**JP (Jurnal Pendidikan) : Teori dan Praktik**
Vol. 9, No. 1, April 2024, pp. 45-53
E-ISSN: 2527-6891, DOI: https://doi.org/10.26740/jp.v9n1.p45-53


# Using Quizizz App to Create an Active Classroom in Mathematics Learning nn Elementary School

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**Article Info**

***Article history:***

Received March 12, 2024
Revised April 2, 2024
Accepted April 12, 2024

***Keywords:***

*Quizizz application*
*Mathematics learning*
*Active classes*
*Elementary school*

**ABSTRACT**

This research aims to find out what the learning conditions are when using the Quizizz application for Mathematics learning in elementary school. The scope of this research focuses on students and teachers. This research uses a qualitative approach, qualitative data in the form of information from interviews and observations made using qualitative data collection techniques including: Interviews and Documentation. As for data collection techniques for interview data, researchers describe the interview results in the form of descriptions. Researchers use data analysis techniques using the Milles and Huberman theory, namely data condensation, data presentation, and data conclusions. The location of this research was carried out at an elementary school in Yogyakarta, involving one teacher as a resource person. There are two factors that influence learning, namely from within oneself and from outside oneself. From outside, in the form of learning media used, one of which is the Quizizz application. The Quizizz application is a web tool that contains interactive quizzes containing educational content presented in an attractive appearance. Learning mathematics is abstract learning so it requires media to clarify the intended symbols or numbers, so the Quizizz application can help make learning mathematics easier with various interesting features.



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## 1. INTRODUCTION

In the educational process, creating an active learning atmosphere is a critical component in achieving learning objectives. Active learning requires a teacher, as a facilitator, to master strategies that encourage student engagement. According to Syaparrudin (2020), teachers need strategies that foster active learning by addressing the diverse learning styles of students. By understanding these differences, teachers can implement strategies that optimize student participation. Similarly, Susanto (2019) emphasizes that effective learning strategies involve maximizing cognitive engagement, understanding real-world phenomena, and applying knowledge in daily life. These strategies highlight the importance of student activity, which refers to the physical and mental engagement of students during the learning process.

To achieve learning goals, both teachers and students play essential roles in creating an effective classroom environment. In active learning, students are encouraged to actively participate in the learning process, as this approach helps them understand material more effectively compared to passive listening (Nurhalimah, 2023). For active learning to succeed, teachers must provide subject matter that aligns with students' abilities, as this fosters confidence and encourages active participation (Amini et al., 2023).

Despite the emphasis on active learning, challenges remain in achieving optimal learning outcomes. For instance, the Indonesian education report card in 2014 (2022) revealed that elementary school students' numeracy skills were still below expectations. This indicates that traditional classroom practices may not fully support active learning. To address this, teachers need to integrate educational technology as a medium to facilitate student engagement and improve learning outcomes. Educational technology encompasses tools and

methods that enhance learning activities, manage information, and support the transfer of knowledge (Dewi & Hilman, 2018). However, as noted by Lumban Gaol and Simanjuntak (2023), the underutilization of technology in classrooms can hinder its potential to improve learning effectiveness.

In mathematics education, teachers must develop innovative learning models that incorporate educational technology. One such model is the Instructional Games approach, which uses game-based features to create an enjoyable and engaging learning experience (Rusman et al., 2015). Mathematics learning should not only focus on formulas and theories but also emphasize real-life applications. To achieve this, effective and engaging learning media are essential, and one promising tool is the Quizizz application. According to Sapriyah (2019), the use of interactive learning media can stimulate students' interest and positively influence their motivation.

Quizizz Is a web-based application designed to make learning more engaging by incorporating game-based quizzes and interactive features. It allows teachers to present mathematics material in an appealing format while providing students with a fun and active learning experience. The application also displays students' performance in the form of statistical data, enabling teachers to monitor progress effectively (Agustina & Rusmana, 2019). The colorful animations and interactive features of Quizizz Make it particularly appealing to students, fostering both enjoyment and active participation.

Several studies have highlighted the benefits of using Quizzes in education. For example, Fawaidatun et al. (2023) found that Quizizz increased student motivation and improved learning outcomes in Islamic Religious Education. Similarly, Ni Wayan et al. (2023) reported that training teachers to use Quizizz enhanced their ability to deliver material in an engaging and effective manner. These findings suggest that Quizizz can be a valuable tool for both teachers and students in the learning process. Based on the background and challenges discussed above, this study aims to explore the use of the Quizizz application in creating an active learning environment for mathematics in elementary schools (SD/MI).

## 2. METHOD

This research used a qualitative approach, with qualitative data in the form of information obtained from the results of interviews. The primary data sources that the author obtained were oral and written statements from students and teachers related to the use of the Quizizz application for mathematics learning. For secondary data, the author collected information from various reliable journal sources and other literature reviews related to the research to add insight and supporting references. This research involved one teacher as a resource person for the interview activities. The study was conducted at a public elementary school in Sleman district, Yogyakarta, during the even semester of the 2023/2024 school year. The qualitative data collection technique used in this study was interviews. For the data collection technique, the researcher described the interview results in the form of a narrative. The researcher applied data analysis techniques based on condensation, data presentation, and drawing conclusions (Miles et al., 2014). Below is a detailed explanation of each step:

a. Data Condensation

This technique was carried out after obtaining data from the field. The researcher grouped the data according to the needs of the study. At this stage, the researcher used the condensation technique after conducting interviews with class teachers. This was done by condensing the data that had been obtained and focusing on the research objectives.

b. Data Presentation

In this technique, the researcher compiled all the selected data to make decisions. The researcher presented the data in the form of notes and narrative text, then made a provisional decision. If the conclusion was considered inappropriate, the researcher re-analyzed the data.

c. Data Summaries

At this stage, the researcher drew a full conclusion after obtaining complete and accurate data.

## 3. RESULTS

The purpose of this study is to describe the use of the Quizizz application for Mathematics learning in elementary school students. In conducting data analysis, the researcher is guided by qualitative research procedures and steps, namely by condensation, data presentation, and data conclusions. The data obtained included the results of interviews with teachers and the results of observations on the use of the Quizizz application during the Mathematics subject.

### Description of Use of QuizizzApp in Education

In obtaining the results of the analysis of the use of the Quizizz application for mathematics learning, the researcher conducted a series of interviews with a homeroom teacher IV. In this interview activity, the researcher gave questions directly related to the use of the Quizizz application. The interview was conducted directly at the school with several questions, the data obtained was in the form of a description of the answers of the class IV homeroom teacher. The teacher revealed that:

> *"When learning mathematics tends to be seen as difficult, confusing and boring, learning using Quizizz can make the impression of learning while playing, it makes students get new experiences and the learning atmosphere becomes fun. In addition, this application also makes it easier for teachers to apply it with various interesting features that make it easier and more exciting for teachers to be creative in the content material they want to create. In addition, the use of the Quizizz application also makes children active and excited."*

From the interview, it can be understood that teachers are happy in using the Quizizz application because the application fosters a fun learning process, which can support the mathematics learning process. Students experience a playful learning atmosphere, which provides new experiences and boosts their enthusiasm. On the other hand, this application also makes it easier for teachers with interesting features that support creativity in creating content materials, so that teachers are more enthusiastic about teaching. The use of Quizizz also encourages student activity and enthusiasm in the learning process.

**Description of Learning Activities Using the Quizizz Application**

In finding out the learning activities carried out using the Quizizz application, the researcher conducted interviews with class teachers by giving questions asked to class teachers. The teacher revealed that:

> *"During learning, this application is quite useful, because after the teacher explains the material, the teacher can review the material that has been taught using the Quizizz Feature based on the theme of the material that has been delivered. In addition, students also feel happy when working on the questions given by the teacher. The effect of enjoying students makes students more confident in showing their active side. Judging from the students' responses when asked in class, they looked very happy. It is also seen that many students often ask when teachers do not use the application for several weeks, students immediately ask when they will use the Quizizz application again. Students also play an increasingly active role when using the application, such as daring to ask questions and opinions, which makes the class more active and conducive."*

From the results of the interview, it can be concluded that the teacher considers the Quizizz application relevant to learning because it makes it easier for teachers to evaluate learning or review the material that has been taught and to simply give practice to students, so that students feel happy when doing it. The use of the Quizizz application in learning is very beneficial, especially in evaluating the material that has been taught by the teacher. Students feel more enjoyment when working on questions through this application, which increases their confidence and activeness. The students' responses were very positive, they showed high enthusiasm and often asked when the application would be used again. With Quizizz, students become more courageous in asking questions and expressing opinions, creating a more active and conducive classroom atmosphere.

**Description of Difficulties in Using the QuizizzApp**

In finding out the difficulties experienced in using the Quizizz application, the researcher conducted an interview by giving questions that were asked the difficulties felt when using the Quizizz application, that:

> *"For the form of difficulties experienced may only be at the beginning of use, because students are still confused by the features that are first encountered. However, this difficulty is solved by helping teachers slowly, because there are still many parents of students who do not understand the operation of learning technology such as the Quizizz application. whether it is appropriate or not depends on what material content, for example, the content of the material that is suitable for using the Quizizz application is a flat build that requires a lot of images. This is suitable for using the Quizizz application, because the Quizizz application provides many colorful images."*

The results of the interview show that the difficulties experienced in using the Quizizz application are only limited to the initial introduction of learning because students are using the application for the first time. However, the difficulties experienced can be overcome with guidance by teachers. However, it is undeniable that these difficulties can become a sustainable problem if they are not quickly solved properly by teachers. After knowing the results of the interview above, it can be seen that the use of the Quizizz application has a great influence on learning, especially in Mathematics subjects. Because there are interesting features that can increase students' desire to learn. This shows that educational technology has a great influence on learning in the current era.

## 4. DISCUSSION

After describing the data, the researcher then discussed the results of the data obtained as follows.

**Use of QuizizzApp in Education**

The use of educational technology makes it easier to take place in the classroom, because technology can give a different impression from the manual learning system. Games in learning continue to attract the attention of teachers and students because they are used in different ways to engage students and stimulate student activeness (Ahmed, 2022). One method for implementing visualization into the classroom is to design a learning environment that allows students to engage with a variety of technology tools (Stanciulescu et al., 2024). One of the technologies that can be used in learning is the use of interactive quiz applications such as Quizziz. The Quizizz application is a learning medium in the form of software containing *tools* to create interactive quizzes on learning (Sari & Yarza, 2021). The presentation of complex concepts to students in a game atmosphere facilitates content interaction among students and provides a positive classroom (Navinkumar & Sivakami, 2024). From this explanation that educational technology is a tool to provide direct involvement in learning, one of the technologies that can be used is the Quizizz application. Quizizz Is a game-based learning media that contains educational pages and can be accessed for free through *official website* Quizizz.

Quizizz Is an innovation of an interesting manual learning evaluation system. Games in learning provide students with an interactive and immersive experience that allows them to focus, build, and change situations by learning the implications of their choices (Ishtiaq Khan et al., 2024). Quizizz Is one of the many interactive quiz applications in online learning that prioritize learning styles by directly involving students to become active through competitive features (Supriadi et al., 2021). Game-based learning is highly efficient because students are motivated to play games and, in the process, they learn without realizing it (Jankovic & Lambic, 2020). From this explanation, it can be seen that the Quizizz application is very useful in learning innovatively and providing a fun learning impression. In discussing innovative education, it will always need an update in the process, because education is something that will never end.

To innovate in learning, educators should always look for shortcomings and needs that are needed. Because if learning lags behind or does not follow the development of needs, automatically the education will be far behind, because education will continue to expand endlessly, for that it is necessary to innovate periodically in the educational process. For this reason, the definition of innovation itself is an activity in giving rise to new things through a new discovery or development in the form of ideas that can be realized and have good goals (Rajagukguk, 2020). Learning innovations that can be done are by using gamification approaches such as Quizizzin learning, it helps students to better understand their lessons and remember information (Mohd Noordin et al., 2023). In supporting the continuity of learning, several elements of the game are included in this application to increase student motivation and attitude (e.g., scores, leaderboards, or rankings) (Delgado-Gómez et al., 2020). From this explanation, it can be understood that education must be pursued in innovation, one of the innovations that can be done by developing a gamification approach, such as the use of the Quizizz application.

In innovating in education today, it can be done through developing technology. Technological advances today can be used in the development of education. Technology that can be used such as the use of mobile phones, computers, and the internet, has been proven to increase the effectiveness of performance in human life, such as developing learning media in the educational process (Wijayanti & Hermanto, 2021). From this explanation, it refers to the use of learning media related to technological tools. Learning media has a usefulness in conveying information during the learning process. Through media related to technology, it can make it easier to access everything related to learning without the need for paper and ink to write. According to Yulistiarawati, Umayaroh, and Linguistika (2021) that there are many features that are presented in an interesting way in order to increase the curiosity and desire to exploit the material by students and increase competitive attitudes in creating an active classroom. From this explanation, it can be understood that innovations that can be carried out today are related to technology, which can be used as a relevant learning medium for students.

**Learning Activities Using the Quizizz application**

In its application, the Quizizz application became famous when Covid 19 broke out in Indonesia, which made learning carried out remotely (online). Innovations in education are further emphasized by encouraging broader discussions about how students learn, assessments are made, and preparing students for future roles (Corrin et al., 2023). The spread of learning technology and best practices in its use among teachers poses complex challenges because technology still has many limitations (Bridge et al., 2023). From the beginning, the use of the Quizizz application was not only used during the Covid 19 period, but until now several schools are still implementing the use of the Quizizz application for evaluation needs. Because the Quizizz application is an interactive quiz application that students can easily access and use, and gives a pleasant impression so that students are not bored in working on the evaluation questions given by the teacher (Roysa & Hartani, 2020). These game-based apps can be an effective tool if they are contextualized and integrated with additional information and activities before and after the session, as well as different teaching approaches (Scurati et al.,

2023). In practice, the use of Quzizz has an influence, one of which makes learning more active. According to Sitorus and Santoso (2022) that the correct use of the Quizizz application can increase students' activeness in learning, because Quizizz has an influence on students in the form of high curiosity and high desire to try. From this explanation, it can be understood that the application of the Quizizz application has an effect on the formation of classes that are active in the learning process, this is supported by features that support students to play an active role.

One of the learning that can be applied using the Quizizz application is the subject of Mathematics, because mathematics is the right abstract concept if juxtaposed with interesting features to increase students' interest in learning (Mulyati & Evendi, 2020). The construction of technological concepts is present in an interactive environment where practical activities, the synthesis of experience gained, and analytical abilities coexist to solve design problems and challenges (Molina-Vásquez, 2021). Mathematics lessons are synonymous with practice questions, therefore the assessment of test types can be done using the Quizizz application, besides that teachers can also maximize the features contained in it, one of which is the ranking system to make it easier for teachers to make assessments (Amany, 2020). The level of student engagement is suggested to determine the level of processing that students perform in different learning environments (Sugden et al., 2021). Active learning improves student performance and improves student outcomes (Jahnke et al., 2022). Students have more opportunities to explore, create, display and evaluate with the support of interactive learning apps (Zhan et al., 2021). Learning using applications that contain animations can build students' enthusiasm (Hao et al., 2024). By combining interactive applications and educational theories, we can increase students' learning activity and encourage innovation and development in teaching (Bi & Ye, 2024). This app can be utilized in education to implement active learning sessions and hands-on experience (Rossoni et al., 2024). This application can be used in knowledge management systems where students can create and communicate new ideas and search for information in a certain field using various knowledge sources (Tajuddin et al., 2023). A game is a system in which players engage in abstract challenges, defined by rules of interactivity and feedback that produce measurable outcomes that often elicit emotional reactions (Stenholm et al., 2019). From this explanation, it can be seen that learning mathematics requires a type of application to do periodic exercises. This can also make it easier for teachers to carry out assessments.

From what has been mentioned above, it can be understood that learning media is very useful in mathematics learning, especially the Quizizz application which is directly related to problem exercises so that it gives a more real impression of contextual learning. Mathematics learning also requires the use of applications that require students to be able to play an active role in learning. This can make students more familiar with mathematical concepts known as abstract concepts. Another thing that strengthens how influential the Quizizz application is in learning is that this application has a ranking concept so that students feel motivated in working on the given questions.

**Difficulties in Using the QuizizzApp**

In practice, the use of the Quizizz application is not as easy as imagined, because the use of information technology-based applications associates new skills that must be mastered for students and teachers (Rossoni et al., 2024). For teachers, assessing students' mastery of learning objectives and providing appropriate feedback to students is not as easy as it seems (Pals et al., 2024). The current generation seeks active learning, which can result in increased knowledge and provide a deeper understanding of the subject matter (Kasinathan et al., 2019). Effective use of technology requires a complex form of teacher knowledge that integrates content, pedagogy (Chen et al., 2022). The Quizizz application is designed with various features in it, ranging from unique images, audio, to question processing time. This makes students and teachers need training first so that the use of the Quizizz application can be used properly and as needed. In improving teaching practices and improving student learning experiences, there will always be challenges in the process because to improve the quality of learning there will always be updates in it (Jaroenkhasemmeesuk et al., 2023). To face the problem of switching the traditional learning system to technology-based, a teacher needs to carry out training (Volk, 2019). From this explanation, it can be seen that the use of the Quizizz application is not spared difficulties, because the updates that occur cause students and teachers to have to adapt from the beginning to be able to apply correctly.

Although the Quizizz app is designed for interactive quizzes, in reality students are not always able to actively participate. Sometimes it can be found that students lose interest in Math lessons, which makes students less interested in actively participating (Lusiani, 2020). Students generally have a positive attitude towards technology, but their interest decreases when certain situations and topics are presented (Annison, 2011). In this new learning paradigm, students are guided to become independent, self-motivated, and learn independently by actively engaging in formal and informal learning according to their desire to acquire new competencies in the 21st century (Cheung et al., 2021). In practice, the role of parents is indispensable in this learning process (Wang, C., Zhang, Y., Ding, H., 2023). Meanwhile, teachers can have a more comprehensive

and accurate understanding of students' learning status and needs, as well as provide more personalized and accurate teaching services for students (Mo & Liang, 2024). In the process of implementing it, teachers need more and better training on the creation, use and evaluation of digital education materials (Area-Moreira et al., 2023). From this explanation, it can be understood that the difficulties that can be encountered apart from technical problems, but the difficulties can come from the individual students themselves, because not all students have a great interest in learning mathematics even if they use the free application *games.*

## 5. CONCLUSION

The use of the Quizizz application in Mathematics learning can foster active learning because this application provides a variety of interesting features that encourage students to participate and have a high sense of curiosity. The Quizizz application also has a ranking feature, which can make it easier for teachers to carry out learning evaluation activities. This study has limitations, namely only discussing the use of the Quizizz application in Mathematics learning in active learning in the classroom and data collection that only relies on interview results. This can make a better study for the future regarding the use of the Quizizz application.

## ACKNOWLEDGEMENTS

The author would like to thank all parties who helped in the process of compiling this article. The author hopes that this article can be useful by readers in developing material about learning media.

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