The Effect of Contextual Approaches in Online Learning on Students' Scientific Attitudes

Ilyas[1*], **An Nisaa Al Mu'min Liu**[2], **Budi Jatmiko**[3], **Wahono Widodo**

[1,2] *Physic Education Program / FKIP, Flores University, Indonesia*
[3,4] *Department Of Physic / MIPA, State University Of Surabaya, Indonesia*

Author's email: ilyasrasmi023@gmail.com; annisaaliu.almumin@gmail.com; budijatmiko@unesa.ac.id; wahonowidodo@unesa.ac.id
**Corresponding author: ilyasrasmi023@gmail.com*

Abstract. *This study aims to determine the effect of a contextual approach in online learning on the scientific attitudes of the third semester students of the Physics Education Study Program at the University of Flores. This type of research is quantitative research, with descriptive statistical analysis and inferential statistics to describe the scientific attitude of students in online learning using a contextual approach. The data collection technique used in this study is the non-test technique. The results of the descriptive analysis show that the students' scientific attitude is 81.15 in the good category. While the inferential statistical results show sig (2-tailed) 0.000. Because the sig (2-tailed) value of 0.000 is smaller than 0.05, this indicates that the contextual approach in online learning affects the scientific attitudes of the third semester students of the Physics Education Study Program of the University of Flores.*

Keywords: *Contextual, Online, Scientific Attitude*

1. INTRODUCTION

In an effort to prevent the Covid-19 pandemic, the government has established a policy for campuses to ask students to study at home. Starting March 2020, the campus apply the online learning method. This is in accordance with the Minister of Education and Culture of the Republic of Indonesia regarding Circular Number 4 of 2020 concerning Implementation of Education Policies in an Emergency for the Spread of Corona Virus Disease (COVID-19). Online learning system is a learning system without face to face directly between lecturers and students but done online using the internet network. Thus, lecturers are required to be able to design and design online learning that is lightweight and effective, by utilizing the right online tools or media and in accordance with the material being taught. Although online learning will provide wider opportunities in exploring the material to be taught, lecturers must be able to choose and limit the extent of the material's scope and the appropriate application of the learning materials and methods used. As stated by Keengwe & Georgina in their research, it has been stated that technological developments provide changes to the implementation of teaching and learning (Keengwe & Georgina, 2012). Information technology can be accepted as a medium in carrying out the educational process, including helping the teaching and learning process, which also involves finding references and sources of information (Wekke & Hamid, 2013).

Delivery of material online can be interactive so that participants are able to interact with computers as a learning medium. As an example of students using electronic media or establishing relationships (browsing, chatting, video calling) through electronic media, in this case computers and the internet will later get more effective and better learning outcomes than conventional learning. Within a few months of implementing online learning, problems emerged. Several lecturers on campus admitted that online learning was not as effective as conventional learning activities (face to face), because some materials had to be explained directly and more completely. In addition, the material delivered online may not be understood by all students. Based on the experience of teaching online, this system is only effective for giving assignments.

Observing the experiences of some of these lecturers, the lecturers must also be ready to use technology in accordance with the times. Lecturers must be able to make learning models and strategies in accordance with the character of students. The use of several applications in online learning is very helpful for lecturers in this learning process. Lecturers must be accustomed to teaching by utilizing complex online media which must be packaged effectively, easily accessible and understood by students. Lecturers must ensure that teaching and learning activities continue, even though students are at home. The solution, lecturers are required to be able to design learning media as an innovation by utilizing online media. The use of a learning approach in the teaching and learning process is an effort to increase the effectiveness and quality of the learning process which in turn can improve the quality of student learning outcomes. The use of a learning approach in the teaching and learning process has several benefits including: Teaching will attract more student attention so that it can foster student learning motivation; The teaching materials will be clearer so that students can understand and master the teaching objectives well; Teaching methods will be more varied; Students will have more interactions in learning activities because they do not only listen to lecturers' explanations but also other activities such as observing, demonstrating and others. In online learning, lecturers are also required to continue using the learning approach so that learning is more effective.

To overcome this problem, Nurhadi (2001) states that today there is a tendency to return to the idea that students learn better if the environment is created naturally. That is, learning will be more meaningful if students experience for themselves what they are learning, not just knowing it. Referring to this opinion, the contextual approach is an alternative that must be applied in the online learning process. Through this approach the learning process takes place naturally in the activities of students who are always working and experiencing for themselves. students don't just transfer the knowledge that comes from the lecturer. Students will realize that what they learn will be useful for their later life. In other words, students will position themselves as needing provisions for their life later. Because they learn what is beneficial for themselves and try to achieve it. Through the application of this approach the learning strategy is more concerned with the results.

In a contextual approach, the lecturer task is to manage the class as a team that works together to find something new for class members. Something new, namely knowledge and skills obtained by self-discovery, is not obtained from the lecturer. Lecturers only set learning strategies, help connect old and new knowledge, and facilitate learning. Lecturers must forget about the old tradition of acting lecturers on the student stage watching, changing students actively working and studying on the stage, lecturers directing from close.

The purpose of this study was to determine the effect of a contextual approach in online learning on students' scientific attitudes. Learning with a contextual approach brought students directly involved in experimental activities. Experimental activities carried out in groups can develop cooperative attitudes, respect other people's opinions and can bring changes in attitudes for the better. Inquiry activities that involve physical action can develop scientific skills and scientific attitudes so that learning can improve overall student learning outcomes.

Learning must be understood as a process, not just transferring knowledge from lecturers to students. The learning process emphasizes providing direct, contextual and student-centered experiences. This learning is an attempt to uncover physical symptoms in everyday life by applying a contextual approach. The application of a contextual approach to learning can form a scientific attitude that can help students understand and discover facts, concepts, principles, laws, and theories.

2. LITERATURE REVIEW

2.1 Contextual Approach

Contextual learning presents a concept that links subject matter with the context of everyday life. The contextual approach is based on the fact that learning is more

meaningful through experiencing for yourself in a natural environment, not just knowing, remembering, and understanding. Learning is not only oriented towards mastery of the material targets, but equips students to solve problems in their lives. Thus the learning process takes precedence over learning outcomes, so that teachers are required to plan varied learning strategies with the principle of teaching - empowering students, not teaching students. The contextual approach is a learning concept that helps teachers connect the material they teach with students' real-world situations and encourages students to make connections between their knowledge and its application in their lives (Muslich, 2007). In other words, contextual learning and teaching involves students in important activities that help them relate academic learning to the real life contexts they face (Johnson, 2008). Komalasari (2011) identifies the characteristics of contextual learning including learning that applies the concept of linkage, direct experience concepts, application concepts, cooperation concepts, self-regulation concepts, and authentic assessment concepts. In its application, the contextual approach (CTL) has seven main components, namely constructivism, finding, asking, community-learning, modeling, reflection and real assessment (Almasdi Syahza, 2012; Depdiknas, 2010; Suprijono, 2011; Nurhadi, 2004). The implementation of contextual learning can run well if it can apply constructivism components, the concept of linkage including asking questions, the concept of direct experience of inquiry, collaboration / learning society, application / modeling, self-regulation / reflection and authentic assessment.

2.2 Online Learning

Along with the development of technology and its supporting infrastructure, efforts to improve the quality of learning can be made through the use of technology in a system known as online learning. Online learning is a system that can facilitate students to learn more broadly, and in variety. Through the facilities provided by this system, students can study anytime and anywhere without being limited by distance, space and time. The learning material being studied is more varied, not only in verbal form, but also more varied such as visual, audio, and motion. There are several opinions regarding the conditions that should exist in online learning educators and students, among them, H. Uno and Nina L. (2010) suggest factors that affect the success of information technology-based education, including: attention, confidence, experience , creativity in using tools, conducting interactions between educators and students. Based on Jonassen's learning model quoted by Isjoni & Firdaus, (2007), there are 7 key learning strategies needed to turn off the glory of technology-based learning, namely active, constructive, collaborative, desire, conversation, contextual and reflective. Online learning learners must be prepared to share knowledge, interact with small and large groups in virtual learning settings, and collaborate on online projects or various risks of isolation in a community that depends on connectivity and interaction. Online learning will be more effective if students have the ability to use online learning technology (Diana Ariani, 2012).

In general, online learning is very different from conventional learning. Online learning emphasizes the thoroughness and foresight of students in receiving and processing information presented online. According to Bonk Curtis J. implicitly stated in the Online Training in an Online World survey that the concept of online learning is the same as e-learning. As stated by Keengwe & Georgina in their research, it has been stated that technological developments provide changes to the implementation of teaching and learning (Keengwe & Georgina, 2012). Information technology can be accepted as a medium in carrying out the educational process, including helping the teaching and learning process, which also involves finding references and sources of information (Wekke & Hamid, 2013). According to Koran (2002) E-learning is any teaching and learning that uses electronic circuits (LAN, WAN, or the internet) to convey the content of learning, interaction, or guidance. Hartley (2001) explains that e-learning is a type of teaching and learning that allows teaching materials to be delivered to students using the internet, intranet or other computer network media. Rosenberg (2001) emphasizes that E-learning refers to the use of internet technology to deliver a series of solutions that can increase knowledge and skills. Learning that is completely online requires several requirements for students, namely: ICT literacy: students must have initial skills in the form of mastery of basic ICT as a learning tool; Indevedency: online

learning requires conditions for students who are accustomed to independent learning; Creativity and Critical Thinking: online learning facilities are very diverse, students can learn various available tools such as browsing, chatting, group discussions, video conferencing, online quizzes, online drill and others, this requires students' creativity to make optimal use of all.

E-learning has shortened learning time and made study costs more economical. E-learning facilitates interaction between students with material or subject matter, students and teachers or instructors and fellow students. Students can share information with each other and can access learning materials at any time and repeatedly, with such conditions students can further strengthen their mastery of learning material.

2.3 Scientific Attitude

A scientific attitude is an attitude of accepting other people's opinions properly and correctly without knowing despair with persistence and openness. A scientific attitude is an attitude that must be present in a scientist or academician when facing scientific problems in order to go through a good research process and good results. The formula above means that the attitude contains three components, namely the cognitive component, the affective component, and the behavioral component. Attitude is always related to an object. This attitude towards objects is accompanied by positive or negative feelings. In general, it can be concluded that attitude is a readiness to behave or react in a certain way when faced with a problem or object.

The scientific attitude is a pattern of solving problems rationally and objectively and eliminating the element of subjectivity and seeing cases neutrally by relying on the opinions of experts, who are believed to have carried out research, analysis and gone through several stages of criticism so that the truth content has been tested and trusted. Kurniadi (2001) is quoted from Edward's opinion which formulates creative behavior of scientific attitudes from words of ideas, namely: imagination; Fact; evaluation; and action. Attitudes are general behaviors that spread thin across everything students do. But attitude is also one that affects student learning outcomes. According to Baharuddin (Ulum, 2007) scientific attitude is basically the attitude shown by scientists when carrying out activities as a scientist. The scientific attitude is an individual's tendency to act or behave in solving a problem systematically through scientific steps. Cultivating a scientific attitude through appropriate learning methods will greatly influence the development of a positive attitude towards the concept or topic being studied. Therefore, scientific attitudes need to be fostered as early as possible in students, so that they can become good individuals and become quality future generations (Sholahuddin, 2006). Scientific attitudes that are developed in learning include: being brave and courteous in arguing, curious, caring for the environment, willing to cooperate, open, diligent, careful, creative and innovative, critical, disciplined, honest, objective, and high work ethic (Depdiknas, 2002). The description of students' scientific attitudes can be captured using a scientific attitude scale instrument. To measure scientific attitudes, the instrument used in the form of a written test in the form of question sentences, namely positive questions and negative questions. The Likert attitude scale type can be used in measuring the attitude scale (Riduwan, 2002).

A scientific attitude is an attitude that must be present in a scientist or academician when facing scientific problems. This scientific attitude needs to be accustomed to in various scientific forums, for example in discussions, seminars, workshops, and writing scientific papers (Apriani, 2011). Some scientific attitudes include (Anwar, 2009) curiosity; critical attitude; open attitude; objective attitude; willingness to respect the work of others; courage to defend the truth; forward-reaching attitude.

3. RESEARCH METHODS/METHODOLOGY

3.1 Descriptive Analysis

This type of research is descriptive quantitative. The sample in this study were 21 students programming mechanics courses. The instrument used in this study was a non-test instrument. The non-test technique is a questionnaire with a total of 25 questionnaires to see the scientific attitude of the students. The data obtained will be

analyzed quantitatively, using descriptive analysis and inferential analysis with the help of SPSS software.

3.2 Inferential analysis

- Test the prerequisite analysis

  The prerequisite analysis test used is the normality test, which is intended to determine whether the research data comes from a normally distributed population or not. Normality testing was carried out using the help of SPSS version 21.0 software, namely using Kolmogorov Smirnov. The basis for decision making is if significant (sig)> 0.05 then the data is normally distributed.
- Hypothesis testing

  In this study using a one-sample t test. The test was carried out with the help of SPSS version 21.0 software, namely using the one-sample t test. The basis for decision making is if significant (sig. 2-tailed) <0.05 then H0 is rejected and H1 is accepted.

4. RESULTS AND DISCUSSION

4.1 The results of the descriptive analysis of Scientific Attitude

The data described in this study is scientific attitude data obtained from the questionnaire as many as 25 items. The description of the student's scientific attitude data is as presented in table 1 below.

Table 1: Description Of Student Scientific Attitude

Variabel	Information	Statistic	Std. Error
scientific attitude	Mean	81.15308	1.68532
	Minimum	60.8	
	Maksimum	96	
	Std. Deviation	7.67862	

From table 1, can we see a minimum score of 60.8 and a maximum score of 96.00 from an ideal score of 100 with an average of 81.15308. If categorized are included in the good category.

Before testing the hypothesis, first the basic analysis of the test is a normality test. The results of the normality test analysis are obtained through the data processing output from SPSS 21.0 for windows, as shown in table 2:

Table 2: Tests Of Normality

Variable	Shapiro-Wilk		
	Statistic	df	Sig
scientific attitude	0.947	21	0.143

From table 2 above shows the results of the normality test using the SPSS program which illustrates that the data on scientific attitude scores of students are normally distributed. This can be seen from the significance value which indicates the value of 0.143 which is certainly greater than 0.05, so it can be said that the data is normally distributed. Normally distributed data continued with hypothesis testing.

Hypothesis testing aims to answer the research hypothesis. The results of the requirements test indicate that all data from the population are normally distributed. So hypothesis testing with one sample t test can be done. The results of data analysis with one sample t test in this study were obtained from SPSS output 21.0 for windows. The results are as presented in table 3 below:

Table 3: One Sample t Test

Variable	t	Df	Sig.(2-tailed)
scientific attitude	5.368	20	0.000

From table 3 it can be seen that the sig (2-tailed) value for the scientific attitude variable is obtained 0,000 which is certainly smaller than 0.05, it can be said that H0 is rejected and H1 is accepted, meaning that the contextual approach basec on e-learning influences the scientific attitude of students physics education study programs.

CONCLUSION

Based on the results of research that has been done as for the conclusion of this research is the contextual approach based on e-learning has an effect on student scientific attitude in Physics Education Programs Flores University.

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