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The Application of Online Learning Assisted with Quizizz Educational Games in Learning Physics

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***Abstract** –This study aims to determine student learning outcomes at SMA Negeri 21 Makassar before and after implementing online learning assisted by the educational game Quizizz. This research is a pre-experimental research. The total subjects of this study were 31 students. The data collection technique used was a multiple choice test with straight motion material. The collected data was then processed using descriptive statistical analysis and N-gain test analysis. The results showed that there was an increase in student learning outcomes after the application of online learning assisted by the educational game Quizizz from 13.42 to 23.98. The conclusion obtained is that online learning assisted by the educational game Quizizz is effective for improving student learning outcomes.*

***Keywords:** educational games; learning outcomes; online learning; quizizz*

I. INTRODUCTION

Science and technology are developing rapidly, their influence extends to various fields of life, including in the field of education. The rapid development of science and technology has had a positive impact by increasing the openness and spread of information from around the world. There fore it is important for students to develop an innovative learning process which of course cannot be separated from adjustments to developments in science and technology (Jamun, 2018).

The online learning system is able to make it easier for students and educators to access learning without having to come face to face especially during the Corona Virus Disease - 2019 (COVID-19) pandemic like now. Where social restrictions are applied on a large scale in the context of breaking the chain of the spread of COVID-19 which requires all levels of education to carry out the learning process online.

Educators can do learning using the E-learning method or what is commonly called online. Online learning is a formal education

organized by schools where students and educators are in separate locations so it requires an interactive telecommunication system to connect the two of them via a computer or Android smartphone (Sobron et al., 2019; Syam, 2017).

One of the interesting online learning media is the use of interactive games. This can make students more interested and happier in following the learning process (Ratmaningsih & Budasi, 2019). Besides being fun, games can also motivate students in learning in the form of delusions, challenges, and curiosity of students (Irwan et al., 2019; Muchlis et al., 2018). Presentation of learning in the form of games can increase interaction between students and train students' skills in understanding the material they get.

Based on the results of the observations conducted, the students' physics learning outcomes were still in the low category with an average of 65. This was because the strategies and methods used by educators seemed monotonous. Therefore, the objective of this study was to describe how much the increase in students' physics learning outcomes before and after the implementation of online learning assisted by the educational game Quizizz on learning.

II. METHODS

The type of this research is pre-experimental research with using design *one-group pretest-posttest.* According to Sugiyono (2014), pre-experimental design is a design that includes only one research class without a control class. With the design, the first step is to provide a pretest to find out the students' initial knowledge, then proceed with implementing online learning assisted by the Quizizz educational game. The last step is giving a posttest at the end of the lesson to see the level of learning outcomes of students after application of online learning assisted educational games Quizizz. The results of the pretest and posttest were then analyzed to obtain answers to the research problems. The research design can be seen in Figure 1 below:
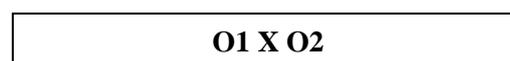
$$\boxed{\textbf{O1 X O2}}$$

Figure 1. Research design

The subjects of this study were students of class X MIPA 1 SMA Negeri 21 Makassar in the academic year of 2020/2021 with a total of 31 students. To collect the data (learning outcomes), a multiple-choice test was used, with 30 questions about straight motion. The successful use of online learning assisted by the educational game Quizizz is determined using the N-Gain test analysis.

III. RESULTS AND DISCUSSION

A. Results

1. Descriptive statistical analysis results

Table 1. Percentage of student learning outcomes

Score Interval	Pretest		Posttest		Category
	Frequency	Percentage (%)	Frequency	Percentage (%)	
0 - 6	3	10	0	0	Very low
7 - 12	9	29	1	3	Low
13 - 18	17	55	3	10	Moderate
19 - 24	2	6	10	32	High
25 – 30	0	0	17	55	Very high

Based on Table 1, it can be seen that at the time of the pretest of 31 students there were 3 students in the very low category with a percentage of 10%. There were 9 students in the low category with a percentage of 29%, and 17 students were in the medium category with a percentage of 55%. The study also showed that only 2 students obtained high category scores, and there is no student in the very high category. Meanwhile, in the posttest, none of the students' score was in the very low category, and only 1 student got low category score. There were 3 students' scores in the medium category with a percentage of 10%, 10 scores were in the high category with a percentage of 32%, and 17 students obtained very high category with a percentage of 55%.

2. N-Gain test analysis

Based on the results of the data analysis, it was obtained that the n-gain (g) value was 0.62. This value was categorized in the medium category. This proves that there was an increase in students' learning outcomes before and after the implementation of online learning assisted by the educational game Quizizz at SMA Negeri 21 Makassar, and the increase is categorized medium.

B. Discussion

Based on the results of descriptive analysis, it was obtained that the students' average score after the implementation of online learning assisted by the educational game Quizizz was 23.98 (high category). Furthermore, based on the results of the analysis of the N-Gain test, the g value of 0.62 was obtained which indicates that the increase in students' learning outcomes was in the medium category.

The scores obtained by students reflects the students; level of the cognitive learning outcomes starting from remembering, understanding, applying to analyzing. The highest score obtained by the students is in the C1 domain or remembering domain with a score of 87.50. This is because in this domain, to answering questions students only need to remember the lessons they have received. Meanwhile, in the C3 domain (applying domain), the students obtained a score of 87.10 because the questions given in this domain are at a level where students must be able to apply equations that are in

accordance with the questions given. Sometimes, students used the wrong equation to solve the problem given. For the C2 domain (understanding domain), students gained a score of 85.89 because students sometimes have wrong perceptions in reading the questions given, one of which is when reading the graph where most students are not able to correctly answer and place the right graph for every question given. Moreover, the lowest average score obtained by students was 72.26 in C4 domain (analysis domain) because in this part the questions displayed require students to analyze the components of the questions which will then be entered. In equations, sometimes students find it difficult to determine what is known in the problem and what equations are right to be used in solving these problems.

These results of this study are similar to the research conducted by (Setiawan at al., 2019) that there is an increase in students' learning outcomes before and after the implementation of online learning assisted by the Quizizz Education game on learning mathematics. From this, it can be seen that online learning assisted by the educational game Quizizz is an effective learning strategy used to improve students' physics learning outcomes.

IV. CONCLUSION

Based on the results of the study, it can be concluded that there is an increase in student physics learning outcomes at SMA Negeri 21 Makassar after the implementation of online learning assisted by the educational game Quizizz. The magnitude of the increase in student learning outcomes after the application of online learning assisted by the educational game Quizizz is in the medium category.

This study has limitations, for example, the number of respondents is small and only focuses on measuring student physics learning outcomes. Therefore, further research is needed, by applying online learning assisted by the educational game Quizizz to a large number of respondents and a varied number of classes and seeing the effect of this learning method on attitudes and learning processes.

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