The Use of Quiz-Based Digital Media on Student Motivation and Learning Outcomes

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Abstract

This study aims to see how the use of Quizizz-based digital learning media affects the level of motivation and student learning outcomes. The type of research used is pseudo-experimental research (quasi), with a paired sample t-test research design. The subjects in this study were Level I Economics Education. The research data collection technique used in this study was a test to measure learning outcomes, as well as an observation instrument to see the level of student learning motivation. The research data analysis technique used the t test. Based on the results showed that the research hypothesis was accepted, this was indicated by the coefficient t count> t table. So that the hypothesis which states that there is an average difference between pretest and posttest learning outcomes, there is an effect of using quizizz-based digital learning media in improving student learning outcomes is accepted. As educators in the millennial era, it is important to use technology in the learning process. Technology-based education that is packaged in an attractive and innovative way will certainly involve more active participation from students, so that they are able to develop their potential according to the demands of education in the digital era.

Keywords: *Digital Quizizz Media, Learning Motivation, Learning Outcomes*

Abstrak

Penelitian ini bertujuan untuk melihat bagaimana pengaruh penggunaan media pembelajaran digital berbasis Quizizz terhadap tingkat motivasi dan hasil belajar mahasiswa. Jenis penelitian yang digunakan adalah penelitian eksperimen semu (quasi), dengan desain penelitian paired sample t-test. Subjek dalam penelitian ini adalah Mahasiswa Tingkat I Pendidikan Ekonomi. Teknik pengumpulan data penelitian yang digunakan pada penelitian ini berupa tes untuk mengukur hasil belajar, serta instrument observasi untuk melihat tingkat motivasi belajar mahasiswa. Teknik analisis data penelitian menggunakan uji t. Berdasarkan hasil penelitian menunjukkan bahwa Hipotesis penelitian diterima hal ini ditunjukkan dengan koefisien thitung > ttabel. Sehingga hipotesis yang menyatakan bahwa terdapat perbedaan rata-rata antara hasil belajar pretest dengan postest, ada pengaruh penggunaan media pembelajaran digital berbasis quizizz dalam meningkatkan hasil belajar mahasiswa diterima. Sebagai Pendidik di era milenial penting untuk menggunakan teknologi dalam proses pembelajaran. Pendidikan berbasis teknologi yang dikemas secara menarik dan inovatif tentu akan lebih banyak melibatkan partisipasi aktif dari para mahasiswa, sehingga mampu mengembangkan potensi sesuai tuntutan Pendidikan di era digital.

Kata Kunci: *Media Digital Quizizz, Motivasi Belajar, Hasil Belajar*

INTRODUCTION

The Industrial Revolution 4.0 is a challenge in all fields of science, especially in the field of education. Learning as a way for educators to provide opportunities for students to think in order to recognize and understand something that is being studied. Learning is any systematic and deliberate effort to create educational interaction activities between two parties, namely between students and educators who carry out learning activities.

The era of the Industrial Revolution 4.0 which affects all life, including education, makes universities must be able to adapt to the development of various technologies, one of which is implementing digital-based media in an innovative and fun learning process. Lecturers and learning technology developers have an important role in terms of developing innovations, ideas or ideas for the use of technology in learning. Teaching skills for a lecturer are a support for success in the lecture process, so one of the efforts that must be mastered is being able to master and use technological devices and being able to carry out evaluation activities to support more interesting lecture activities.

Learning evaluation is one of the important aspects of the learning process. By evaluating learning, teachers can find out how successful the delivery of material is during teaching and learning activities. This is in accordance with the opinion conveyed by Edwind & Gerald W. Brown in Supriyadi (2011) that learning evaluation is a process to determine the value of everything in learning. Assessment is one of the processes of learning evaluation. This is in accordance with research conducted by Darodjat & Wahyudiana (2015), namely evaluation activities are preceded by assessment, and assessment activities are preceded by measurement.

The phenomenon of many problems that occur is that there are still some lecturers who have not increased their creativity in making and using media in learning. Especially learning media that can be used as a tool to conduct technology-based evaluation activities. Most often use power point media that looks simpler, so it does not need more time to make it. Whereas there are many learning media that can be used in today's digital era. The effect of this problem is that the assumption that learning is saturating, boring learning, monotonous learning models, and the ability of educators who are not optimal in developing evaluation creativity in learning.

Kemp and Dayton (1985) in Arsyad (2002) identify several benefits of media in learning, namely: (1) the delivery of learning materials can be uniformed, (2) the learning process becomes clearer and more interesting, (3) the learning process becomes more interactive, (4) efficiency in time and energy, (5) improve the quality of student learning outcomes, (6) the media allows the learning process to be carried out anywhere and anytime, (7) the media can foster a positive attitude towards the material and the learning process, (8) change the role of the teacher in a more positive and productive direction.

One of the learning media that is interesting, has interactive properties that prioritize cooperation, communication, and can cause interaction with students is games, which have characteristics to create motivation in learning (namely: fantasy, challenges, and curiosity) (Irwan et al., 2019, Mulyati, 2020). Games themselves are any context that creates interaction with each other between players by following existing and predetermined rules in achieving a goal (Sadiman et al., 2010). Interactive quiz is a combination of lecture, question and answer and assignment methods packaged in a quiz game. Games like this provide opportunities for players and all participants and even the audience to make

creative efforts. Giving quizzes is a strategy given to students by giving questions in the learning process related to the material that has been taught with the aim of measuring the level of mastery of understanding.

Quizizz as one of the technology-based learning media that can be accessed and used for free by all users. Quizizz is a digital-based learning media (multimedia). Digital media (multimedia) is media whose content is a combination of data, text, sound, and various types of images stored in digital format and disseminated via broadband optical cable-based networks, satellites and microwave systems (Flew, 2008). Quizizz is one of the digital media in the form of question practice games and online presentations that help educators / teachers to distribute teaching materials so that they are more easily understood by students. It can even increase students' interest and enthusiasm for learning certain materials when utilizing this digital learning media. The use of quizizz makes learners active and able to increase concentration on learning material, for that teachers are encouraged to apply it (Suo Yan Mei, 2018). This research analyzes how to use Quizizz as a learning media development and the opinions of millennial generation learners.

According to Tae, et al. (2019), several factors that can determine the success or failure of learning include the application of appropriate learning models and methods, the use of interesting and innovative learning media, effective learning evaluations and the motivation possessed by students in learning. Asral & Chandra (2021) revealed that learning motivation is one of the driving factors that can come from inside or outside students to be actively involved in learning activities. In line with Husamah, et al., (2018) which reveals that learning motivation is an encouragement from within students that creates a desire to learn and provides direction so that learning activities achieve the goals

desired by students. Based on the phenomenon of the problem above, the researchers conducted a study with the title Use of Quizizz-Based Digital Media on Student Motivation and Learning Outcomes.

METHODS

This research uses a quantitative approach (Sugiyono, 2017). The method used in this research is the Poor Experimental design method which does not have a control group (Jack R. Fraenkel, Norman E. Wallen, 1993: 267). The experimental research method is a method that is the only type of research that directly tries to influence a particular variable, and when applied properly, it is the best type for testing hypotheses about cause-and-effect relationships. In an experimental study, researchers look at the aspect of at least one independent variable on one or more independent variables. Independent variables in experimental research can be formed in several ways, namely, one form of variable compared to another variable, the absence of a certain form of variable and variables with varying degrees and the same form (Jack R. Fraenkel, Norman E. Wallen, 1993: 267).

While the design used is One Group Pres test - Post test Design before starting treatment, both groups are given an initial test or Pre-test to measure initial conditions (O1). After being treated the two groups were given another test Post-test (O2). The results of the treatment are more accurate, because they can compare with the situation before being treated, more clearly this research design is presented in the following table:

Table 1. One-Group Pretest-Posttest Research Design

O1	Treatment	O2
Pre-test score (before treatment)	**X**	Post-test score (after treatment)
Description: X = Quizizz learning media		

The research subjects used were all Level 1 students of the 2022-2023 Academic Year of the Economics Education Study Program at Kuningan University, totaling 20 students. The data collection techniques used are tests and observations. Tests (pretests and posttests) use questions to measure learning outcomes totaling 10 questions and all of them are used in research activities because they have met the data quality test, namely valid and reliable, and observation rubrics to observe the level of student learning motivation based on expert indicators as many as 4 aspects of observation. Furthermore, data analysis is carried out, namely the statistical (parametric) prerequisite test, namely the data normality test, then proceed with hypothesis testing using the t test (paired sample t-test).

RESULTS AND DISCUSSION

The data collected in this study are the scores obtained from the pretest and posttest learning outcomes. The results of the research that has been carried out are presented as follows:

a. Description of Pre-Test

The pre-test was given at the beginning of the learning activity before treatment. To test the research hypothesis, first the normality distribution test of the research class data must be carried out as a prerequisite in the calculation of parametric analysis. Based on the data processing of the initial test results, the following results were obtained:

Table 2. Pretest Data Analysis Results

Value	X_{min}	X_{max}	Average
Pre_test	40	65	54,80

Based on table 2 above, the pretest data has an average of 54.80 with the highest score of 65 and the lowest score of 40.

b. Description of the Final Test (Post-Test)

The Final Test (post-test) was given at the end of the learning activity after treatment. To test the research hypothesis, first the normality distribution test of the research class data must be carried out as a prerequisite in the calculation of parametric analysis. Based on the data processing of the final test results, the following results were obtained:

Table 3. Post-test Data Analysis Results

Value	X_{min}	X_{max}	Average
Post_test	70	85	78,81

Based on table 3 above, the posttest data has an average of 78.81 with the highest score of 85 and the lowest score of 70. To determine the increase in student learning outcomes by using quizizz- based digital learning media, the calculation of normalized gain is used with the Hoke formula. The results of the n-gain data analysis can be seen from the table below:

Table 4. Gain (Improvement)

Value	Pretest	Postest	n-gain
gain	65	85	0,58 (High)

c. Normality Test Results

To test the normality of the data in this study using the Kolmogorov-Smirnov (K-S) test. The results of the pretest and posttest frequency distribution normality test with a significant level $\alpha = 0.05$. If koef.sig <0.05 then the data is not normal while if koef.sig> 0.05 then the data is normal. The results of the calculation of data normality, more clearly the author presents in the form of a table below:

Table 5. Pretest and Posttest Data Normality Test Results

One-Sample Kolmogorov-Smirnov Test

		pre_test	post_test
N		20	20
Normal Parameters a,b	Mean	54.8000	78.1000
	Std. Deviation	6.82565	4.30300
Most	Absolute	.180	.129

Extreme Differences			
	Positive	.123	.129
	Negative	-.180	-.121
Test Statistic		.180	.129
Asymp. Sig. (2-tailed)		.087[c]	.200[c,d]

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.
d. This is a lower bound of the true significance.

Based on the results of normality testing, it shows that both data are normally distributed, so next it is necessary to test the hypothesis using paired sample t-test.

d. Hypothesis Test Results

The results of hypothesis testing with t test through Paired Samples T-test obtained the following results:

Table 6. Hypothesis Test Results

		Mean	Std. Deviation	Std. Error Mean
Pair 1	Postest	78.100	4.30300	.96218
	Pretest	54.800	6.82565	1.52626

		Correlation	Sig.
Pair 1	Postest & Pretest	.295	.207

Paired Samples Test				
		t	df	Sig. (2-tailed)
Pair 1	Postest & Pretest	15.072	19	.000

From the calculation results obtained t = 15.072 with α = 0.000 and df = 19, obtained ttabel = 1.75. Because thitung > ttabel , it is significantly different, meaning that H0 is rejected and Ha is accepted. It can be concluded that there is an average difference between pretest and posttest learning outcomes, meaning that there is an effect of using quizizz-based digital learning media in improving student learning outcomes and motivation. Furthermore, to see how the level of student learning motivation while using quizizz media is presented more clearly through the following figure:
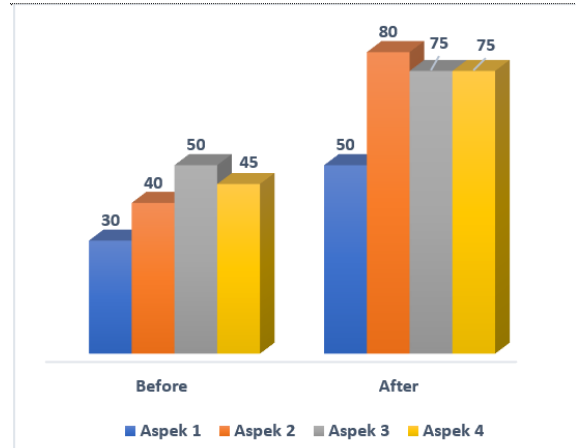

Figure 1. Student Motivation Level

Researchers conducted observation techniques to measure the level of student learning motivation. Through the description above, it is clear that of the four (4) aspects that researchers observe based on the indicators of Uno (2010) that there are several aspects to measure students' critical thinking skills, among the several indicators referred to are as follows:

1) *Strong will to do*

In this aspect 1, researchers see how students actively ask the environment either to lecturers or friends about material that has not been understood. There was an increase of 20% of students who were encouraged to be more willing and brave in asking or responding to various problem case materials provided.

2) *Perseverance in doing tasks*

It can be seen that in aspect 2 the students have tried actively to collaborate and discuss with their friends in completing the assigned tasks. Statistically there is an increase of 40% because the lecture process is more student-centered.

3) *Show interest in a wide range of problems*

In this aspect, there is an increase of 25% in students in doing questions or doing assignments in class, students can relate lessons to everyday life, meaning that the lecture process can be carried out in a more meaningful and contextual manner.

4) Can defend his/her opinion

Aspect 4 shows that the majority of students who have been brave and willing to ask questions and express their opinions, they are able to defend their opinions and their reasons in front of other friends accompanied by empirical evidence obtained through various sources both from books or the internet and so on.

Based on the results of the study, it illustrates that lectures using digital-based learning media, namely quizizz, are able to improve student learning outcomes, this can be seen from the average posttest score at the end of the lecture showing a significant increase. Not only learning outcomes, the level of student learning motivation while using quizziz media has also increased. Because the lecture process is student-centered, and using devices / smartphones in the learning process makes lecture activities more interesting, the majority of students look more excited, high curiosity, dare to ask questions and express opinions and other ideas obtained based on other sources obtained.

In teaching and learning activities, there are five important factors that can be used to make learning sustainable. These factors include learning objectives, materials, methods, facilities and assessment. These five aspects influence each other. The selection of certain teaching methods will affect the type of learning material that is appropriate, one of the main functions of learning media is as an educational tool to influence, advance and manage the learning environment (Falahudin, 2014).

The study concluded that the use of Quizizz in the lecture process that had taken place was very interesting and impressive. Students perceived and agreed that Quizizz was easy to use; using Quizizz for class assignments was fun, helped them review the course material and sparked their interest in the material. The highly innovative graphic design attracted students' attention, especially the leaderboard, which showed their

performance ranking (marks obtained) in real-time, so that during the lecture the majority of students were very enthusiastic and enthusiasm motivated them more to learn. They agree that Quizizz helps them focus in class and reduces the fear and tension of taking exams. Students prefer to study and practice in class with Quizizz, not just on paper.

The results of this study are relevant to previous research that gamification allows students to change their way of thinking by following the rules of the game during problem solving (Zicherman & Cunningham, 2011). Gamification is useful in overcoming learning difficulties and encouraging participation in learning activities (Codish & Ravid, 2014; Bruder, 2014). By using blended learning methods and techniques, gamification has played an important role in the success of learning processes in today's world (Çeker & Özdamlÿ, 2017).

Quizizz is an educational application that applies the concept of gamification (MacNamara & Murphy, 2017). An attractive interface or web graphic design, the availability of contemporary avatar images, and the presence of audio or music can make students have a very pleasant learning experience. After students answer each question, Quizizz will display a meme or image to respond whether the answer is right or wrong, and this is very interesting for them (Miller, 2016).

Previous research describes various ways to implement Quizizz. Quizizz can be used to organize classroom activities and prepare for exams (Dean, 2017; MacNamara and Murphy, 2017). Quzizz can also be used in lectures that have been conducted (Porcaro, Jackson, McLaughlin, & O'Malley, 2016; Dayal, Green, & Browne, 2016). Boulden, Hurt, and Richardson (2017) used Quizizz and other educational apps to help students recognize the difference between helpful and unhelpful questions. Suo, Suo, and Zalika (2018) applied Quizizz in improving student learning as a game-based learning

tool. Quizizz is also used by university students and has been shown to be effective in improving academic performance and reducing anxiety (Aÿÿksoy & Sorakin, 2018). Hamilton-Hankins (2017) incorporated Quizizz in an English language arts lesson and found that it had a positive impact of active engagement from the students. Chaiyo and Nokham (2017) found differences in student perceptions of using different educational apps. Student feedback was more positive using Kahoot and Quizizz than using Google Forms or other paper-based quiz tools. Bouden et al. (2017) found that students were more focused and paid more attention to quizzes when using Quizizz.

Measures of success Effective implementation of learning with the "quizizz" application which includes (a) well-organized documentation, (b) communication efficiency, (c) mastery and enthusiasm for the course, (d) positive responses and attitudes, (e) giving fair value, (f) flexibility in learning methods and (g) improving student learning outcomes. In the end, apart from various advantages and disadvantages, in the current era of globalization and information, the use of information technology (IT)-based learning media has become a must for us as educators, this is the answer to all the demands and needs for them as millennial learners, although to start and in terms of its application is not an easy thing. Therefore, in the use and selection of learning media, educators must pay attention to a number of techniques to consider several important aspects such as suitability for teaching materials/materials, time allocation, student characteristics, and the means used can be used optimally and not deviate from the media focus.

CONCLUSION

Based on the results of the study, it is concluded that there is an average difference between pretest and posttest student learning outcomes, meaning that there is an effect of using quizizz-based digital learning media in improving the learning outcomes and motivation of Economic Education students in technology, information and communication (ICT) I courses. Digital-based learning media "quizizz" is effectively able to facilitate students to build a more creative, innovative, flexible and fun learning process. Quizizz as one of the web tools for creating interactive quizzes that can be used as learning aids. One of the learning media that has been freely available and open source in student mobile applications such as Android and the App Store and can be used as a website through a browser on a laptop. The activity of giving quizzes changes the student paradigm that the implementation of exams tends to be more flexible and fun, especially with the direct display of student performance results with a ranking that makes a healthy sense of competition among students, so this has a positive effect on improving learning outcomes and student motivation levels. Their enthusiasm in analyzing and answering questions is very good, so that indirectly, the implementation of lectures using this media is also able to improve problem solving skills for students, as one of the skills needed in the 21st century learning pattern. In the end, that the use and utilization of digital-based learning media either through phones or PCs, is able to create a more creative, innovative learning environment and positively impacts on increasing students' learning motivation and cognitive aspects.

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