

Blended Learning Using Lms Moodle with Social Media Application to Enhance Higher Order Thinking For Grade 6 Students

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Abstract. The objective of this research were to 1) create blended learning using LMS moodle with social media application to enhance higher order thinking for grade 6 students 2) study higher order thinking of students 3) study the achievement of students. The number samples were 24 students, obtained by simple random sampling technique. The instruments used in this research were 1) blended learning using LMS moodle with social media application 2) the higher order thinking evaluation test 3) the learning achievement evaluation test. This student pattern was one-group pre-test-post-test design. The statistics used in data analysis were Percentage, Mean, Standard Deviation and T-Test dependent.

The research findings indicated that 1) blended learning using LMS moodle with social media application to enhance higher order thinking for grade 6 students had the efficiency 81.09/80.67 2) the students' post-test score of higher order thinking was higher than pre-test score the statically significant at the level 0.05. 3) the students' post-test score of achievement was higher than the pre-test scores the statically significant at the level 0.05.

Keywords: Blended Learning, LMS Moodle, Social Media, Higher Order Thinking, Achievement, Satisfaction.

1. Introduction

Technology and innovations have rapidly evolved; it enables communication or digital transmission to be simple and instant. Hence, Education 4.0 involves changing instruction to promote students' ability to creatively integrate a body of knowledge in the real world and digital world with accumulated experience to develop innovations responding to social needs [1]. Despite that, the production of students in Education 4.0 has not made any promising progress and lacked clear direction and creativity since the old practice has still been implemented. That is, the adults are still solely responsible for imposing learning practices and do not promote students' lateral thinking or creative thinking [2].

Fostering students should promote activity, self-learning ability and self-improvement both inside and outside of school. Teachers should be able to link knowledge in the classroom to universal and local knowledge, and students should acquire knowledge themselves using technology, be able to expand knowledge and thinking from existing knowledge and have creative skills. Higher order thinking skills are, therefore, crucial for creation of innovations; analysis, evaluation and creativity are regarded as the highest order thinking skills. Thus, thinking skills are an essential indicator of learners' performance and vital to the development of students and the nation in the 21st century [3].

Towards Education 4.0, Thai students view that what is crucial includes the ability to use technology to search for information for their learning, creativity and studiousness [4]. Recently, social media have played an important role in daily life, especially in students' life in terms of communication. Thus, the application social media to classroom instruction may promote effective and systematic instruction in compliance with the educational trends and changes.

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Blended learning is integration or a blend between face-to-face instruction and online instruction [5]. In addition to face-to-face instruction, students will be given an opportunity to do a self-study through online instruction; they will study the contents, search for information and work on assignments and can interact with teachers or classmates through social media. Moreover, activities for promoting higher order thinking skills are implemented to promote students' ability to analyze, compartmentalize, decide, choose and formulate creative plans for creating innovations.

Objective of the study

- Create blended learning using LMS moodle with social media application to enhance higher order thinking for grade 6 students.
- Study higher order thinking of students who learning with blended learning using LMS moodle with social media application to enhance higher order thinking for grade 6 students.
- Study the achievement of students who learning with blended learning using LMS moodle with social media application to enhance higher order thinking for grade 6 students.

2. Method

2.1. Participants

The samples were grade 6 students. The number samples were 24 students of the total 48 students, obtained by simple random sampling technique.

2.2. Instruments

The instruments used in this research were

- Blended Learning using LMS moodle with social media application to enhance higher order thinking for grade 6 students. Blended Learning was created based on the format of ADDIE model 5 steps. Total 7 lessons.
- The higher order thinking evaluation 20 multiple choice question for pre-test and post-test. Questions were created based on revised Bloom' taxonomy [6] in analyzing, evaluating and creating stages of cognitive domain. Its difficulty indices were in the range of 0.44-0.72. Its discrimination indices were in the range of 0.20-0.56 and 0.54 for the whole reliability.
- The learning achievement evaluation 20 multiple choice question for pre-test and post-test. Questions were created based on revised Bloom' taxonomy [6] in 6 stages of cognitive domain. Its difficulty indices were in the range of 0.44-0.72. Its discrimination indices were in the range of 0.20-0.56 and 0.50 for the whole reliability.

2.3. Data collection

- First week was orientation to introduce blended learning using LMS moodle with social media application such as how to learn online, task , quiz, evaluation. Pre-test of higher order thinking evaluation were online test and the learning achievement evaluation were online test.
- Blended learning instruction by using LMS moodle with social media application to enhance higher order thinking. Students were able to use Google Search or YouTube to find new examples to support learning with face to face in traditional classroom and LMS moodle online. Moreover, students were able to create a collaboration platform on cloud by using Google applications such as Google slide, and Google doc.
- After 6 weeks of instruction period, post-test was examined in 7th week. Both higher order thinking evaluation and learning achievement evaluation were tested by online.
- To calculate the test scores.

2.4. Data analysis

Data obtained from the study was analysed with SPSS by dependent-samples t-test at the 0.05 level of significance.

3. Results

In this section, the results about the data analysis related to the objective as follows:

3.1. Efficiencies of blended learning

Table 1. The results of blended learning using LMS moodle with social media application to enhance higher order thinking for grade 6 students efficiencies (E_1/E_2).

Testing	N	E_1/E_2	Update
One to one testing	3	76.67/78.33	Revised
Small group testing	6	82.65/80.00	Revised
Field testing	15	81.09/80.67	-

As Table 1 indicates, the experimental efficiencies (E_1/E_2) of blended learning using LMS moodle with social media application to enhance higher order thinking for grade 6 students. One to one testing had efficiency 76.67/78.33, small group testing had efficiency 82.65/80.00 and field testing had efficiency 81.09/80.67.

3.2. Higher order thinking of students

Table 2. The dependent-samples t-test results of higher order thinking pre-test and post-test.

Evaluation	N	X	S.D.	t	p
Pre-test	24	6.83	2.60	-17.35	0.00*
Post-test	24	15.17	1.24		

*Statistical significance level at 0.05

As Table 2 indicates, the average pre-test score of students is 6.83, SD =2.60, the average post-test score of students is 15.17, SD =1.24. According to this result, the students' post-test score of higher order thinking was higher than pre-test score the statically significant at the level .05

3.3. Learning achievement of students

Table 3. The dependent-samples t-test results of learning achievement pre-test and post-test.

Evaluation	N	X	S.D.	t	p
Pre-test	24	9.58	1.79	-20.66	0.00*
Post-test	24	17.04	0.96		

*Statistical significance level at 0.05

As Table 3 indicates, the average pre-test score of students is 9.58 , SD =1.79, the average post-test score of students is 17.04, SD =0.96. According to this result, the students' post-test score of learning achievement was higher than pre-test score the statically significant at the level 0.05

4. Discussions

In this section, the discussions about the result related to the objective as follows:

4.1. The efficiency of blended learning

Blended learning using LMS moodle with social media application to enhance higher order thinking for grade 6 students was created by researcher had efficiency 81.09/80.67. As a result of blended learning are created based on the format of ADDIE model 5 steps.

- Step 1: Analysis: course, purpose of learning, sample, instrument and context
- Step 2: Design: learning management plan, flowchart, story board
- Step 3: Development: create a blended learning
- Step 4: Implementation: experimental efficiencies (E_1/E_2) by one to one testing, small group testing, field testing
- Step 5: Evaluation: conclusion of the results, analyse data, revised

After researcher has created the blended learning, blended learning has been examined by experts. Before conducting experiments for efficiencies by one to one testing, small group testing and field testing.

Likewise, instruction was organized according to the learning management plan. This result was consistent with the studies of Cho, C.W., & Ernest, L.K.S. (2014) [7] Exploring the effectiveness and efficiency of blended learning tools in a school of business. It found that blended learning was significantly effective in the instruction. It also enhanced learning experience of students and learning outcomes. According to Sarka, H., & Ilona, S. (2016). [8], It discovered blended learning was not only practical but also was favourable in learning. Nowadays, students likely accepted new technology. As a result, there was not problems to integrate it into learning. Weeraparwat, T. (2014) [9], Which was instructed by using blended learning. For this reason, blended learning that the researcher has created is effective.

4.2. Higher order thinking of students

The difference between the average pre-test and post-test scores of students' higher order thinking who studied with blended learning. It found that it was found statistically significant at level .05. This result showed that the blended learning and online learning integrated into classroom were more practical than traditional face to face in classroom and online learning but also integrate social media which students favourite in lesson to support students learning by doing . It absolutely enhanced higher order thinking in term of information analysis, and evaluation in order to plan new creations appropriately. This result consistent with the study of Fazzlijan, M., Adnan, K., & Mona, M. (2015) [10] The effectiveness of an interactive multimedia courseware with cooperative mastery approach in enhancing higher order thinking skills and in learning cellular respiration. It found that students that used MML and MCML were more capable to developing potential solution to solve high order thinking skill problem. Jihyun, L., & Hyoseon, C. (2017). [11] What affects learner's higher-order thinking in technology-enhanced learning environments? The effects of learner factors. It found that technology enhanced learning environment revealed that learners' higher order thinking was strongly and directly affected by deep learning approaches and indirectly affected higher order thinking. Sarawut, S. et al. (2015) [12] Which was studied student' higher order thinking by using blended learning to enhance higher order thinking that found statistically significant at level 0.05.

4.3. Learning achievement of students

The difference between the average pre-test and post-test scores of students' learning achievement who studied with blended learning was found statistically significant at level .05. This result showed that the blended learning conducted are more traditional face to face in classroom and online learning but also integrate social media for searching new information, talk, question-answer, task performance, work submission, test and evaluate through social media which students preferred blended learning that encouraged students learn by themselves. This result is consistent with the studies of Dorin, H. (2015) [13] Improving efficiency of learning in education master programs, by blended learning. It found that blended learning strategy caused a student become sponsor and participator in the construction of the information's meanings, problem reframing, through exploration and research, and applying what they gain in new different contexts. Chang, C.C. et al. (2014) [14] Pensri Panyakaew (2017) [15] Which was studied students' learning achievement by using blended learning to enhance higher order thinking that found statistically significant at level 0.05.

5. Conclusions

In conclusion, this study demonstrates that the blended learning instruction are superior compared study result to enhance student's competency in analysing, evaluating and especially creating. Moreover, to encourage students to have self-learning. Even though, they are not study in classroom.

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