

Effect of Edmodo towards interests in mathematics learning

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Abstract. The purpose of this paper is to know the effect of Edmodo towards interest in mathematics learning of elementary school teacher education students. This type of research used the experimental method with pretest-posttest control the only group. The sample is taken using cluster random sampling from students of elementary school teacher education. The instrument used in this research is a questionnaire. The questionnaire is used to know the student's interests in mathematics learning. Data Analysis technique of quantitative used N-gain and t-test (paired-samples t-test). Based on the results of the test can be concluded that the use of Edmodo can improve learning interests in mathematics.

1. Introduction

Mathematics is a basic science that plays an important role in the development of science and technology [1]. The rapid development of science and information technology has a positive impact on the development of information in education [2]. The development of highly advanced technology in the modern era and globalization also allows various activities to be carried out quickly and efficiently. Formal, informal and non-formal education can use information technology to access all knowledge [3]. This means that technology becomes an integral part of the learning experience and an important consideration for teachers, from the onset of preparing learning experiences through to teaching and learning with students [4]. Technological developments have had a lot of influence on our way of life, one of which is in the field of education with the use of e-learning in learning activities in schools and colleges.

The general purpose of learning mathematics, at the level of elementary school education puts pressure on reasoning, attitude formation, problem-solving ability, communicating ideas and applying mathematics skills, having an attitude of respect for the usefulness of mathematics and interest in learning mathematics [5]. The purpose of learning mathematics in universities is also emphasized on cognitive, affective, and psychomotor aspects. One of the objectives of learning mathematics in the cognitive aspect is having an interest in learning mathematics. Interest as a feeling or choice for certain activities, ideas, or objects [6]. Interest has the main characteristics of doing self-selected and enjoyable activities so that it can form a habit in a person. Individual interest and prior knowledge of the contents of the mathematics exhibition were used in predicting situational interest and mathematical knowledge test results in the exhibition, controlling for the effects of general cognitive competencies [7]. In mathematics learning, interest can be seen as pleasure and interest in understanding mathematics further and habits to learn mathematics. Interest known as condition or situation is related to individual wishes or necessities. It can define as the preference in someone's soul together with happiness [6].



Based on observations during the learning of Lower Class Elementary Mathematics courses most students have not prepared textbooks or notebooks when learning begins, students do not prepare the material to be learned during learning, students rarely ask lecturers and speakers, pay less attention during mathematics learning, and some students did not work on assignments and cheated during midterm exams and semester exams [8]. This is based on observations at the time of semester exams, as many as 60% of student answers have the same mistakes, it is possible that happened because students cheated. Besides that, the interest of elementary school teacher education students to take the final assignment with elementary school mathematics concentration is still very low. This is evidenced by only an average of 4-10 students per lecturer who takes the final task of mathematical concentration, while at the concentration of other subjects an average of 20-30 students per lecturer [9].

Many factors influence the interest in learning mathematics. Innovative and varied learning is expected to be an alternative so that student interest increases. One of the learnings that are supposed to increase the interest in learning mathematics is e-learning learning. There are various types of e-learning learning including Portals, Blogs, Websites, Edmodo, etc. E-Learning is a form of learning that utilizes electronic media and Information and Communication Technology (ICT) which allows learning material to be conveyed to students without the limited learning process in a space [5,6]. E-learning as the use of electronic technology to send, support, and improve teaching, learning, and assessment [10].

Further e-learning can include various applications and processes such as computer-based learning web-based learning, virtual classroom, etc. meanwhile online learning is part of technology-based learning that utilizes internet resources, intranets, extranets. More specifically e-learning as the use of intranet technology to distribute learning materials, so students can access from anywhere [8].

One of the e-learning that is currently in trend is e-learning using Edmodo. Edmodo is a limited social network with teachers as the center. Students can enter into a circle in Edmodo only if invited by the teacher, therefore students know that the people in the circle are only classmates. Everyone in Edmodo is anonymous, including teachers. So that the atmosphere in Edmodo circle remains conducive, educators will become a kind of supervisor. educators can give points for students whose opinions are good and useful. The absence of distance as a result of the internet can be used as an alternative learning. The nature of the internet that can be contacted at any time, means that students can take advantage of educational programs provided on the internet at any time according to their free time so that space and time constraints they face to find learning resources can be overcome [10].

Further Edmodo is a free and secure learning platform available at www.edmodo.com [11]. This website looks similar to Facebook but is much more private and safe for a learning environment [12]. This study aims to investigate how a non-digital-native teacher can make use of Edmodo to set up and run an online classroom community for her students to work online concurrently with their physical classes, and to run a workshop on Edmodo for other teachers [11]. Edmodo is chosen because it is less known and less used even though it provides more secure and easy platform than a popular social network, e.g Facebook [13]. When compared to other social media learning management systems, Edmodo has the following advantages: similar to Facebook, easy to use, closed group collaboration, only those that have group code that can take classes, free, accessed online, available for smartphone, Android and iPhone devices, does not require a server at school, can be accessed anywhere and anytime, Edmodo is always updated by developers, Edmodo can be applied in one class, one school, between schools in a city or district, Edmodo can be used for students, teachers, and parents, Edmodo is used to communicate using social media models, learning materials, and evaluation, Edmodo supports the team model teaching, co-teacher, and teacher, There is a notification, the badge feature can be used to increase student motivation [12].

Based on the description above, the purpose of this study is to describe the effectiveness of Edmodo's e-learning in terms of the interest in learning mathematics for elementary school teacher education students.

2. Method

This study uses a quantitative approach, with the design of One-Group Pretest-Posttest Design. One-Group Pretest-Posttest Design involves three steps: first administering a pretest measuring the dependent variable; second applying the experimental treatment of X to the subjects; third administering a posttest, again measuring the dependent variable [14]. The sample used was 37 elementary school teacher education students who took high school elementary mathematics courses taken randomly. In High-Grade Elementary Mathematics courses students are expected to have the ability to base algebra and arithmetic and be able to use them to solve problems in everyday life. The material learned in High-Grade Elementary Mathematics courses, namely the relationship of distance, time and speed; two-dimensional figure; geometry; symmetry; units of measurement; comparison; and geometry transformation.

To obtain data about interest in learning mathematics used questionnaire techniques. The indicators are trying to learn mathematics, doing individual assignments, doing group assignments, taking notes on math lessons, activating learning activities, implementing math tests. Furthermore, this interesting data is converted into three categories: high interest, moderate interest, and low interest. High interest if the number of students' interest in learning scores is at least more than 88 points, moderate interest if the total score of student learning interest is between 56 and 88 points, and if a student scores less than 56 learning scores are obtained then students have low interest.

Edmodo's use in high-grade elementary mathematics learning becomes effective if students (1) have an interest in the high category of interest scores of at least 88 points, and (2) the percentage of increasing interest in the medium category. To answer this, data analysis techniques use one sample t-test and N-Gain. One sample t-test aims to determine differences in the conditions of interest in learning mathematics between before and after using Edmodo, while N-Gain aims to determine the increasing interest in learning mathematics before and after using Edmodo. The acquisition of the average value of N-gain that has been obtained is then interpreted based on table 1.

Table 1. Intepretation of N-gain (g)

N-Gain (g)	Intepretation
$g > 0,7$	High
$0,3 < g \leq 0,7$	Middle
$g \leq 0,3$	Low

3. Result And Discussion

3.1. Result

After calculating the data of interest in learning mathematics before using Edmodo, data was obtained that the score of learning interest was in the range of 56 to 115 with a mean of 97.76 and a variance of 104.911. For interest data, after using Edmodo it was found that the score of interest in learning was in the range of 83-117 with a mean of 103.97 and variance of 96.294.

From the results of the description, it can be seen that there is a difference in average interest in learning mathematics between before and after using Edmodo. This can be seen from the mean before using Edmodo by 97.76 and after using Edmodo by 103.97. But when viewed based on the criteria of interest in learning mathematics both of these are in the high-interest category because the mean is at intervals of more than 88. These results are also strengthened with the results of statistical calculations (see table 2), that the significance coefficient before and after using Edmodo is 0,000. Based on these results, students have a high interest in learning mathematics because it has an average of more than 88.

Table 2. Output statistic one-sample test

	Test value = 88		
	t observation	Df	Sig.
Pre interest	5.794	36	.000
Post interest	9.903	36	.000

To find out the number of students who experience an increase in interest in learning is done by N-gain test, while the summary of results can be seen in table 3.

Table 3. Summary of output N-Gain

N-Gain (g)	Improved Interpretation	Amount	Percentage
$g > 0,7$	High	8	22
$0,3 < g \leq 0,7$	Middle	6	16
$g \leq 0,3$	Low	23	62

Based on Table 3, it can be seen that the percentage of students who experienced an increase in learning interest in the high category by 22%, an increase in learning interest in the middle category by 16%, and an increase in learning interest in the low category by 62%. This shows that the use of Edmodo in learning mathematics has a low effect on increasing interest in learning.

3.2. Discussion

The results of the questionnaire on students' interest in learning mathematics before using Edmodo, it was seen that students had a high interest in mathematics courses conducted through Edmodo e-learning. This is because, it is likely that students already know Edmodo, so they do not experience difficulties in participating in learning activities through Edmodo, especially when downloading material, doing assignments and doing quizzes. All students can work on assignments and quizzes through Edmodo. The learning activities in the classroom are the same, students look enthusiastic to go forward and present the material in front of the class individually. The enthusiasm of students in learning mathematics is also supported by the results of questionnaires given to students at the end of learning. The questionnaire results show that there are no students who have low interest in learning mathematics. An increase in students' interest in learning mathematics from before and after proving that Edmodo learning can be an alternative learning method used to increase interest in learning mathematics. However, the percentage of increasing interest according to Table 2 is in a low category so that it does not correspond to the percentage of expected increase in interest in the medium category. This is because the results of the questionnaire interest in learning mathematics at the time of the pretest were in the high category, so the increase was not significant with the results of questionnaire interest in learning mathematics at posttest.

A person's interest in learning does not arise by itself. There are several factors that can influence a person's learning interest, especially when someone is learning mathematics. Not infrequently people are afraid to learn mathematics. Ranging from elementary students to even students, there are still many who think that mathematics is a difficult and scary thing so that just by hearing the word mathematics they are afraid. Everyone has different factors that can affect their interest in learning mathematics. This is similar to Defining interest as preferences for particular work activities" [15]. Further "interests can be described with regard to their target, direction, and intensity. The target of interest are activities; the direction can be described as interested or disinterested, and the intensity can be labeled as high or low" [16]. Interest are preferences for specific types of activities when a person is not under external pressure [12].

Based on the results of the questionnaire on the factors that influence students' interest in learning mathematics, we can see that the factors that most influence the interest in learning mathematics of elementary school teacher education students are internal factors in the form of motivation in themselves to follow mathematics learning. For them, that inner motivation is very important. This is because, when we do not have the motivation to learn mathematics, no matter how interesting mathematics learning is designed we will not be interested at all. The second factor that most influences students' interest in learning mathematics is the encouragement and attention of their parents. So when parents ask them to learn but parents ignore them, do not give encouragement and attention to them then a child will tend to be lazy and have no interest in learning. This is similar with interest refers to the liking and willful engagement in an activity [17–19]. Further interest is similar and related to curiosity. Interest is an

enduring characteristic expressed by a relationship between a person and particular activity or object [2,15].

Mathematics learning media turned out to occupy the third position which was chosen a lot on the factors that influence students' interest in learning mathematics. It is undeniable that to learn mathematics, we need a learning medium in order to foster interest in learning mathematics and understanding the mathematical concept itself. This is evident when the learning process of mathematics by using Edmodo e-learning, students feel happy and enthusiastic to learn. In addition to the use of e-learning is something new for them, the use of Edmodo is also not far from the name of the gadget (Android phone). As we all know, nowadays it can be said that a child cannot be separated from his gadget for a long time. This is similar to the student strongly agreed to use this platform for making inquiries on information posted by the lecturers [20]. Edmodo can also be integrated with realistic mathematical approaches so that when students are able to solve problems then upload to Edmodo indirectly fosters math literacy and interest in learning [21].

In addition to the three factors above, there are still several factors that influence students' interest in learning mathematics such as attention when learning mathematics, the ability to solve mathematical problems, the atmosphere of the house to learn mathematics, family economic conditions, methods of teaching lecturers, relations with lecturers, learning time of mathematics, classroom layout that supports student activities in the community.

4. Conclusion

Edmodo's e-learning learning can increase the mathematics learning interest of elementary school teacher education students. This can be seen from the increase in the results of the interest questionnaire given at the pretest and posttest. The factors that influence student interest in elementary school teacher education, namely attention when the learning process of mathematics, motivation to follow mathematics learning, the ability to solve mathematical problems, the atmosphere of the house to learn mathematics, family economic conditions, encouragement and attention of parents, teaching methods lecturers, relations with lecturers, mathematics learning media, mathematics learning time, supporting classroom layout, and student activities in the community.

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