

***Enhancing Student Learning Outcomes in Educational Measurement and Evaluation:
Integrating Blended Learning Approaches and Concept-Based Instruction***

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Abstract

The development of student learning outcome should possess effective learning experience in which the directly effective approaches. This study investigates how blended learning approaches and concept-based instruction affect to students' educational measurement and evaluation capability. The research method is deemed as one-group pretest-posttest experimental design which a treatment is implemented into group of college students for 45 hours and a dependent variable is measured before and after the treatment is implemented. Participants included 56 college students that were drawn by using cluster random sampling technique from student who enrolled the educational measurement and evaluation course at Lampang Rajabhat university, Thailand. Data were collected by using the Educational Measurement and Evaluation Test (EMET). Test was based on the curriculum guideline that measured five knowledge domains consist of setting goal of measurement and evaluation, designing a measurement and evaluation, creating and assessing an instrument quality, administration a testing, and grading score and reporting the result. Total of 30 items for testing included 6 items each domain. Descriptive statistics were used to analyze student learning outcomes in educational measurement and evaluation. Also, a t-test is inferential statistics test that used to determine if there is a significant difference between the means of two groups. Result revealed that the posttest score ($M=23.53$, $SD= 1.02$) of students' educational measurement and evaluation capability was significantly higher than the pretest score ($M=16.12$, $SD= 1.31$), $t(56) = 9.21$, $p=.01$.

Keyword: College Students' Capability, Teaching Approaches, Comparing Means Analysis

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Introduction

Nowadays, the emergence of diverse students is assigned to refer streaming the high competencies of 21st century, which has been a challenge particularly related to the college students learning outcomes in educational measurement and evaluation, especially in teacher students (Christoforidou and Kyriakides, 2022). There is a significant component that teacher will find out an approach to cover in accommodating the teacher students' capability.

Educational measurement and evaluation capability is seen as the key to foster teacher students for teaching profession (Arista et al., 2022). One of the cognitive skills which lead to be accomplished in the academic of college students and beyond in teaching profession is the educational measurement and evaluation capability. There is selected to be an important factor of competencies development.

In current, a widely integrated approaches for teaching and learning were selected to enhance learning outcome for getting reach school accomplishment beyond the next chapter in profession. Also, the integrated teaching and learning strategy was applied to classroom for implementing student competence. Blended learning implementation usually involves face-to-face and other corresponding online learning delivery methods was transformed into classroom that is a teaching approach used in many classrooms to promote student learning (Daskan and Yildiz, 2020: Alammary, 2019). Furthermore, concept-based instruction was transformed into classroom that was a teaching approach used in several classrooms to promote student learning (Chappell and Killpatric, 2003). Blended learning approach was combined with concept-based instruction that was assigned as innovative learning strategy for sustainable development in education.

Many studies were conducted on how to develop educational measurement and evaluation capability and examine the effect of blended learning in learning outcome (Sluijsmans et al., 2003: Christoforidou et al., 2014: Liu and Li, 2014). Those studies considered various classroom activities and classroom level based on the blended learning approach. Some studies indicated significant effect of blended learning without included the other effective approaches. However, there is little describe and present the understanding of whether students are developmentally ready to educational measurement and evaluation capability can be developed at integrated approaches.

In this regard, it should be investigated to account the effect of blended learning approaches and concept-based instruction in student's educational measurement and evaluation capability.

Literature Review

Blended Learning Approaches

Blended learning implementation usually involves F2F and other corresponding online learning delivery methods (Australian National Training Authority, Blended Learning: learning new skills in blending, Sydney, Australian National Training Authority, 2003).

Key aspects of blened learning derived from Graham (2013) and Moskal et al. (2013) that were face to face activities and online activities. First, face to face activities consisted of classroom lecture, individual/group discussion, presentation activities, classroom interaction,

and assessment. There were focuses on encourages students to participate in learning activities together in the classroom and students participate in a class where the teacher presents the learning content, experiential learning, and practice. Online activities consisted of Online Individual and collaborative learning, web-based training, discussion board, recorded lectures, and online assessment and feedback. The teaching process would be encouraging students to participate in learning activities online. Also, the teaching process is accomplished online with the teacher's assessment of the learning progress and interactions throughout the learning process include the feedback vary on the lesson.

Concept-Based Instruction

Concept-based instruction is an approach to teaching and learning that uses for finding out how learning happens, encourages higher-order thinking strategies and executive function skills (Erickson et al., 2017). Furthermore, the distinction in concept-based curriculum and instruction is the three-dimensional approach. There were focuses on what students know, what students are able to do, and what students should understand conceptually (Erickson et al., 2017). Especially, the element of what students should understand conceptually allows teachers to help students make conceptual connections and generalizations across content, tying together important skills and information (see also figure 1). Concept-based learning is an opportunity for students to create meaning with what they are learning and to see the connection between subject areas.

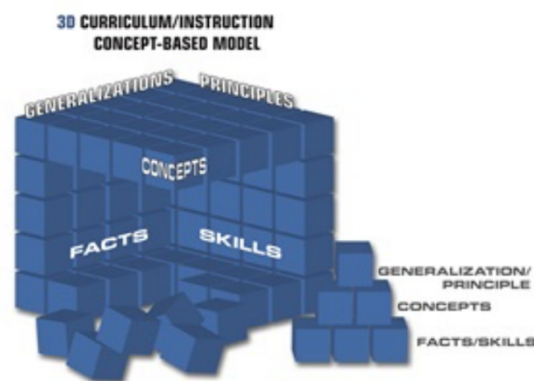


Figure 1: 3D Curriculum and instruction Models (Erickson & Lanning, 2014)

Educational Measurement and Evaluation Capability

Educational measurement and evaluation capability is the one of teacher students' competency (Brookhart, 2011). There were five knowledge domains consist of setting goal of measurement and evaluation, designing a measurement and evaluation, creating and assessing an instrument quality, administration a testing, and grading score and reporting the result.

The researcher analyzed and synthesized the concept, theories and research study that concern the blended learning approaches included concept-based instruction. The conceptual framework is shown in Figure 2.

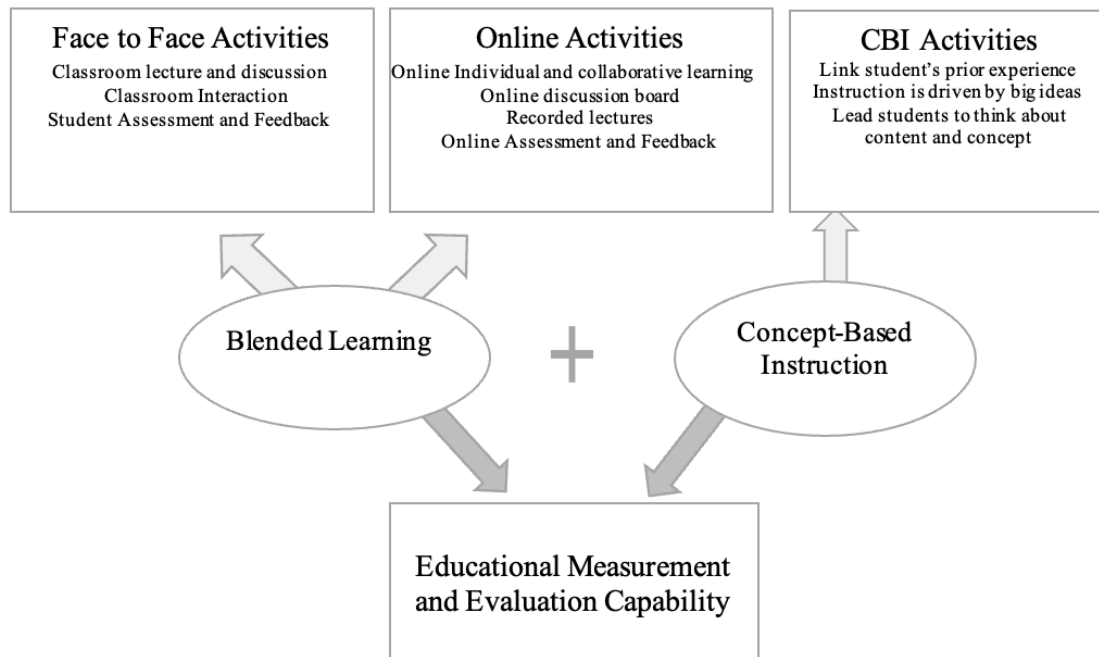


Figure 2: Integrating blended learning approaches and concept-based instruction model

Methodology

The purpose of this study is to investigate a blended learning approaches and concept-based instruction affect to students' educational measurement and evaluation capability. The research method is deemed as quasi-experimental research design (one-group pretest-posttest experimental design) which a treatment is implemented into group of college students and then a dependent variable is measured once after the treatment is implemented.

Participants

The samples were drawn by using cluster random sampling technique from student who enrolled the educational measurement and evaluation course at Lampang Rajabhat university, Thailand. There were 56 college students, 22 were males and 34 were females.

Measurement

The research instrument used in this study was educational measurement and evaluation test (EMET). Test was based on the curriculum guideline that measured five domains: 1) setting goal of measurement and evaluation 2) designing a measurement and evaluation 3) creating and assessing an instrument quality 4) administration a testing and 5) grading score and reporting the result. Total of 30 items for testing included 6 items each domain.

Procedure

The procedure of research took place in three separate steps (see also Figure 3).

In the first step, a classroom instructional model was formed by derived the concept and theories of blended learning and concept-based instruction. The face-to-face approach as traditional classroom was blended to online approach. The face-to-face approach were designed to classroom lecture and discussion, classroom interaction, and student assessment and feedback. Also, the online approach created the learning with self-study and classroom collaborative learning. Moreover, the online discussion board and online assessment and feedback were offered to students. Furthermore, the concept-based instruction was embedded in both approaches included linking student's prior experience, instruction is driven by big ideas, and lead students to think about content and fact. There was the classroom instructional model that integrated the blended learning and concept-based instruction. In the second step, The integrated blended learning approaches and face-to-face activities were distributed in the classroom. The concept included evaluation of classroom issue and school values that inspire students to act upon their learning. Also, concept-based instruction creates connections to students' prior experience. The process time for using integrated blended learning approaches and face-to-face activities was 45 hours that presented by scaffolding. The third step was assessing the student educational measurement and evaluation capability. College students were asked to response the educational measurement and evaluation test (EMET).

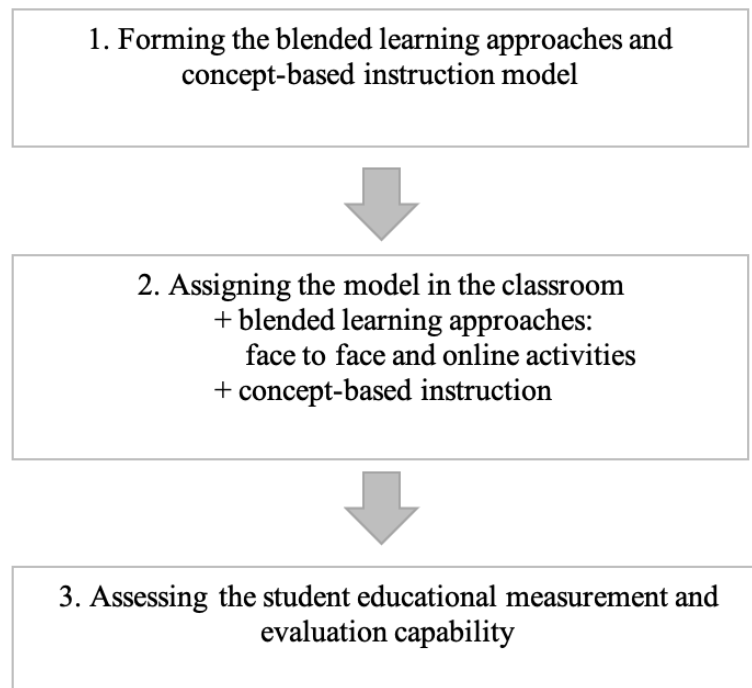


Figure 3: Flowchart of the research process: Integrated blended learning approaches and concept-based instruction into classroom design

Data Analysis

The study used descriptive statistics and analyzed data via the software packages SPSS. T-test was used to investigate how integrated blended learning approaches and concept-based instruction affect the educational measurement and evaluation capability.

To describe the college students' educational measurement and evaluation capability, the capability was interpreted into 4 categories as:

score	level
greater than 75%	refer to high level
51% - 75%	refer to moderate level
25% - 50%	refer to low level
less than 25%	refer to very low level

Results

The Students' Educational Measurement and Evaluation Capability

After the blended learning approaches and concept-based instruction was assigned to classroom. The students' educational measurement and evaluation capability was varying among students (as shown in Table 1). The highest percentage of students were in the high educational measurement and evaluation capability level (58.93%). Moreover, the data reported the maximum score of educational measurement and evaluation capability was 28 and the minimum score of educational measurement and evaluation capability was 23, and the grand mean of students' educational measurement and evaluation capability was 23.56. Also, score of students' educational measurement and evaluation capability as shown in Figure 3.

	Educational measurement and evaluation Capability Level		
	High	Moderate	Low
Number of college students	33	20	3
Percentage	58.93	35.71	5.36
Maximum	28	22	15
Minimum	23	17	14
Grand mean	23.56 (78.53%)		
Standard deviation	1.02		

Table 1: The college student's educational measurement and evaluation capability

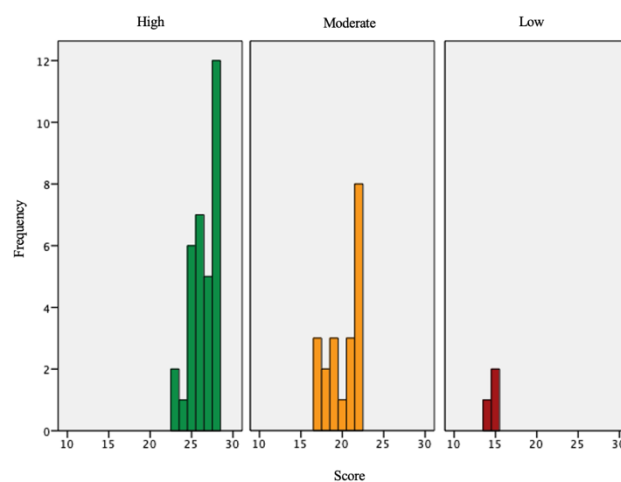


Figure 4: Histogram of college student's educational measurement and evaluation capability

The t-test was analyzed the difference between mean score of students' educational measurement and evaluation capability posttest and pertest score. The result showed that posttest score ($M=23.53$, $SD= 1.02$) of the students' educational measurement and evaluation

capability were significantly higher than pretest score ($M=16.12$, $SD= 1.31$), $t(56) = 9.21$, $p=.01$ (as shown in Table 2).

	Educational measurement and evaluation capability			t	p-value
	N	M	SD		
Posttest Score	56	23.53	1.02	9.21	.010
Pretest Score	56	16.12	1.31		

Table 2: The result of t-test analysis of students' educational measurement and evaluation capability between posttest and pretest score

Conclusions and Discussion

College students reported that the highest proportion of educational measurement and evaluation capability were in the high level. In which, the college students' educational measurement and evaluation capability after using blended learning approaches and concept-based instruction were significantly higher than before using blended learning approaches and concept-based instruction. The result revealed students' capability was significant increased that reflect the integrating blended learning approaches and concept-based instruction was the effective approaches for enhancing students' outcome, according to, Hadiyanto et.al (2022) founded that included blended learning in classroom could be foster student accomplish at school and enhance students' performance for 21st century skills.

For implication, the result of this study could effort that using blended learning approaches and concept-based instruction could be developed college students' educational measurement and evaluation capability. Educators should be considered the approach into classroom which emphasized the developing the educational measurement and evaluation capability such as research for learning development course. In the future research, the comparing the other approach for developing educational measurement and evaluation capability should be considered for understanding the capability difference when were treated at least two different approaches.

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