

The Effect of e-Learning Toward Student Learning Outcomes

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Abstract— This study seeks to determine the impact of e-learning in education on students' learning outcome. We employ a quasi-experimental design in this study. The subject of this study consisted of students of Sport Science Faculty at State University of Medan. The independent variables in this study are e-learning using an Edmodo platform that serves to provide e-learning materials and conventional learning method. The dependent variable is the students' learning outcome. The data of learning outcomes were analyzed using t-test. The results indicate that the learning outcomes of control class scored 74.31 at 9.47 standard deviation. As for the experimental class, the average score of learning outcomes was 83.56 at 8.26 standard deviation. Significant differences exist between the learning outcomes of experimental and control classes at a significance level of $0.000 < 0.05$, indicating that the experimental class scored 9.25 higher than the control class. From this, it can be stated that students who use e-learning scored higher than those who use conventional approaches to learning. This research conclude that e-learning can have an impact on student learning outcomes.

Keywords: *e-learning, learning outcomes, student.*

I. INTRODUCTION

Undergraduate students' understanding of stress in a sport situation is critical for them in teaching stress management techniques for high school students and for athletes in match situations. It would be better for lecturers to have deeper and comprehensive knowledge on this topic in order to allow their students to obtain good knowledge of stress and stress management in a sporting situation. Lecturers are required to be creative in delivering their lecture so as to stimulate students' ability to absorb the material presented. From the observation of learning process on this topic find that lecturers who teach the concept of stress and stress management using conventional method, i.e. lecturing in one-way method of communication, leave students with comprehension of the material presented by only 16.67% (Excellent category).

To improve the quality of learning, lecturers can adopt a technology-based learning. Technology has the potential to

assist in learning processes for the purpose of developing learners' knowledge; providing relevant information to explore the supporting knowledge; providing context for learning by doing, social media to support learning by talking, and serving as a intellectual partner to support learning by reflecting [1]. One form of technology utilization in education is e-learning. The term e-learning is made of "e" and "learning", which stands for electronic and learning. The use of *e-learning* in education facilitates student-centered learning as the learning processes do not depend on the lecturer because the latter no longer serves as the only source of knowledge for students. Students can have access to sources of information anytime and anywhere to support their independent learning activities [2]. Therefore, the use of e-learning in education provides a better option to improve student learning outcome.

Learning that utilizes an e-learning system is expected to create a positive learning atmosphere for students to further improve their learning outcomes. This research aims to determine whether e-learning can have an impact on student learning outcomes for the topics on stress management in Sports Psychology Courses.

II. METHODS AND RESULTS

This study employed a quasi-experimental research design. The subject of this study is students of Sport Science Faculty at the State University of Medan. They are divided into control group consisting of 32 students of Sport Coaching Education Program and experimental group consisting of 32 undergraduate students majoring in Physical, Health Education and Recreation. Learning activity in the control group was conducted in a conventional method of teaching, i.e. lecturing in a one-way method of communication between lecture and students; on the other hand, learning activity in the experimental group was conducted using an e-learning system. Thus, the independent variables were conventional learning and e-learning system that adopts Edmodo as the provider of

e-learning materials, and the dependent variable was student learning outcome.

Statistical analysis was conducted on data of learning outcomes in this study. To identify the distribution of all the data collected, normality and homogeneity tests were performed prior to t-test. A significance level of 5% ($p=0.05$) is used for statistical test. The results indicate that the learning outcomes of control class scored 74.31 in average at 9.47 standard deviation and that the learning outcomes of experimental class scored 83.56 in average with a standard deviation of 8.26. The results of normality test demonstrate that the control group had a significance value of $0.029 < 0.05$ and the experimental group had a significance value of $0.000 < 0.050$, thus it can be stated that the data of both group were not normally distributed. As the data were not normally distributed, a parametric statistical test (assumption of normality not being fulfilled) can not be conducted. Therefore, a non-parametric statistical test (non assumption) was conducted on the data.

TABLE I. TEST OF NORAMILTY DATA

		Learning outcomes of experimental class	Learning outcomes of control class
N		32	32
Normal Parameters ^{a,b}	Mean	83,56	74,31
	Std. Deviation	8,258	9,468
Most Extreme Differences	Absolute Positive	,225	,163
		,187	,118
	Negative	-,225	-,163
Test Statistic		,225	,163
Asymp. Sig. (2-tailed)		,000 ^c	,029 ^c

a. Test distribution is Normal.
 b. Calculated from data.
 c. Lilliefors Significance Correction.

Data test after a statistical treatment of the data indicate that significance differences exist between the learning outcomes of experimental group and of control group at a significance value of $0.000 < 0.05$, where the experimental group scored 9.25 higher than the control group. Thus, it can be stated that the students that adopt an e-learning system scored higher on their learning outcomes compared to their counterparts that adopt a conventional method of learning.

TABLE II. AVERAGE SCORE OF LEARNING OUTCOMES

Group	N	Mean Rank	Sum of Ranks
Learning Eksperimental	32	41,55	1329,50
Control	32	23,45	750,50
Total	64		

TABLE III. TWO-SAMPLE T-TEST

	Learning outcomes
Mann-Whitney U	222,500
Wilcoxon W	750,500
Z	-3,946
Asymp. Sig. (2-tailed)	,000

a. Grouping Variable: Groups

III. DISCUSSION

Before The results of study indicate that significant differences exist between the learning outcomes of experimental class and of control class. The students who adopt an e-learning system scored higher than those who adopt a conventional method of learning in terms of learning outcomes. From this, it can be concluded that e-learning has an impact on student learning outcomes. The results of this study confirm those of indicating that e-learning group scored higher than their non e-learning counterparts in terms of learning outcomes[3]. The results of studies that use Edmodo in learning also confirm that have shown effectiveness in learning and significance difference in learning outcomes between students that use Edmodo and those that use conventional method of learning [4][5].

An improved learning outcome from an effective learning is possible because the learning that adopts an e-learning system can develop students' cognitive competence [5]. It also enriches the teaching and learning system by improving teacher-learner interaction [6]. Moreover, it facilitates students to access education anywhere and to get adequate learning materials from any sources without depending on the University where they study [2].

IV. CONCLUSION

From the results of analysis presented above, we can conclude that e-learning has an impact on the learning outcomes of students who have taken Sport Psychology course in Physical Education, Health and Recreation department of Sport Science Faculty at State University of Medan.

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