GAME-BASED LEARNING MEDIA AND ITS EFFECT TOWARD STUDENTS' LEARNING ACHIEVEMENT

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ABSTRACT

This study aims to determine the effect of game-based learning media toward students' learning achievement. The game-based learning media implemented during this study was Quizziz. This research design used a Non-equivalent control group design with Quasi Experiment method. The research sample comprised 20 students, ten from class XI MIPA 5 as an experimental class and ten from class XI MIPA 6 as a control class. The research instrument is a learning achievement test in the form of a pretest and posttest with as many as 15 questions numbers. Based on the game-based learning media analysis result, it shows that implementing learning using Quizizz game-based learning media is better than conventional learning methods. It can be seen from the calculation of the quizizz game media t-test shows that the sig t count is $0.000 < 0.05$, then H_1 is accepted, and H_0 is rejected. The results of the score analysis averaged the completeness of the experimental class reached 76.40 with high criteria, while the conventional learning method in the control class of 65.90 with medium criteria. All in all, game-based learning media is proved that it affects in the students' learning achievement on digestive system topic.

Keywords: *game-based, learning achievement, learning media, quizziz*

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Game-based Learning Media and Its Effect toward Students' Learning Achievement

Introduction

Education can help learners develop various information, abilities, and personality traits while encouraging active learning. Education must be of high quality to achieve the goal. With quality education, one can achieve educational goals and improve academic standards (Sugian Noor, 2020). Education is the process of learning, understanding, and developing critical thinking. Education includes not only the act of learning but also the process of conveying knowledge, changing values, and knowing the personality of students. The difference between education and the teaching process is forming individual nature and consciousness (Hasnaeni et al., 2021).

Learning is a way to change behavior when interacting with the environment. Such abilities have to be engaged in the learning process that include students' cognitive, affective, and psychomotor skills (Adila Putri Laksana &; Hady Siti Hadijah, 2019). The development of technology and information can encourage the creation of innovative, effective, and efficient in use of learning media. For this reason, digital-based learning media is needed to improve student learning outcomes (Unik Hanifah Salsabila et al., 2020).

The 21st-century teachers are required not only to be able to teach and manage classroom activities effectively but also to make creative efforts are needed from teachers in making learning more exciting and develop learning variations by elaborating learning using technology to support the improvement of teaching quality (Susi Sulastri et al., 2019). One example of the use of technological advances, namely the existence of interactive quizzes. Students can use interactive quizzes to determine the extent of understanding of the material learned by answering questions in the form of quizzes. In addition, this game-based learning media is easy to access by students using their smartphones (Windi Anggraini et al., 2020).

One of the educational facilities that can foster exciting teaching and learning activities and measure the understanding of students' cognitive abilities is the use of interactive game-based learning media through quizziz. Teachers can use this technology in the learning process to provide more effective learning class (Mutia Dewi Kilater &; FX. Mas Subagio, 2020). Technology is an application or platform as a learning media integrated with games. A game is a learning strategy that combines aspects of a game or video game to inspire learners to learn and create a sense of fun in the learning process. (Meita Dwi Solviana, 2020).

The existence of increasingly advanced and popular technology has given rise to a new term: educational games stimulate students' thinking to concentrate on formulating problems. Games are means that can be entertaining; game also act as a media combined with material and questions that have been summarized and are expected to arouse the spirit of learning for each individual (Agung Setiawan et al., 2019; Arum & Prasetyo, 2019). Technological advances have an impact on the quality of education. The education sector must follow the education system to keep up with technological advances. The Indonesian government has experienced the industrial revolution 4.0, and teachers are expected to be able to develop learning systems that support technical passages (Dwi Yulianto Nugroho et al., 2019).

Education and learning process can take place anywhere. As with other fields, technology in education can make it easier for teachers to carry out the learning process, including the evaluation process and assignment (Lasia Agustina &; Indra Martha Rusmana, 2019). With the Quizizz application, students will get challenges when using it because grades will be obtained if they answer the questions correctly, where there is a separate score when answering questions. Then there is a concurrency between students because there is class ranking. Besides, there are music and memes as embedding at during the learning process (Desy Safitri, 2019). Quizizz is a web tool in the form of an online quiz game that can be used as a formative assessment in learning. Quizizz is relatively easy; that has been compiled can be directly added to quizizz and set both images, backgrounds, and options. Quizzes can be shared with code to learners (A. U Yana et al., 2019).

Quizizz can be done in class and outside class hours. Through quizizz, students are more eager to learn better because this application is tournament-based, so students are triggered to become tournament winners (Sri Wilda Albeta et al., 2020). While learning can be used as effectively as possible to achieve learning objectives, educators can use quizizz as an alternative to ICT-based learning programs. This learning can compensate for the need for more related learning resources. These learning resources can help students overcome various learning challenges (Sri Mulyati &; Haniv Evendi, 2020).

Another benefit of the quizizz app is a score and ranking for each question. However, if a student answers the question incorrectly, the correct answer will be displayed so that

participating learners can review the solutions that have been selected. In addition, because the questions that appear will be randomized, each student will get different questions from other students, making it less likely for students to exchange answers (Khairiyah et al., 2021). According to (Muhammad Dafid Pitoyo et al., 2019), the features of Quizizz game-based learning media are:

1) Learner all-rounder: The educator will set a time limit for each question, and the learner must answer before the time allotted for each answer runs out.
2) Bring Your Own Device (BYOD): Quizzes can be played on handheld electronic devices.
3) Thousands of public quizzes: Many educators worldwide are creating their shareable quizzes, so everyone can work on them as long as they are a member of the examination. It is helpful for educators to get inspiration from other educators in designing quizzes.
4) Quizizz editor: Quizizz allows educators to take questions from any quiz, easily add images from the internet, and auto-save educators' progress.
5) Reports: provides detailed information to educators, and each quiz can be downloaded via a spreadsheet in Microsoft Excel.
6) Quiz Customization: Educators can customize their quiz sessions in various options to consider competition level, speed, and other factors.

According to Joao Batista (2020), the use of this quizizz game-based learning media is as follows:

1) Log in through the www.quizizz.com website, or you can download the quizizz application on the play store or app store, then create an account by clicking the signup button or through the login button if you have registered. To make it easier to access, the application offers the possibility to take advantage of Google and sign in with a Gmail account, to shorten the login process.
2) Once registered or logged in, the platform will ask the user to identify their profile. In this case, users can select role options to sign in as a teacher or student and complete the data.
3) If the role is as a teacher, how to make questions by clicking "Create quiz" on the Quizizz home screen in the upper right corner. Conversely, if the role is as a student, the way to join the class and do the questions can be by entering a code the teacher gave.
4) How to make Quizizz questions is: by clicking the "create a quiz" button on the Quizizz home screen at the top, then writing the quiz name

and selecting the quiz material provided. Then complete the quiz details; after completing the completion, click the save button, and it can be used to create questions based on the desired question form, such as multiple choice, essay, filling the blank, and so on, then give and mark the correct answer. In addition, in making quizizz questions, educators can set the time for each question provided by students.

5) Furthermore, if the question or question has been made as a whole, educators can share the question with students through a link or a code created by Quizizz; after that, quizizz is ready to be used or played.

Rahmania Rahman et al. (2020) stated that the Quizizz application could be used as a motivation for providing quizzes to students whose results significantly affect student learning in Manado. The score of the effect is 0.853 with the high category. This study aims to determine the effect of game-based learning media toward students' learning achievement.

Research Methods

This study used a quantitative approach with quasi-experimental research (Quasi-Experimental Research) and nonequivalent control group design. The subjects of this study were ten students of class XI MIPA 5 (as an experimental class) and ten students of grade XI MIPA 6 (as a control class). The research sampling technique is purposive sampling. The number of samples was ten due to the change from online learning to limited face-to-face learning, where face-to-face learning was limited to the distribution of study group pickets for each class to continue to comply with health protocols during the Covid-19 pandemic.

Research instruments are tests of learning outcomes and documentation. The test is in the form of multiple-choice questions totaling 15 questions with five answer choices: A, B, C, D, and E. Tests are given at the beginning of learning (pretest) and the end of the learning process (posttest). Documentation aims to obtain data and information supporting research (Sugiyono, 2019). Data analysis was used using a non-parametric Wilcoxon matched pairs test. The Wilcoxon test tests conditions (variables) in paired samples or can also be for before and after research (Dedy Rudianto, 2020).

Results and Discussion

Using a Quizizz game-based learning media, teachers can combine instruction, review, and evaluation. Teachers can connect with all teachers worldwide and easily access online quizzes created by other teachers. Therefore, teachers can be as creative as possible in the classroom and will not run out of ideas (Rahmawati &; Vickry Ramdhan, 2021).

This game-based learning media presents learning quizzes made as well as possible to effectively improve students' cognitive development. Students can also participate more, create an exciting classroom atmosphere, and gain an understanding of the learning material. The quality of learning that is trained continuously and gradually will increase along with improved learning outcomes (Desy Safitri, 2019). The visualization of game-based learning media is presented in Figure 1.
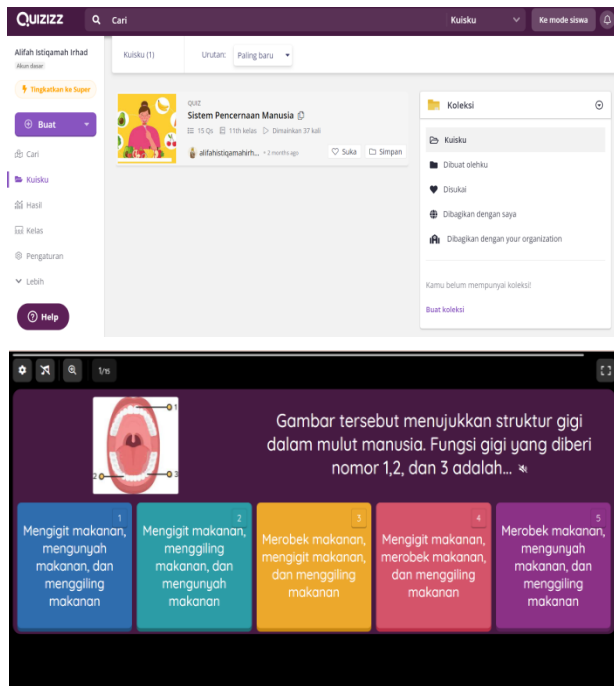

Figure 1. Quizziz game-based learning media

At the meeting in the experimental class, students of XI MIPA 5 applied Quizizz game media. Students are given a pretest to determine their initial understanding before applying Quizizz game media. After that, quizizz game media is used as a practice question after the teacher explains the material that has been presented and gives a posttest through Quizizz. Meanwhile, at the meeting in the control class, students of XI MIPA 6 used conventional methods and were still given a pretest in the form of a sheet of question paper in general and given a posttest through a sheet of the question paper.

Based on Table 1, it can be seen that the level of pretest learning achievement of students in experimental class XI MIPA 5 at MAN 1 Makassar City, which is applied quizizz game media, can be seen that there are no students in the criteria of very high, high, medium, low and there are ten students in the deficient category. In contrast, the posttest learning achievement of students in the XI MIPA 5 experimental class at MAN 1 Makassar City which applied the quizizz game media showed that there were two students in the very high criteria, three people in the high standards, four people in the medium standards, one person in the low criteria. There were no students reached in the very low criteria.

Table 1. Students' learning achievement in Experimental class

No	Range Value	Category	Frequency	
			Pretest	Posttest
1	90-100	Very High	0	2
2	80-89	High	0	3
3	65-79	Moderate	0	4
4	55-64	Low	0	1
5	0-54	Very Low	10	0

As for Table 2 below, it can be seen that the level of pretest learning achievement of students in the XI MIPA 6 control class at MAN 1 Makassar without applying quizizz game media can be seen that there are no students in the criteria of very high, high, medium, low and there are ten students in the requirements of very low while the learning outcomes of the posttest in students in the control class XI MIPA 6 at MAN 1 Makassar without applying quizizz game media it can be seen that there are no students in the very high criteria, two people in the high criteria, three people in the medium criteria, three people in the low criteria and two people in the very low criteria.

Table 1. Students' learning achievement in Controlled class

No	Range Value	Category	Frequency	
			Pretest	Posttest
1	90-100	Very High	0	0
2	80-89	High	0	2
3	65-79	Moderate	0	3
4	55-64	Low	0	3
5	0-54	Very Low	10	2

Based on the total score, the average score obtained in Table 3 is that in the experimental class, the average score is 76.40, which is the high

criterion, while in the control class, the average score is 65.90 is the medium criterion. This data shows that the experimental class using Quizizz game media is better than the control class that uses conventional learning methods.

Table 3. Comparison of students' learning achievements (average score from pre-test and post-test)

No.	Class	Average Score	Criterion
1	Experimental Class (XI MIPA 5)	76,40	High
2	Controlled Class (XI MIPA 6)	65,90	Moderate

To test the hypothesis, it used the Wilcoxon matched pairs test with a significant level of $\alpha = 0.05$. According to the results of hypothesis testing in the experimental class (XI MIPA 5) and control class (XI MIPA 6) in this study showed that the significance value of $< \alpha = 0.000 < 0.05$ so that H_0 was rejected and H_1 was accepted at a significant level of 5% ($\alpha = 0.05$). Thus H_o is left, and H_1 is accepted, so it can be concluded that there is an influence from the quizizz game-based learning media.

The significant difference between the experimental and control classes of learning achievement is due to the use of quizizz game media. The application of quizizz game media in the learning process can make students more motivated to learn while playing games; besides that quizizz can be used as a form of learning evaluation in terms of cognitive. Students can also participate more and create an exciting classroom atmosphere and gain an understanding of the learning material. The quality of learning that is trained continuously and gradually will increase along with improved learning outcomes (Desy Safitri, 2019).

Quizizz game-based learning media direct students to do assignments or quizzes and play games individually, which will undoubtedly make students more independent, think critically, and enjoy the learning process. Students who feel less will make a better effort to learn as a form of self-reflection (Yulia Isratul Aini, 2019). Learning that can be applied by teachers is games. Quizizz is a game application that can be used for evaluation media. Learning activities in class can be tedious for students if learning evaluation is carried out with text and read by the teacher; teachers can use evaluation media by utilizing various learning media to be more interesting for students (Cahyani Amildah Citra &; Brillian Rosy, 2020).

Low learning achievements in the control class (XI MIPA 6) taught without applying quizizz game media due to differences in evaluation tools provided. Conventional learning in the control classroom focuses on teachers rather than participants and tends to be passive because of the lack of interaction during learning activities. (Masayu Diska Prilliza et al., 2020).

Based on the average score obtained, the average score in the experimental class (XI MIPA 5) is 76.40, which has high criteria. The average score in the control class (XI MIPA 6) is 65.90, which is medium criterion. This shows that the experimental class using quizizz game media is better than the control class using conventional learning methods. Efforts to improve quality learning can be achieved by developing a fun learning media (Sugian Noor, 2020).

Conclusion

This study aims to determine the effect of game-based learning media toward students' learning achievement. The conclusions in this study are: (1) The learning achievement of students who use quizizz game-based learning media in experimental class is in the high category with an average of 76.40; (2) The learning achievement of students in controlled class reached the medium category with an average of 65.90 (3) There is an influence of quizizz game-based learning media on student learning achievement with significance value $< \alpha = 0.000 < 0.05$.

Acknowledgement

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