

The effect of e-learning on the Geography Education students' levels of understanding at Universitas Veteran Bangun Nusantara

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ABSTRACT

This study aims to: (1) Find out the effect of e-learning on the geography education students' understanding (2) Evaluate the geography education students' levels of understanding after the use of e-learning. This study was One Group Pretest – Posttest Design. The effect of e-learning on the levels of understanding was measured using pretest and posttest which was continued with analyzing using t-test and statistical description. This study results: (1) There was an effect of e-learning on the geography education students' levels of understanding in the hydrogeography material which showed with a p.value sig. (2-tailed) at 0.001 (lower than 0.05) and t-statistic value of 4.236 which is greater than t-critical value ($4.236 > 1.796$), (2). Geography education students' levels of understanding after the use of e-learning increased as seen from statistical description which showed that 25% students (3 students) is partially understand and occuring misconception which is the rest of 75% (9 orang) students is partially understand without misconception

KEYWORDS

e-learning
hydrogeography
One Group Pretest –
Posttest Design

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1. Introduction

In this modern era, lecturers should be dynamic towards the rapic technological change. Conventional teaching method is concerned to slow down the students' development and find it difficult to follow tecnological development, whereas the use of technology it-self facilitates the lecturers to convey the material. Moreover, the use of technology helps students to be more ease to understand the lectures given. E-learning based media is one of the alternatives which can be used to constantly increase the learning quality because it takes advantage of the use of technology. Universitas Veteran Bangun Nusantara is a private university that have applied e-learning in the learning process, including in the geography education. Geography comes from geo and graphien which mean the earth and writing, respectively. However many terms have developed according to the experts. Richard Hartshone in the Sumaatmadja (1997; 9) said that “geography is that discipline that seeks to describe and interpret the variable character from place to place of the earth as the world of man”. Hartshorne wants to emphasize that the places where humans live have different characters, and the science of geography seeks to explain and interpret the character of the places on the earth's surface. Based on Permendiknas No. 22 of 2006 concerning Standar Kompetensi dan Kompetensi Dasar for High School Education, the objectives of Geography are as follows: a. Understand spatial, environmental and regional patterns and related processes, b. Master basic skills in obtaining data and information, c. Communicate and applying geographic knowledge, d. Displaying a caring behavior towards the environment and utilizing natural resources wisely and having tolerance for the cultural diversity of the community. E-learning or electronic learning is a learning concept carried out through electronic media networks. The development of highly advanced technology in the modern era and globalization allows various activities to be carried out quickly and efficiently. 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, colleges, course places and even communities - online communities have started to use this kind of concept. Along with the development of information technology and the demands of the globalization of education and distance learning, various concepts have been developed to replace traditional learning methods, one of which is the concept of e-learning. E-learning can be used as an alternative to problems in the education sector, either as an addition, complement or substitute for existing learning activities. The use of e-learning at a university educational institution is needed to assist lecturers in improving the learning process. As is well known, lectures at universities have more theoretical and practical learning time than class planning in the classroom. By utilizing e-learning as a learning medium, it can be used as a complement or a supplement to improve learning in the classroom so that it can help improve understanding of lecture material. Based on the aforementioned background, several problems can be identified as follows: Not yet known the effect of e-learning on the understanding of lecture material for Geography Education Study Program students of Universitas Veteran Bangun Nusantara Sukoharjo, the level of understanding of Geography Education Study Program students of Veteran Bangun Nusantara Sukoharjo University e-learning.

2. Method

This study was conducted at the Universitas Veteran Bangun Nusantara Sukoharjo. This study is quantitative research with One Group Pretest - Posttest Design. This type of research is used because in reality it is difficult to get a control group to use for research (Sugiyono, 2013). Data that is used in this study is in the form of data on the level of understanding of geography course material, especially in the Hydrogeology subject. The data collection techniques used were: 1. The documentation to obtain student name lists and photos of lecture activities. 2. Tests were carried out to collect data about the learning outcomes of geography. In this case, the test instrument used is in the form of mastery of Geography course material, especially in the hydrogeography subject. Analysis of the data used in this study was descriptive statistical methods and parametric inferential. Descriptive statistical analysis is used to describe or provide an overview of the data in the form of tables and graphs of the average value at the level of understanding of students' hydrogeographic material. Hypothesis testing in this study used t-test analysis with a significance level of 5% ($\alpha = 0.05$). Before the analysis of variants for hypothesis testing is carried out, it is necessary to conduct a prerequisite test first with the normality test.

3. Results and Discussion

3.1. The effect of e-learning on the Geography Education students' levels of understanding at Universitas Veteran Bangun Nusantara Sukoharjo.

Table 1. Paired Sampel Statistics of students' understanding of hydrogeography material.

		Paired Samples Statistics			
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest	843.333	12	257.023	.74196
	Posttest	867.500	12	213.733	.61699

Table 1 shows that there is a significant difference between the average of pretest and posttest scores. The average of pretest score before the use of e-learning is 84.33, whereas after the use of e-learning the average posttest score is 86.75. Thus an increase of score is 2.42. The difference between pretest and posttest showed that the use of e-learning increased the understanding of hydrogeography material. During the use of e-learning students can utilize a variety of information and communication technology to access

learning material so as to facilitate students' thinking process, so that it can foster and increase students' interest and creativity.

Table 2. Paired Sampel correlations of students' understanding of hydrogeography material.

Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	Pretest & Posttest	12	.662	.019

Table 2 shows that there is a correlation between pretest and posttest because the p.value sig. (2-paired) is lower than 0.05 ($0.019 < 0.05$). It means that there was a correlation of data and variable of pretest and posttest.

Table 3. Paired Sampel T-test of students' understanding of hydrogeography material.

Paired Samples Test									
Paired Differences									
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	Pretest - Posttest	241.667	197.523	.57020	367.166	116.167	-4.238	11	.001

Table 3 shows that a p.value sig (2-paired) is lower than 0.05 ($0.001 < 0.05$) and t-statistic value of 4.236 which is greater than t-critical value ($4.236 > 1.796$) which mean that there was an effect of e-learning on the students' understanding. Negative value on the t-statistic value showed that pretest score is lower than posttest score. This is because e-learning provides interactive tutorials so that is makes students felt more interested in the learning process.

Based on the results of the study, the use of e-learning in geography is significantly better than without using e-learning because it increased the students' activities. Students do not just get monotonous things such as online classes, power point of materials, listening lecturers's voice note but also learn with more accessible source of interactive materials so that understanding of the material is more effective and efficient. During learning process using e-learning, the lecturer tends to act as a facilitator, that is giving direction to students as needed. The activeness of students as participants is emphasized in this learning, so that it will foster a high enthusiasm for learning and in the end students' learning outcomes increase. At the beginning of learning process, students' conditioning in the online class experienced a few obstacles. Students are still confused because e-learning was still something new for them. But slowly the obstacles began to decrease because students began to interest to the e-learning during learning process. Before the use of e-learning, students only depend on conventional learning and their independence has not been optimal, so the learning outcomes obtained are lower. This means that in this study students who get learning using e-learning get better learning outcomes than students who only get conventional learning. An increase in learning outcomes indicates that the application of e-learning in geography learning can increase students' understanding of the material being studied. During learning, students can actively think, so that the learning

system that occurs can foster students' interest and motivation in obtaining learning material. In the end, this condition can improve students' learning outcomes.

E-learning can be used as an option that can reduce student boredom and can stimulate geographic thinking skills so that students are interested in being active in understanding and solving problems related to the material being studied. E-learning provides opportunities for learners to take control of their respective learning success, meaning that learners are given the freedom to determine when to start, when to finish, and which parts of the module they want to learn first. They can start from the topics or pages that interest them first, or they can just skip the parts that they think had been mastered. If they have difficulty understanding a passage, they could repeat it again until they understand. If, after repeating, there are still things that they do not understand, the learner can contact the lecturer via email or participate in interactive dialogues at certain times. This independent learning method is more effective than other learning methods which force it to study in a predetermined order. Based on the study results, e-learning can be applied as a method for learning geography at the university level. E-learning is used to support conventional learning. This is because e-learning is web-based and applications that can be installed on Android or IOS so that it can be mobile.

3.2 Geography education students' levels of understanding after the use of e-learning

Table 4. Levels of Understanding

tingkat	Deskripsi Pemahaman Konsep	Kriteria penilaian
0	don't understand at all	blank answers, answers in the form of repeating questions, answers that are irrelevant or unclear, do not provide an explanation for the answer choices
1	misconception	wrong scientific answers, different concepts that are believed to be true, but actually contradict the concepts held by scientists
2	understand some and others there is a misconception	the answers given show the correct understanding of the concept, but also contain misconceptions
3	understand partly without any misconceptions	the answer contains part of the scientifically accepted concept
4	understand completely	the answers contain understandings that are all correct

The table of the levels of concept understanding is used to assess how much the spread of understanding of the material for students in geography course material, especially in the hydrogeography material. The use of this table is by matching students' answers to the assignments or tests that have been given with the criteria in the description of concept understanding. The number of students studied was 12 with the following results:

Table 5. Levels of Understanding on the hydrogeography material

Level	Concept Understanding	Number of Students	Percentage
0	Fully not understand	0	0
1	Misconception	0	0
2	Partially understand with misconception	3	25%
3	Partially understand without misconception	9	75%
4	Fully understand	0	0

Through the table of the level of understanding of the hydrogeography material can be shown that there are 5 descriptions that represent the levels of understanding. Table 5 shows that students that fully do not understand at all is 0%, occurring misconceptions is 0%, partially understand with misconception are 3 people with a percentage of 25 %, partially understand without misconceptions by 9 people with a percentage of 75% and 0% in the fully understand. This distribution shows that the levels of understanding of the material is influenced by the use of e-learning. It can be seen in the 5 descriptions of the second and third levels which represent the most widely used level of student understanding. E-learning refers to using the web and applications to deliver a range of solutions that enhance knowledge and skills. In this lesson, the role of computers and smartphones is optimized as a means to display and engineer text, graphics, and sound in an integrated display. The use of information technology can train students to learn how to learn. In e-learning, there are many learning resources that can be explored by students. Learning resources are not only limited to learning resources owned by the lecturers. This must also be supported by the ability of the lecturer in designing accessible learning resources to be combined with books, multimedia and other learning resources. The implementation of learning is also efficient in terms of time because the provision of independent material for students is allocated time for e-learning. Materials that is requiring special explanation are allocated at face-to-face time. Face-to-face learning is also used to reflect on learning between students and lecturers. Students learn according to their respective learning styles and speeds under the guidance of a lecturer who plays a role in encouraging and completing the whole series of the learning process. The application of e-learning tends to be educational research that leads to cognitive and psychomotor abilities. This quasi-experimental study has research limitations. The limitations of the existing research, among others, are that not all variables that influence E-learning learning are included in this study, for example the condition of the internet, the condition of computers and smartphones, intelligence level, interests, skills and so on.

4. Conclusion

Based on the results and discussion obtained from this study, it can be concluded that: (1) There was an effect of e-learning on the geography education students' levels of understanding in the hydrogeography material which showed with a p.value sig. (2-tailed) at 0.001 (lower than 0.05) and t-statistic value of 4.236 which is greater than t-critical value ($4.236 > 1.796$), (2). Geography education students' levels of understanding after the use of e-learning increased as seen from statistical description which showed that 25% students (3 students) is partially understand and occurring misconception which is the rest of 75% (9 orang) students is partially understand without misconception.

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