭学, the main purpose of which was to study and spread Western learning, as the information and knowledge was broadly European. During the reign of Tanuma Okitsugu 田沼意次(1719–1788)[3], the Councilor of Elders, Dutch Studies developed into an individual scientific field, covering Western anatomy and medicine.

Thus the understanding of Western practical knowledge became profound, but, as research shows, the basis for that had been created by the work «Things Heard and Seen from the West» (*Seiyo Kibun* 西洋記聞, 1713) written by scholar Arai Hakuseki 新井白石 (1657–1725) after his conversations with Italian missionary Giovanny Sidotti (1668–1714). Hakuseki made a full description of Africa, Asia, Australia, Europe and America and gave a comparative analysis of Catholicism, Christianity and Buddhism, covering religious sphere of the West. The manuscript by Hakuseki was thus an attempt to fix the ideological boundary between Japan and the West (The Cambridge History of Japan, 1991).

Besides, much research on understanding of the attitude towards the Outer World had been done by scholar and astronomer Nishikawa Joken 西川如見 (1648–1724). In his work «Thoughts about Water and Land of Japan» (*Nihon suido ko* 日本水土考, 1720) he put Japan in the center of the World (Middle Kingdom), surrounded by Barbarian Countries. Due to superb geographical position and natural climate, Japan was said to obtain a strong KI 気 energy, which helped to obtain harmony in the country despite not a big territory. It can be seen that geographical determinism became a key factor in geopolitical contacts between Japan and the West (Mescheryakov, 2015).

The same position of Middle Kingdom can be seen in the views of scholar Kumazawa Banzan 熊沢蕃山 (1619–1691). In his «Explanation of Heavens and Earth» (*Kenkon Bensetsu* 乾坤弁説, 1659) he wrote that «Americans [i.e., Indians] are extremely stupid. They must be classed together with the ignorant Ainu of the present day. In general they do not study nor have they etiquette. They are but a step removed from the birds and beasts. Only by studying, finding the way, and knowing the proper forms of social behavior does man become man» (Jansen, 1965, p. 145).

Thus, the views of Nishikawa Joken, Kumazawa Banzan and Arai Hakuseki represented the general understanding of Outer World in Japan, which had strong influence of Chinese Confucian Learning, considered paramount in Pre-Modern Japan: the Middle Kingdom was regarded the center of the Universe, and prior to the end of the XVIIIth century the image of the West together with diffusion of Western science was understood through the prism of Dutch reports (*fusetsugaki* 風説書) , sent annually to the Shogunate.

Radicalization of foreign relationship concept

Understanding of the West by scholars in latter part of Pre-Modern Japan is closely related to the official position of Tokugawa Shogunate, oriented to continuing and strengthening seclusion policy, which was considered the «moral state of affairs» (*soho* 祖法). However, the situation around the borders of Japan had changed radically, as more and more foreign trade and military ships, mainly from Russia, America and England entered Japanese ports, seeking for provision and permission to trade with Japan. Thus the whole seclusion policy concept was put under threat, which contributed to creation of Marine Defense Concept (原, 1988).

The number of foreign ships which came to Japan

YEAR	HOLLAND	CHINA	ENGLAND	RUSSIA	THE USA
1770s	2 ships per year	13 ships per year		1 ship (1778)	
1780s	2 ships per year	13 ships per year			1 ship (1787)
1790s	1-2 ship per year	10 ships per year	2 ships (1791, 1797)	1 ship (1793)	1 ship (1790)
1800s	1 ship per year	11 ships per year	1 ship (1808)	3 ships (1804, 1807)	
1810s	1 ship per year	11 ships per year	3 ships (1816 –1818)	1 ship (1818)	
1820s	1 ship per year	11 ships per year	2 ships (1822, 1824)		
1830s					1 ship (1837)

As it can be seen, in 1778 there was one Russian ship which came to Japan – it was Russian expedition to Hokkaido (at that time – Ezo land) headed by Dmitry Shabalin and Ivan Antipin with a task to explore the possibility of trade negotiations with Japanese authorities, thus becoming «a starting point of Japanese awareness of Russia's presence to the north» (Shchepkin, 2016). It's necessary to remark that Central Japanese Government wasn't aware of these contacts, so the monopoly was taken by Matsumae Domain (southern part of present Hokkaido), which was licensed to control the northern trade and was autonomous (大石、pp. 129–130).

By the second half of the XVIIIth century Russian merchants had already moved to the Far East, exploring the lands near Pacific Ocean, the Sea of Okhotsk and the environs of Kamchatka land. Much emphasis was put on Russian penetration to Kuril Islands and Sakhalin. The first settlements appeared there in the XVIIth, and by the middle part of the XVIII century Russian merchants had already formed their bases close to Japan. Three main expeditions can be mentioned:

1) Semyon Dezhnev (1605–1673) expedition to the Bering Strait in 1648,
2) Yerofey Khabarov (1603–1671) exploration of the Amur River region,
3) Expeditions by Vitus Bering (1681–1741) in 1728 and 1741 resulted in exploration of Alyaska.

The visit of Russian ship in 1778 became a turning point in creation of «Russian threat» idea, especially after translation and research made on letters written by adventurer Maurice Benyovszky (1746–1786) in 1771. In one of his letters, addressed to director of Dutch trade house in Dejima, he said that the Russians construct fortresses in Kamchatka and Kuril Islands in order to attack northern borders of Japan. Benyovszky advertised Japanese Government to take defensive measures against Russian menace (Pozdneev, 1909). These letters also initiated Marine Defense Concept, marked with discussions by such prominent scholars as Kudo Heisuke 工藤平助 (1734–1800), Honda Toshiaki 本多利明 (1744–1822) etc. who promoted the idea of trade negotiations with Russian merchants in the north.

The ideas by Kudo Heisuke

Kudo Heisuke was a physician from Sendai Domain and famous for his manuscript «The Inquiry into Customs of Red Ezo» (*Akaezo Fusetsuko* 赤蝦夷風説考, 1783)[4]. The main information for his work was taken from Nagasaki translators as well as from Dutch books about Russian history and geography.

Kudo understood Russian power, but still regarded impossible Russian aggression against Japan and was skeptical to Dutch official reports. In his manuscript economic background is emphasized: «When I asked the Dutch about Red Hair Ezo, I heard many stories, heard about their aggressive plans against Japan. However, I don't regard these stories seriously, because Dutch interpreters, who worked in Nagasaki, could exaggerate these facts … The Red Ezo just want to trade with us, as they know our country has much precious metals … In fact, the products, which the Netherlands merchants import to Japan, are expensive because of high transportation fees, where as in Russia there are many rivers, so Japan can acquire more products. Russian has much experience in trade with China, so if this country starts trade with us, Japan-Dutch trade would be threatened because of low prices. That's why the Dutch do their best to prevent Japan from having trade with Russia» (工藤, pp. 216–217, 1943).

Much attention is given to Russian history and geography – it was first mentioned that Russia is a neighbor of Japan. So the movement of the Russians towards Japan is inevitable but it can be stopped if Japan reclaims Ezo mines with precious metals, which can be used to get Russian medical as well as industrial goods (工藤, pp. 219–220, 1943).

Thus, the manuscript by Kudo contained perspective economic aspects, emphasizing Ezo land reclamation, which could provide additional rice paddies and attract population from other parts of Japan. Moreover, Ezo could provide wealth to Japan due to mine reclamation. These products could be used in official trade with Russia and bring prosperity to Japan without illegal trade: «It is very hard to prevent such an illegal trade, but if we start official trade relations, then we can take different measures. First is the building of fortresses. Second is the prohibition of illegal trade. If we leave everything as it is, the illegal trade will become trickier, and the number of merchants will increase. If we consider it, then there is no way but to make this trade legal. If we would have legal trade relations, we could know the manners of those people and the natural features of their lands, and work out appropriate measures» (Shchepkin, 2016).

Under the influence of Kudo Heisuke conclusions Japanese Government sent an expedition to Ezo in 1785–1786. The main organizer was Matsumoto Hidemochi 松本秀持, holding the position of Financial Superintendent. Expedition to Ezo became the first official expedition to this region, providing information about Kunashir, Iturup, Urup Islands as well as Sakhalin.

Influence of Kudo manuscript

Analyzing «The Inquiry into Customs of Red Ezo», we can state that in the early stage Marine Defense Concept incorporated the idea of trade as a source of national wealth and was further developed in works by prominent scholar Honda Toshiaki:

1) «A Secret Plan of Government» (*Keisei Hisaku* 経世秘策)

Honda claimed that transfer of capital from Edo (present Tokyo) to Ezo would contribute much to development of Japanese economy and Japan could become the leader in Far East like England in the West. Realizing the necessity of Ezo land colonization, Honda claimed that Japan «will get lands with mines, which can provide wealth, will get the reclaimed land with good crops, which will save Japan from famine; will get the forests which can supply wood for ships construction. If we keep Ezo lands uncultivated they will become Russian territory» (Vsemirnaya istoriya economicheskoy mysli, pp. 300–301, 1987). The main point of view of the advocates was an idea to establish a national merchant marine that would enhance the national treasury by selling products abroad.

This work was written in 1789–1801, during that time Japanese Government regarded the idea of cultivating all Ezo land and putting it under governmental control. That policy was seen as the only one way to overcome the results of Tenmei Era Famine, one of the most devastating in Japanese history.

2) «Situation on Red Ezo» (*Sekie Dosei* 赤夷動静, 1791), advocating the idea of Russo-Japanese trade benefits:

«Red Ezo are Russian citizens. Every summer they arrive to the eastern part of Ezo to give us our ship wreckers. They are moving to the south and hold secret trade with ainu … Russia is not an enemy to us, and trade partnership would be beneficial to both of us … The products we shall give to the Russians will be taken to their capital - Moscovia … Its necessary to designate places of trade on Etorofu [Iturup] and Kunashiri [Kunashir] islands, where our sea products will be exchanged to Russian goods. It would contribute to cultural contacts, too» (本多, pp. 113, 125–126, 1978).

Honda criticizes Japanese attitude towards Ainu, indigenous population of northern islands – if much attention had been given to their enlightenment and education, Kuril Islands wouldn't have become Russian land, so Ainu enlightenment was considered crucial for strengthening Japanese positions on Kuril Isles. To achieve this goal, Honda recommended to transfer Japanese prisoners to Ezo so that they could become farmers (本多, pp. 128–129, 1978). Thus, Honda attitude shows that Japan began to realize its northern borders and took efforts to cultivate Hokkaido, though previously it was regarded as barbarian, not Japanese land.

The ideas by Hayashi Shihei

As we have seen, Kudo proposed the idea of trade with Russia as a measure to protect northern borders of Japan. However, different point of view was presented in manuscript «A Discussion of the Military Problems of a Maritime Country» (*Kaikoku Heidan* 海国兵談, 1791) written by Hayashi Shihei 林子平 (1738–1793), another scholar of Pre-Modern Japan.

His concept was more radical, as he pushed for Japan to adopt Western military science and the re-education of the samurai. He complained of the lack of organized drill exercises, and stressed the importance of teamwork drill, rather than mere individual martial training. In his work he gave a lot of technical descriptions about shipbuilding, cannons and other military designs. The first 15 chapters were on military tactics on land and sea, while the last one described what is necessary to make nation rich and strong (Shchepkin, 2011).

Shihei claimed: «What is meant by maritime nation? It is a country not connected by land to any other, but which is bordered on all sides by the sea. There are defense preparations which are suited to a maritime nation, and which differ in kind from those prescribed in Chinese military works, as well as those which have traditionally been taught in Japan by the various schools… Military preparation for Japan means a knowledge of the way to repel foreign invaders, a vital consideration at present. The way to do this is by naval warfare, the essential factor in naval warfare is cannons. To be well prepared in these two respects is the true requisite of Japanese defense, unlike the military policies appropriate to such continental countries as China and Tartary. Only when naval warfare has been mastered should land warfare be considered…» (Shchepkin, 2011).

As it was mentioned previously, Japan was under seclusion policy, so the construction of big vessels was strictly prohibited. Military tactics were completely restricted to ground warfare and generally followed ancient Chinese texts, since the main problem of China had been overland invasion.

However, Shihei believed Russia to be an even greater threat to Japan. This was based not only on the increased activity of the Russians in the area of the Kuril Islands, but also on the high regard in which *Shihei* held European military techniques such as the employment of great firepower and of large navies. These military virtues, he believed, were supported by what he thought as the benevolent and well-organized governments of the West and their scientific learning. *Shihei* warned that the Chinese could copy the tactics of the Occidental Powers and send forces to Japan, so he advocated for the fortifications of the coastline with naval batteries and a broad program of reeducation for the samurai in both military and literary subjects in order to cure the warrior class, which was in decline because of peaceful Tokugawa era (林子平、1933).

Further development of Marine Defense Concept

Although Hayashi Shihei was repressed, accused of panic rumors, his ideas were taken into consideration by Japanese Government during the Kansei Era (1789–1801),

when seclusion policy was considered as the «moral state of affairs», so Marine Defense Concept began to be realized on governmental level through special edicts, the first of which was «Edict to Deal With Foreign Vessels» (*Ikokusen Toriatsukaiho* 異国船取扱法, 1791), officially introducing the Concept in its real sense. The text of the Law was quite radical: «One foreign ship has appeared in the vicinity of Chikuzen, Nagato and Iwami Provinces … In case if foreign ships arrive to Japan, it's necessary to check if it is going to Nagasaki or not … In such case special measures should be taken for defense, and local statesmen should be sent to the foreign ship. If its crew refuses to leave Japan, the ship can be attacked and burnt down. The use of local artillery and guns is permitted» (御触書天保集成, 1959).

However, the HMS Phaeton incident in Nagasaki Harbor (1808), resulted in taking Dutch hostages[5], marked the turning point in the attitude towards foreign ships, which were obliged to go away from Japanese waters. Thus «Edict to Drive Away All Foreign Ships» (*Ikokusen Uchibarairei* 異国船打払令, 1825) was passed, contributing much to strengthening of Japanese seclusion policy. According to this Law, local authorities were ordered to arrest or kill "without a second thought" any foreigner who landed Japan without permission (御触書天保集成, 1959). That law was the most radical compared to the previous Act and turned into Morrison incident (1837), when, according to the Law, the American merchant ship «Morrison» was fired and driven away.

Acceptance of Western military science

Despite such a harsh position towards foreign ships, Western practical knowledge was incorporated into the Maritime Defense Concept, and used for strengthening coastal defense, particularly artillery, and organizing military trainings. The main reason for such rapid changes were news about the First Opium War between Britain and China, which lasted from 1840 to 1842, resulting in British victory and the Treaty of Nanking with China (1842). It was the first unequal treaty and the beginning of colonization of China by Britain, which led to further weakening of the Chinese state's power and legitimacy. Japan knew about the results of the War from Dutch reports and, as a result, reexamined its attitude towards Western learning, as traditional feudal ways which relied upon samurai troops were not sufficient. Thus the situation in the Outer World gave impulse to increasing modernization in Japan.

The most prominent scholar who encouraged western military technology in order to better resist the West was engineer Takashima Shuhan 高島秋帆 (1798–1866), who established two companies of infantry equipped with guns, as well as one artillery battery, and in 1841 successfully demonstrated gun training with 125 warriors, using Dutch commands for drilling (Murdoch, 1926, p. 563–564; Sansom, 1965, pp. 249–251). The training was held at Tokumarugahara in Musashi Province (now Takashimadaira in Tokyo) and contributed much to the spread of military experience – «Complete Book of Maritime Gunnery» (*Kaijo hojutsu zensho* 海上砲術全書, 1843–1854) and «Western Manuscript on Maritime Defense» (*Bokai yoron* 防海要論, 1864) were published, containing the explanation for constructing and running coastal gun batteries.

Besides Takashima, gunnery, Maritime Defense problems as well as the idea of casting cannons from copper were studied by scholar and politician Sakuma Shozan 佐久間象山 (1811–64). Having analyzed the reasons for the British victory in the First Opium War, formulated his program «Eight Policies for the Defense of the Sea» (*Kaibo Hassaku* 海防八策), advocating Western methods of coastal defense. It included equipping strategic fortifications with artillery, suspending the export of copper so that it could be used in guns, building large merchant ships, supervising maritime trade, building modern warships and training naval officers, establishing widespread schools for men and women, making governmental rewards and punishments clear, and employing men based on ability (Sansom, 1965, p. 254).

Thus, Western learning became connected with Maritime Defense Concept, and after the Opium War there was no doubt that Japan should undertake measures to protect borders and avoid conflict with the West. As a result, Foreign Ships Expulsion Order (1825) was abolished and in 1842 replaced with the Order for the Provision of Firewood and Water (*Shinsui Kyuyorei* 薪水給与令) (横山, 2013, pp. 343–344).

Conclusion

After the arrival of the fleet of «black ships» by Commodore M. C. Perry (1853) and subsequent conclusion of the Treaties of Peace and Amity with the USA, Russia, Britain, France and the Netherlands, Japan ended its seclusion policy, opened its ports (*kaikoku* 開国) and started to renovate its domestic system. With the *Meiji* Restoration (1868), when political power was transferred from s*hogun* to Emperor, Japan started the rapid westernization and modernization under the slogan «Rich Country – Strong Army» (*fukoku kyo:hei* 富国強兵).

Marine Defense Concept can be regarded as a preliminary stage, when Japan started to realize itself as a country surrounded by sea, which nevertheless couldn't protect Japan against foreign countries, so Japan had to take measures to strengthen its position towards the Outer World. Begun as a Concept with main emphasis upon the trade as a source of national income, it accumulated Western military knowledge and resulted in radicalization of foreign intercourse, especially after incident in Nagasaki (1808). As we have seen, the main impulse to the Concept was given by the arrival of Russian ship in 1778, but since the beginning of the XIXth century it touched not only Russia, but all European countries Japan didn't communicate with, thus resulting in Edicts against foreign ships.

[1] Profound analysis of Japanese foreign trade was done by Iwao Seiichi (1976), Toby R. (1984), Yamamoto Hirofumi (1995) etc.

[2] Besides these countries, Japan held contacts with Ryukyu Kingdom (through Satsuma Domain), so *sakoku* policy didn't mean complete isolation of Japan. Modern Japanese historians turn to reevaluate the use of *sakoku* notion to Pre-Modern Japan, explaining it by the lack of seclusion consciousness in Japanese mentality at that time (川勝, 2012).

[3] Prewar Japanese works directly accuse him of taking numerous bribes for personal enrichment, but modern historiography (like «The Period of Tanuma Okitsugu» by Oishi Shinzaburo, 1991) presented a new point of view on his domestic policy – during his time many efforts were made towards land reclamation, coinage of new currency, and increasing of foreign trade volume with the use of dry sea staple food (*tawaramono* 俵物).

[4] «Red Ezo» means «red-haired» Russians, who came to trade to Kuril Islands and Sakhalin.

[5] The incident showed the low level of coastal defense in Nagasaki and resulted in Nagasaki Magistrate Matsudaira Yasuhide 松平康秀 (1768–1808) suicide.

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Simulation-Based Learning: A New Educational Tool

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Abstract
Problem- based learning (PBL) has been well established in medical education as an efficacious learning technique. Meanwhile, developments in computer technologies and high-fidelity patient simulators have thoroughly reformed medical education including designing problem based learning and case scenarios. Combining problem-based learning with simulation has significant potential. Key to successful implementation of this pedagogy is the use of a "good problem".
High-fidelity patient simulators were used at the end of the theoretical course in cardiovascular and respiratory physiology in the first year medical program in the medical school, national university of Singapore. High-fidelity simulation was used to design an intensive care unit case scenario as part of PBL program. It was developed to involve the students to perform procedural skills and apply biomedical knowledge/concepts to clinical decision-making during simulated emergency scenario training. Our observation shows that simulations can effectively serve as the "problem" in a PBL designed course. In this paper an example of design and use of high-fidelity patient simulators to facilitate case study teaching and PBL of cardiopulmonary physiology and intensive care concepts discussed. The factors that need to be considered when using a simulation exercise as a PBL problem are discussed and the limitations and directions for future research are explored. Knowing the limitations of high-fidelity patient simulators, case study and PBL designers should carefully consider the extent to which they would use high-fidelity patient simulators.

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Introduction

The ultimate goal of medical education is to train students to be clinicians. This requires students to possess an extensive, diverse set of theoretical knowledge, practical knowledge, and procedural skills. Perhaps one of the greatest challenges faculty must address is how to best facilitate students' abilities to transfer and apply knowledge to clinical settings. This is the primary reason that a substantial portion of medical education is devoted to clinical education. However, a common anxiety expressed by students and echoed by clinical instructors is whether students are sufficiently prepared to begin a clinical education experience in a particular setting. This can be due to several factors, including where in the curriculum the clinical experience occurs relative to the theoretical and practical content necessary for that setting. However, this can also be due to difficulty in a student's ability to use his or her knowledge in a clinically meaningful and relevant manner. Chief among other reasons is that didactic material that does not emphasize clinical reasoning may prohibit the use of biomedical concepts to support clinical reasoning [1]. Furthermore, basic science may not provide the axioms, the analogies, or the abstractions required to support clinical problem solving. Therefore, theoretical (biomedical) information should be presented in applied clinical problem contexts where students allowed deriving the appropriate abstractions and generalizations to further develop their models of conceptualization. For example, a student may have learned that electrolyte imbalances such as hypokalemia can have various manifestations including cardiac arrhythmia and muscle cramping. They may also have learned that diuretic medications can cause hypokalemia. However, if the student clinician has recently initiated an exercise program with a patient with heart failure, he or she may inappropriately explain any muscle symptoms as being associated with exercise, instead of considering the patient's diagnosis, medical therapy, and the associated side effects. However, if the student had the opportunity to encounter a similar context through case study, live patient simulation, actual experience, or some other clinically applied learning opportunity, the student might have been able to consider a much broader range of possible explanations for the patient's complaints. Thus, medical education programs should challenge students to apply and use newly-gained biomedical knowledge in a clinical context.

Cardiovascular and pulmonary physiology and pathology is an area of practice that relies heavily on biomedical knowledge. Teaching interventions that help students organize and access this knowledge in a clinically relevant manner include the use of paper-based cases, standardized patients, and simulations using human patient simulators. It is our observation that students generally have the greatest difficulty assimilating to the acute care and emergency setting. This difficulty is compounded when the student is introduced to the accident and emergency room (A&E) setting. The A&E poses numerous challenges to students, including the physiologic instability of patients, involvement of multiple physiologic systems, the need for close monitoring of physiologic responses to medical interventions, and the number and complexity of invasive and noninvasive monitoring and interventional devices (chest tube, feeding tube, electrocardiogram leads, tracheostomy tube with ventilator circuit, arterial line, etc).

Recent advances in simulation technology have improved student’s understanding of disease pathophysiology and enhanced the opportunity for clinical skills training.

High fidelity patient simulators allow students to practice procedural and decision-making skills within a realistic, dynamic clinical environment [2]. These human patient simulators are able to simulate real-time changes in heart rate, blood pressure, oxygen saturation, respiratory rate, heart rhythm, and pulmonary artery pressures. Additionally, many clinical examination findings such as pulses, heart sounds, and lung sounds can also be simulated. High fidelity human simulation mannequins can also have a number of invasive and noninvasive monitoring and interventional devices attached. The extensive amount of clinical data and simulated examination findings can be manipulated in real-time according to the circumstances of the clinical scenario, allowing for a dynamic interaction between the student clinician and the simulated patient whereby the student can observe the results of his or her decision-making and be required to respond appropriately.

One relatively new learning theory that has received very little attention in the simulation literature is PBL. This learning theory examines how the brain learns. Several theorists are still actively contributing to building this learning theory. PBL concepts are very applicable to patient simulation which satisfies the essential elements for learning such as:

- Relaxed alertness – Learners must be alert to new challenges, but not so much so that fear (including fear of failure) interferes with the learning process. Simulation represents a safe environment for learners to face new challenges without the fear of patient harm.
- Orchestrated immersion in complex experiences – The instructor creates an immersive simulation experience with specific objectives.
- Active processing of experience – Similar to the reflective thought process found in experiential learning, learners must process the experience to identify areas for improvement.

High fidelity patient simulation is a powerful learning tool in healthcare provider education at all levels. With a combination of PBL and simulation technology, patient simulation will be a key part of the healthcare provider education curriculum. However, as simulation technology advances, users must be cautious to use the technology as part of a coordinated curriculum that emphasizes learning outcomes and not just the use of technology.

Case Description

Simulation Design Principles

Principles of the simulation design were based on the work of Jeffries and Rizzolo [3] Key principles in simulation design include: (1) clear objectives, (2) fidelity/sense of realism, (3) an opportunity for real-time problem solving appropriate to level and preparation of the learner, (4) student support/ability to facilitate the students' resolution of the clinical problem, and (5) an opportunity for reflection. Furthermore, the following guidelines were instructed to the tutors to follow:

- Instructors are facilitators of learning and must be present to provide the necessary balance between students support with the technicalities of the

simulation, provide direction as needed, and promote student exploration and active learning.
- Simulation duration can vary between 30-40 minutes with specific focus on educational objectives.
- Scenario complexity and the level of uncertainty can be manipulated with the number and magnitude of clinical problems and the amount of irrelevant information that is provided.
- Guided reflection should occur immediately after the activity and should last at least as long as the activity.
- Learning outcomes can occur regardless of the role assigned to the student, including observers.

Student self-evaluation is context-specific and thus simulations should expose them to a variety of scenarios and contexts.

Objectives

The specific objectives for the simulation were for students to: (1) assess the patient's clinical status and readiness for medical intervention, (2) assess and respond appropriately to the patient's physiologic changes during interventions, (3) respond appropriately to monitor alarms, (4) give provisional diagnosis of the case (5) suggest additional clinical investigation that may help to reach the diagnosis, and (6) suggest further treatment or other interventions that may be beneficial.

The case history

The patient was a 60-year-old male involved in road traffic accident (RTA) resulted in fracture right femur. The patient brought to A&E room for further investigation and management

The simulation set-up

SimMan™ mannequin was equipped with the following: a cuffed tracheostomy tube, ventilator circuit with in-line suction catheter, electrocardiogram leads, central venous line, swan-ganz line, a peripherally-inserted venous catheter, and a finger-probe pulse oximeter. The display for the telemetry data included a running single lead electrocardiogram, heart rate, oxygen saturation, and noninvasive blood pressure. The cardiovascular data were able to be changed as the simulation progressed by manipulating the simulator settings.

Student preparation

The students were given a brief orientation to the A&E simulation suite and the mannequin simulator, including information on additional equipment available (resuscitation bag, supplemental oxygen, suction device) and mannequin capability with respect to heart and lung sounds, pulses, joint mobility, etc. They were provided with pictures of the telemetry and ventilator screens to prepare them for what data was available and where it was located. Students were divided into groups of 12. Two students acted as clinicians, and the other students silently observed and reflected on the provided questions. The student clinicians were encouraged to verbalize as much

of their decision-making as possible to allow the observers to compare their own decision-making with that of the student clinicians. The student clinicians were instructed to maintain a strict role-playing environment, and to interact with the mannequin as they would with an actual patient.

Progression of the simulation

The simulation was divided into 3 stages, with each stage requiring students to assess the status of the "patient" and respond accordingly. Stage I began with the patient resting comfortably with stable vital signs and cardiovascular parameters. As students became familiar with the environment, the patient's status, and the various devices attached to the patient, requiring the students to assess the patient and respond appropriately.

Stage II began when the patient condition start to deteriorate. At that point, a rise in respiratory rate, a rise in heart rate, a drop in oxygen saturation, and a drop in blood pressure was created in the "patient." It should be noted that the students had the opportunity to ask the patient about symptoms of hypotension, and a simulated response to the affirmative would be given by the facilitator.

In stage III the clinical condition of the patient is continued to deteriorate. At that point, a severe drop in the blood pressure accompanied with severe drop in the central venous pressure and an increase in the heart rate.

Additionally, it should be noted that blood pressure values and other parameters would continue to deteriorate (up to asystolic phase) and improved only if the students start to take active measures as blood or intravenous fluid transfusion. Thus, the scenario required students to actively seek out the patient's response to sitting. If they did not, then they would be forced to respond to the alarms of the monitor (low blood pressure) and the telemetry (oxygen desaturation and tachycardia). Throughout all 3 stages the heart rhythm was set to change to either atrial fibrillation and/or occasional premature ventricular contractions.

Outcomes

Student Performance

Student performance was not measured using any specific, reliable, and valid instrument as the simulation session was used as a laboratory activity. Furthermore, the use of the HFPS session was not anticipated at the time. In general, however, students were able to attend to and interpret relevant vital sign data, though some students were faster than others in recognizing changes that indicated a need for action (decreased oxygen saturation or blood pressure, etc). Psychomotor skill performance such as managing lines, leads, and tubes was notably awkward in many instances, which is consistent with novice performance. Response to monitor alarms was generally appropriate but the speed of problem recognition was quite variable. Student reflection and self-evaluation at the completion of the simulation was surprisingly accurate.

Student Feedback

A feedback (in a form of short questionnaire) solicited from each student immediately after the simulation session. The feedback was universally positive, especially regarding the opportunity to experience a realistic context for lines, leads, and tubes, as well as for making decisions in real-time. Students commented particularly about the realism of the environment and the stress and pressure associated with changes in "patient" status. Questions were based on the 5 main principles of simulation design. Highly consistent feedback was received.

Discussion

One of the more recent lines of thought in education theory has been the development of problem-based learning [4, 5]. However, the healthcare simulation literature has not explored this area well despite its potential to impact simulation-based education learning theory. The learning principles that can be transitioned into the simulation learning environment could be summarized in the following:

1. The implications of simulation in learning provide an immersive environment and low stress learning in which the fear of failure is removed. Facilitators should provide a supportive learning environment that engages more than just the brain, but rather includes opportunities for involvement of the whole person and on his or her senses.
2. The brain/mind is social: Humans have a natural urge for social contact. Learning is more effective when learners are engaged in processes that permit relationships that allow them to be recognized and have their contributions acknowledged. The simulation-based training emphasizes social structure and communications between the students and the facilitators.
3. The search for meaning occurs through patterning: The brain does not learn isolated facts well. There needs to be some logical connection, or pattern, to previously learned knowledge. The learner is actively searching for these connections. Simulation offers the opportunity for the learner to recognize patterns where new knowledge can be integrated with previous knowledge.
4. Emotions are critical to patterning: Learning is not a purely cognitive function. Emotions play a significant role in encoding and retrieving information. The realism of simulation allows the learner to associate emotions with certain areas of knowledge, such as when the learner in an A&E simulation associates the rapid decreased blood pressure monitor with an emotional need to react.
5. The brain/mind processes parts and wholes simultaneously: As the learner processes information, he or she is examining information both in parts and in the whole simultaneously. As the learner breaks down the skills of a medical procedure (such as blood transfusion in case of hemorrhagic shock), the learner must not only examine each part of the skill, but also keep the end result in focus (in the case of blood transfusion, patient blood pressure).
6. Learning involves both focused attention and peripheral perception: While focus may be on an individual skill, attention is still be directed to the big picture view of the situation. Simulation provides the opportunity for practice of individual skills while creating a need for monitoring the overall patient condition.

7. Learning is both conscious and unconscious: As individuals learn, they are receiving both overt knowledge and covert knowledge. In overt knowledge, the content of the lesson is managed and transmitted. In covert knowledge, an underlying message is being generated about this knowledge. Covert knowledge may be intentional on the part of the instructor or may be an unintended consequence. In simulation, presenting information in a positive manner that manages the covert message is important in instilling the appropriate response in the learner. For instance, a vitally important skill must be presented in a manner that conveys that importance to the learner. If the instructor presents it in a nonchalant manner, the learner may encode this information as not being important even if the instructor says it is.
8. There are two sets of memory systems. The spatial memory system and a set of systems for rote learning. In spatial memory, recall just happens. Learners do not have to think about what a tree is; they just know it. Recall is automatic and is improved by novelty. Facts and skills that represent isolated ideas and concepts are not processed through by the spatial memory system. These concepts require some degree of organization to create retrieval systems. Simulation plays a role in this by supplying practice in context to help train the brain to retrieve information needed for the clinical scenario.
9. Learning is developmental: All learners do not progress at the same rate. There are individual differences in which each person falls in a novice to expert continuum. Education programs must recognize this and avoid categorizing all learners in the same group. Simulation can be used as a means to discriminate where learners fall on the novice to expert continuum and if the simulation is scalable in its objectives, the simulation can be adjusted to accommodate the appropriate level for each individual learner.
10. Complex learning is enhanced by challenge and inhibited by threat associated with helplessness and fatigue: When fear – including fear of failure – is present, the brain downshifts into a more primitive function and encoding into long term memory becomes problematic. While some stressors in a realistic simulation session are beneficial and help with encoding, fear is a complicating factor. That is one reason why debriefing sessions are done in a non-punitive manner, so individual learners do not fear being criticized, ridiculed, or embarrassed at the conclusion of the simulation.

Brain research establishes and confirms that multiple complex and concrete experiences are essential for meaningful learning and teaching [5, 6]. Content is inseparable from context. In simulation this has great impact as all learning is contextual, which may explain the universal positive feedback from most of the learners as well as the instructors.

Conclusion

The purpose of this article was to provide the educators with a brief introduction to the use of HFPS as a teaching intervention to assist students with applying didactic knowledge and practicing the procedural skills needed to prepare them for acute care clinical education experiences.

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