The Effect of Blended Learning and Self-Efficacy on Learning Outcome of Problem Solving (Learning Strategy Improvement for Health Students)

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ABSTRACT

This quasi experimental research aimed at understanding the effect of blended learning and self-efficacy learning strategy on the learning outcome of problem solving strategy in health students. The subjects were 75 students of Midwifery Department in Malang. The data of learning outcome were collected through questionnaire for self-efficacy and test for problem solving strategy. Data were analyzed using Two-Way Anova. The result of the study showed that: (1) the learning outcome of blended learning with station rotation model served better result than individual rotation; (2) the high self-efficacy students had higher mean score than low self-efficacy students; (3) there was an interaction between blended learning strategy and self-efficacy toward the learning outcome of problem solving.

Keywords: *Blended learning, Self-efficacy, Problem solving*

INTRODUCTION

Islamic studies is one of the important courses in midwifery department because it becomes basic knowledge to construct their attitude during the treatment for patients. However, the fact showed that there is still a limited number of problem solving strategy as a learning outcome. Besides, Islamic studies has a broad scope which covers all matters which are addressed by Allah and His Messenger to all of His believers; they are in the forms of *aqidah*, pray, morality, sharia, *mu'amalah* rules, and both His order and prohibition. Unfortunately, the huge coverage of the materials does not balance with the time allocation which are only 2 credits.

The learning outcome of the students in Islamic studies is less satisfactory which is caused by some factors. One of the dominant factors is the conventional learning strategy, that is class-based learning with lecturing method. It which has been used until today is limited to face-to-face classroom interaction.

The result of the interview with the Islamic Studies lecturers in Health Polytechnic of Malang implied that lecturing was the most used learning method, followed by discussion, and assisted by the use of LCD projector and powerpoint slides; those method would need a longer time to explain the broad scope of the materials. The students were enthusiast to follow the course. The discussion became more interesting when they discussed about popular issues such as pluralism and tolerance in religion, Islam and its related health issue, namely: circumcision for women, polygamy, rights of reproduction, abortion, contraception in Islam, women sexuality, and HIV/ AIDS from the perspective of Islam. Nevertheless, the discussion in each topic was not complete because of the time limitation in the classroom.

Therefore, a solution is needed to be an alternative for the classical learning method. When lecturing becomes the only method used by the lecturer, the problem solving ability of the students are not fully developed since they are not used to think outside the context given

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by the lecturer. The students are also passive in choosing the additional learning materials outside those given by lecturer. In fact, there are many learning sources other than the lecturers, especially in this digital era where learning sources can be obtained easily through the help of information technology[1].

In this digital era, traditional didactic teaching and online learning have been modified and gradually replaced by blended learning[2]. It combines two different learning environments which are face-to-face learning interaction and online learning[3]. Blended learning is an innovative concept which comprises the advantages traditional teaching and IT-supported learning includes offline and online learning[4].

One of the students' characteristics which affect the learning outcome is self-efficacy. Self-efficacy is a person's belief for his/her ability to learn or perform a behavior at certain level and dynamic construction which can be influenced and changed by reciprocity[5,6]. According to this matter, self-efficacy becomes an important factor to be examined, related to the aspects of individual identity. Self-efficacy refers to which extend an individual believes that he/she can do a certain task or achieve certain goal[6]. Internet self-efficacy (ISE) from the adults can predict their learning outcome and maintain the online learning activities[7,8]. ISE refers to an individual's ability to self-evaluate the use of internet and independently complete their task[8,9]. Besides, more positive attitude[10] and a better searching strategy[11,12] can be more highly developed and predicted by ISE. Therefore, this study also tried to explore the role of ISE along with blended learning to predict student preferences for the internet-based learning environment.

Students' beliefs and learning ability affect the learning performance, and self-efficacy can be used to predict learning performance[5,6,13]. Thus, the students with higher self-efficacy show better learning performance[7,9,14]. Teo found that teacher's self-efficacy influences how the technology will be used in the classroom[15].

METHOD

This study was designed with a quasi-pretest-posttest nonequivalent control group design 2x2 factorial version[16]. The independent variable was blended learning strategy with dimensions, namely station rotation model and individual rotation model of blended learning, (2) moderator variable was self-efficacy, (3) the dependent variable was the result of problem solving learning.

The subjects were 75 students of Midwifery Department in Health Polytechnic of Malang (from 2 class). The subjects in each class were divided into two groups which were the group with high self-efficacy and group with low self-efficacy. Cluster random sampling techniques was used to consider that this research was not possible to be done with random sampling[17]. The instrument consisted of problem solving test and self-efficacy questionnaire. The collected data are numerical type so that they are presented descriptively in the form of mean and standard deviation[18], then analyzed using Two-way Anova test.

FINDINGS

Table 1. Pretest Score of Problem Solving

Self-efficacy	Control Group or individual rotation model of blended learning		Experimental Group or station rotation model of blended learning	
	Mean	Std. dev.	Mean	Std. dev.
Low	66.94	10.31	61.67	9.00
High	67.50	7.34	67.50	9.85

Table 2. Pretest Score of Problem Solving

Self-efficacy	Control Group or individual rotation model of blended learning		Experimental Group or station rotation model of blended learning	
	Mean	Std. dev.	Mean	Std. dev.
Low	63.89	6.08	73.00	5.61
High	67.00	6.77	83.41	6.62

Table 1 and 2 show that in the students in experimental class or in the group who learned using station rotation model had low self-efficacy ability with the mean score 73.0, with standard deviation 5.61, while for students who have high self-efficacy, the score reached 83.41, with a standard deviation of 6.62. The students in the control class or those who learned using individual rotation model obtained low self-efficacy with mean score of 63.89 and standard deviation of 6.08. On the other hand, the students with high self-efficacy reached 67.0, with a standard deviation of 6.77.

The students in control group, or the students who used individual rotation model of blended learning strategy obtained low self-efficacy with mean score of 63.89, with standard deviation of 6.08. In contrast, the students with high self-efficacy had the mean score of 67.0, with the standard deviation of 6.77.

Anova test result showed that the learning strategy affected the score of learning outcome from blended learning strategy in Islamic Studies course. It could be seen from F value of 74.351 with p-value = 0.000 (there was a significant difference in the posttest score of problem solving learning between the students who were given station rotation model and rotation model). It was strengthened by the mean score of problem solving learning outcomes in students of experimental group of 79.19, which was higher than control group of 65.52. Thus, the mean score in posttest in experimental group was higher than control group, and it could be concluded that the students who used station rotation model performed better than students who used individual rotation model in the problem solving learning outcomes for Islamic Studies course.

It was also shown that the self-efficacy also affected the problem solving learning outcomes. The F-value for the learning outcomes of problem solving based on the self-efficacy was 20.868 with p-value = 0.000 (there was a significant different in the posttest result between the high and low self-efficacy students). According to the fact that the students with high self-efficacy performed higher scores, generally it was known that the students with higher self-efficacy performed better learning outcomes ability than low self-efficacy students in problem solving learning.

The interaction lines between learning strategy and self-efficacy has F-value = 6.080 with p-value = 0.016 (there was a significant different in the posttest score of problem solving learning outcomes from the interaction between learning strategy and self-efficacy). In other words, there was a shared effect between the blended learning strategy and the posttest of problem solving learning outcomes.

DISCUSSION

According to result, there was a difference of learning outcomes between the students who were given station rotation model of blended learning and individual rotation model of blended learning. The mean of posttest score from the students who were given rotation model of blended learning was higher than the students who were given individual rotation model. Thus, it was concluded that the students in station rotation model of blended learning learned better than the students in individual rotation model of blended learning's group.

The findings in his study proved that blended learning which was done by creating learning groups was better than individual blended learning. This finding was in line with the result of research conducted by Escurado et al. who found that virtual learning model which is done in group give better outcomes than virtual learning model which is done individually[19]. The online learning that only provided limited interaction among the learners would limit their opportunity to develop

the ability to solve a more complex problem. In a group work, the learning outcomes tended to give better result because there were opportunities for the learners to interact with their peers through discussion. In the discussion, the learners with less basic knowledge could obtain information from other learners who has different background.

Active learning was possible to take place because the environment in station rotation model of blended learning provided the situation for the learners to construct their knowledge independently by doing problem analysis. Then, the learners were stimulated to find solution though online media, and given opportunity or time to share their findings. In this stage, the learners would exchange information and give opinion to the others through small discussion among themselves so that it became an assimilation process of information which constructed new information with higher accuracy to solve a problem.

The research result also confirmed that self-efficacy affected the score of blended learning outcome in Islamic Studies. It was in line with the research of Isaacson & Fujita which showed that learners who had higher self confidence in learning would be more accurate in predicting the result test, more realistic in their life goals, more likely to conform their belief with the test result, and more effective in choosing questions in a test which answers they had believed previously[20]. In other words, self-efficacy gave big influence towards the learning outcomes. The high self-efficacy learners would be faster in accessing the learning source and making decision.

The various characteristics which were related to the environment on online learning and students' learning performance could be affected by internet self-efficacy experienced by the learners[21,22,23]. It was generally believed that the performance of online learning could be improved when the students had high self confidence in their computer skills or when they spared their times to learn such skills. The students' perception about internet self-efficacy and their ability to do learning task affected their performance[24].

CONCLUSION AND SUGGESTION

The conclusion are: 1) there was a significance difference in the problem solving learning outcome of Islamic Studies between the students who used station rotation model and individual rotation of blended learning, 2) there was a significance difference in the problem solving learning outcome of Islamic studies between groups of students who have high self efficacy with students who have low self efficacy, 3) there was an effect of the interaction between station rotation model and individual rotation of blended learning with the students' self-efficacy toward the problem solving learning outcome in Islamic Studies course.

The suggestions for its learning use are: 1) it is recommended for the lecturers to use blended learning strategy in Islamic Studies course by considering the suitability of the materials which will be taught, 2) blended learning strategy requires several facilities and learning sources which can support the learning outcomes, so that it needs sufficient preparation before being implemented in the higher education, 3) the result of this research showed that students' self-efficacy affected the learning outcomes significantly; thus, it is suggested that Islamic Studies lecturers in Midwifery Department to consider students' self-efficacy in the learning process.

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