Development of Moodle-based Learning Media using Blended Learning Methods in Graphic Design Subject

Arif Setiawan[1], Dimas Radika Putra[2], Sujalwo[3], Aditya Nur Cahyo[4]

Informatics Engineering Education, Faculty of Teacher Training and Education
Universitas Muhammadiyah Surakarta
Surakarta, Indonesia
arif.setiawan@ums.ac.id[1], a710150014@student.ums.ac.id[2], sujalwo@ums.ac.id[3]

Abstract—**This research aims to develop learning media using Moodle and apply blended learning methods to help improve the learning effectiveness of students at SMK Muhammadiyah 1 Klaten. The research method used in this research is Research and Development. The results showed the average value of media experts was 79.55% categorized as feasible category, while the material experts were 75% categorized as feasible category. Whereas the System Usability Scale (SUS) questionnaire, which could measure usability, from 32 students of SMK Muhammadiyah 1 Klaten consist of 29 Male and 3 Female Students obtained 71.25% which were categorized as acceptable category. The average test results of the students' pre-test scores were 58.75%, the post-test scores were 81.87%, an increase of 23.12%. The conclusion in this study is that learning media using Moodle-based blended learning methods are appropriate for use in basic graphic design subjects, and are effectively used to improve student understanding and learning outcomes.**

Keywords-e-learning; blended learning; Moodle

I. INTRODUCTION

Learning media are media that contain messages or information that lead to goals or assistance goals [1]. This greatly helps the teacher in teaching and makes it easy for students to accept and understand the material Learning media are media that contain messages or information that lead to goals or assistance goals. This greatly helps the teacher in teaching and making it easy for students to accept and understand the material [2]. The Blended Learning Method is a learning facility that combines a variety of delivery methods, teaching models, and learning styles, introducing various media dialogue choices between the facilitator and those who are taught [3]. Blended learning is also a combination of face-to-face teaching and online teaching, but more than that as an element of social interaction [4].

The current condition of the learning process is still not ideal, in which the teacher still provides an explanation to students so that there is a lack of interaction between the teacher and students [5]. Often students have difficulty in understanding the material, so it is necessary to innovate learning models that can accommodate the needs of the current learning process, including the use of technology in order to facilitate the learning process [6]. Some learning processes have implemented technology such as the use of presentation applications, but they are still not optimal enough to support learning activities [6].

Research conducted by [7], making learning models in the form of activities using Moodle. Research aims to find out the teacher's perception of the learning media and its influence on learning outcomes, the results obtained show that the level of activity and influence on learning outcomes is very significant.

Subsequent research was conducted by [8] which in this study aims to develop Moodle-based e-learning media from the immune system material in Eleventh Grade High School. The goal is to determine the effect of e-learning on student self-learning. The results obtained in this study are learning media in the form of e-learning using Moodle appropriately, is recommended to be applied in the learning process, and can improve student self-learning.

Research on Moodle was also conducted by [9], this research aims to find out the relationship and influence of the use of Moodle e-learning be-tween teachers, students and parents. The results of this study are that Moodle-based e-learning platforms can improve student-learning enthusiasm and are able to facilitate teachers in providing material in class.

Research conducted by [10] [11] [12] conducted research on Moodle-based e-learning to increase group participation and ability to solve problem solving by students. The results obtained in this study are the use of Moodle-based e-learning could increase student group participation and could increase the spirit of independent learning and student ability. However, the research is still not optimal, there needs to be improvements that can be done to determine whether the improvement experienced when using Moodle-based learning media and using significant blended learning methods in the material provided.

From the description above, this researcher aims to develop a learning media using Moodle to find out how effective the use of e-learning and Blended Learning methods is to increase effectiveness in the subject of Graphic Design.

II. METHOD

This type of research used in this research is Research and Development (R&D). Research and development methods is a research method used to produce certain products and test the effectiveness of these products [13]. Ref. [14] believes that Research and Development is a step or process to improve existing products or develop a new product that can be accounted for. The product is not always in the form of hard-ware (hardware) or objects, but it can also be software (software).

In this study, the sample population was the tenth grade students (B) majoring in Computer and Network Engineering at SMK Muhammadiyah 1 Klaten with 32 students (29 Male and 3 Female), where at the time the study was divided into two sessions into a control class and an experimental class. The initial data collection technique uses the method of observation and interviews with teachers and students that are intended to collect information and also find out the problems that can occur at the school. To find out the feasibility of the product the researcher uses a validation test of material, media, and questions. Meanwhile, to determine the effectiveness of the product the researcher used the Normality Test, Paired Sample t Test, and N-Gain Test

III. RESULT AND DISCUSS

Learning media using Moodle-based blended learning methods for Basic Graphic Design subject contains features that can help the learning process, which are announcements, reading book references, teacher asking questions, material (videos, text, pictures), material downloads, understanding tests (quiz), material discussion, and assignments. The data used in the study used two different data, namely pretest and posttest. Two data from the results of the pretest value with the value obtained from the application of the blended learning method using Moodle (posttest value) were tested using paired sample t-test for hypothesis testing in order to find out the difference in the average of two samples.

TABLE I. PAIRED SAMPLE T TEST RESULTS

	Mean	Std. Deviation On	Std. Error Mean	95% Confidence Interval of Differences		t	df	Sig. (2-tailed)
				Lower	Upper			
Pretest	-23,12	12,50	3,12	-29,78	-16,46	-7,40	15	,000
Posttest		00	0					

TABLE II. N-Gain Value

	Class			Statistic	Std. Error
NGain_Percent	Experiment Class	Mean		56,56	7,443 41
		95% Confidence Interval for mean	Lower Bound	40,69	
			Upper Bound	72,42	
		5% Trimmed Mean		57,29	
		Median		55,00	
		Variance		886,47	
		Std. deviation		29,77	
		Minimum		,00	
		Maximum		100,00	
		Range		100,00	
		Interquartile Range		41,67	
		Skewness		-,077	,564
		Kurtosis		-,598	1,09
	Control Class	Mean		49,89	6,82
		95% Confidence Interval for mean	Lower Bound	35,27	
			Upper Bound	64,41	
		5% Trimmed Mean		49,88	
		Median		50,00	
		Variance		742,39	
		Std. deviation		27,246	
		Minimum		,00	
		Maximum		100,00	
		Range		100,00	
		Interquartile Range		35,42	
		Skewness		,46	,56
		Kurtosis		,11	1,09

As shown on Table 1, Paired Sample Test T Test results for class Ten (B) majoring in Computer and Network Engineering have a sig. (2-tailed) value of 0,000. Significant value of 0,000 <0.05 is rejected, which means that there is an influence of the application of the blended learning method using Moodle on the material elements and graphic design layout of the tenth grade (B) majoring in Computer and Network Engineering at SMK Muhammadiyah 1 Klaten.

This study uses the N-Gain Test aims to determine the effectiveness of the use of a method in research as in Table 2. The results of the calculation of the N-Gain test score in the table above shows that the average value of the N-Gain score for the experimental class (use of instructional media) is 56.56 or 56.56% included in the category of quite effective. With an N-10 score, a score of 0% for a minimum and 100% for a maximum. While the average NGain score for the control class (conventional method) is 49.89% included in the ineffective category. With an N-Gain score of a maximum of 100% and a minimum of 0%. Then it can be concluded more effective learning media users (experimental class) compared to using lecture/ conventional methods (control class)

IV. CONCLUSION

Based on the development of learning using Moodle-based blended learning methods for basic subjects of graphic design, it can be concluded that: The product produced from this research is Learning Media Using Moodle-Based Blended Learning Methods for Basic Subjects in Graphic Design. This learning media contains features that can help the learning process, which are announcements, reading book references, teacher asking questions, material (videos, texts, pictures), material downloads, comprehension tests (quiz), discussion material, and assignments.

The results of tests conducted on 32 students using a questionnaire showed that the response of students to e-learning with Moodle as the basic learning media of graphic design agreed to be used as a learning medium. As for testing the effectiveness of e-learning with Moodle as a basic learning media of graphic design.

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