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Exploring Students' Responses: The Feasibility of Pizza Slice Math Learning Media

Yulia Maftuhah Hidayati[1*], Sylviana Ika Safitri[2], Achmad Januar Arifin[3], Syavira Salsabila Rahmawati[4], Rusnilawati[5]

[1,2,3,4,5] Pendidikan Guru Sekolah Dasar, Universitas Muhammadiyah Surakarta, Surakarta, Indonesia

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ABSTRAK

Lemahnya proses pembelajaran merupakan salah satu permasalahan yang muncul dalam dunia Pendidikan khususnya pada pembelajaran matematika. Kegiatan pembelajaran matematika masih didominasi dengan kegiatan menghafal dan mendengarkan. Tujuan penelitian ini adalah untuk mengidentifikasi respon siswa terhadap pengembangan media pembelajaran android Pizza Slice Math *pada materi pecahan di sekolah dasar. Penelitian ini menggunakan pendekatan kualitatif dengan tujuan mendeskripsikan dan menggambarkan secara sistematis atau mendetail tentang tanggapan siswa terhadap pengembangan media pembelajaran* Pizza Slice Math *pada materi pecahan. Data dalam penelitian ini dikumpulkan menggunakan teknik angket. Angket yang digunakan dalam penelitian ini terdiri dari pertanyaan-pertanyaan yang bertujuan untuk mengukur tanggapan siswa terhadap media pembelajaran yang telah dikembangkan. Pengujian dilakukan dengan mengujikan aplikasi pembelajaran pada siswa sebagai responden. Responden yaitu siswa kelas 2 sebanyak 15 orang. Hasil pengujian aplikasi pembelajaran berbasis Android* Pizza Slice Math *pada siswa kelas 2 menunjukkan peningkatan signifikan pada aspek kualitas isi dan tujuan, kualitas pembelajaran, dan kualitas teknis setelah revisi dilakukan. Secara keseluruhan, aplikasi ini mengalami peningkatan penilaian dari siswa, yang menunjukkan bahwa aplikasi ini efektif dan bermanfaat dalam proses pembelajaran. Aplikasi ini direkomendasikan untuk digunakan dalam pembelajaran karena memiliki kualitas isi yang tepat dan lengkap, memberikan kesempatan belajar yang baik, serta mudah digunakan. Hal ini menunjukkan bahwa respon siswa sangat tertarik terhadap media* Pizza Slice Math*. Dengan demikian, aplikasi* Pizza Slice Math *layak digunakan sebagai media pembelajaran interaktif.*

ABSTRACT

Weaknesses in the learning process are one of the problems that arise in the field of education, especially in mathematics learning. Mathematics learning activities are still dominated by memorization and listening activities. The aim of this study is to identify students' responses to the development of the Android-based learning media, Pizza Slice Math, for teaching fractions in elementary schools. This study uses a qualitative approach to systematically and in detail describe students' responses to the development of the Pizza Slice Math learning media for fractions. Data in this study were collected using a questionnaire technique. The questionnaire used in this study consists of questions aimed at measuring students' responses to the developed learning media. Testing was conducted by administering the learning application to students as respondents. The respondents were 15 second-grade students. The results of testing the Android-based learning application Pizza Slice Math on second-grade students showed a significant improvement in the aspects of content quality and objectives, learning quality, and technical quality after revisions were made. Overall, the application experienced an increase in student ratings, indicating that the application is effective and beneficial in the learning process. This application is recommended for use in learning because it has accurate and complete content quality, provides good learning opportunities, and is easy to use. This indicates that students' responses are very interested in the Pizza Slice Math media. Thus, the Pizza Slice Math application is suitable for use as interactive learning media.

Corresponding author
*E-mail addresses: ymh284@ums.ac.id (Yulia Maftuhah Hidayati)

1. INTRODUCTION

The development of science and technology has progressed very rapidly, including in the world of education. The continuous development of technology influences creative and innovative thinking. As a result, all fields must be able to utilize technology to continue to develop, especially in the field of education. In this digital era, humans are very dependent on technology, including in the learning process. Global demands encourage the world of education to follow technological developments in order to improve the quality of education during the learning process (Suryadi, 2015; Wardani & Budiadnyana, 2023). Education must keep up with the times and existing technology to increase superior and competent human resources. This is why education requires educators who are able to accept and follow technological developments to be applied in the world of education. Educators or we can call them teachers are required to strive for innovation related to the use of technology in teaching and learning activities. The development of this technology allows teachers to think creatively by combining learning through a touch of technology in it. Teachers can functionally use communication and information technology by utilizing various sources or learning media (Aka, 2017; Restiani et al., 2022). In the teaching and learning process, a teacher must be skilled in selecting, using, and adjusting the media to be used in order to improve the quality and effectiveness of teaching (Apriati et al., 2021; Rasvani & Wulandari, 2021). Basically, classroom learning only relies on materials from books. Thus, the ongoing learning process does not pay attention to students' needs. The monotonous learning process results in a lack of collaboration between teachers and students which results in the learning process decreasing or weakening.

The weakness of the learning process is one of the problems that arise in the world of education, especially in mathematics learning. Mathematics learning activities are still dominated by memorization and listening activities. As a result, mathematics teaching activities become unpleasant, scary, and boring, and ultimately have an impact on student abilities that are far from what is expected (Suryandaru & Setyaningtyas, 2021; Wardana & Fitriyani, 2019). Teachers must have a way to enliven the learning process that is interesting especially to improve problem solving activities without the benchmark of memorizing and listening activities. Therefore, teachers must be able to use appropriate media, methods, approaches, and strategies so that learning becomes meaningful and enjoyable for students (Saryanti, 2023; Sunaryanto et al., 2020). Student involvement is also needed to provide equitable learning. To achieve learning activities that can facilitate students to understand concepts well, learning media is needed as a companion for teachers and students.

One of the tools or learning materials that can be used by educators so that learning activities take place effectively is the use of learning media. Effective learning requires representative media that can connect students' knowledge in real conditions and learning materials (Abidin, 2020; Shalikhah, 2017). Learning media is considered effective to support the learning process in the classroom. The existence of this learning media can change the learning process to be more interesting and effective. The existence of learning media will make students easier and faster to understand the material as a whole so that it will attract students' interest in learning more (Risma Handayani & Surya Abadi, 2020; Shoimah & Syafi'aturrosyidah, 2020). Learning media can also help students in the process of solving a problem so that learning will be interesting and enjoyable. Media is one component of learning as a container or channel for messages delivered to targets or recipients of messages and materials that want to be delivered in the learning process. The use of learning media is very important because it can provide a concrete understanding of the material delivered, the level of teacher creativity is very much needed in developing or using all types of learning media that can be used as information media to make it easier for students to understand a concept well (Mayevskaya, 2018; Ramdan & Atiaturrahmaniah, 2019).

The type of mathematics learning media that is considered to have a positive influence on education is technology-based media. Several innovations in learning have also begun to be developed, especially related to learning media (Hermita et al., 2021; Pratiwi & Puspitaningtyas, 2019). The existence of this media can influence the learning structure to be interesting for students and increase a high sense of curiosity. This technology-based media can attract students' attention when using it so that students will be more focused in the learning process. Technology has been proven to be able to increase students' interest in learning through attractive displays, thus helping to avoid feelings of boredom and boredom during the learning process (Fransiska & Sukmawarti, 2021; Monica et al., 2019). The use of technology-based media in the learning process can be applied in mathematics material. Mathematics learning is sometimes boring for students, even many students are lazy in learning mathematics. The integration of information technology-based learning media in mathematics learning is considered to be able to provide great benefits in improving the quality of learning and student learning outcomes (Chairunnisak, 2020; Ma'iswati Hani et al., 2024).

Mathematics learning is an effort to encourage and help students in learning Mathematics (Asih, 2017; Putri & Airlanda, 2020). Minister of National Education Regulation Number 22 of 2006 concerning Content Standards publishes 3 of the 5 general targets of mathematics learning, namely first, so that

students can study mathematical theory, interpret relationships between theories and apply theories effectively, carefully and accurately. Second, to enable students to reason about patterns and features, generalize, and write or express mathematical ideas and statements. Third, to enable students to develop problem-solving skills, including the ability to understand problems, design and work on mathematical models, and explain solutions from a framework. By learning mathematics, students can think critically, be skilled in counting, and be able to apply basic mathematical concepts to other subjects as well as in mathematics itself (Amir & Andong, 2022; Wardana & Fitriyani, 2019). One of the mathematics lessons that requires problem-solving skills is fraction material.

Fractions are one of the mathematics subjects that are closest to life. Students' ability to operate fractions is one of the important indicators in determining their success in solving mathematical problems. Fractions are numbers that when illustrated in a picture, the part in question is the part that is paid attention to, which is usually indicated by shading (Maulidina et al., 2023; Unaenah et al., 2020). Fractions are often used to divide goods or food. The concept of fractions, such as dividing a cake or bread into equal parts, can solve many problems in everyday life (Amir & Andong, 2022; Sujana et al., 2022). Fractions are also commonly used in measurement, such as when we measure time, distance, and weight. Fractions are also commonly used in the business world. Therefore, it is expected that students will be able to solve problems related to fractions in learning and in everyday life.

Research on Android-based learning media has been conducted byRofiqoh et al. (2020), stated that the form of application-based educational games obtained valid, practical, and effective criteria targeting fourth grade elementary school students in fractional material. Research by stating that learning outcomes in fractional material are influenced by the use of peer tutoring models assisted by fractional pizza media (Detrianty et al., 2023). Research on fraction learning media using Pizza Hitz is effective in fraction arithmetic operations and has a positive influence on the ability to add and subtract fractions (Rahayu, 2019). The same study stated that PACAPI media (pizza fraction board) can improve mathematical problem solving skills by fulfilling success indicators (Khurriyati et al., 2022). Based on the description above, it can be concluded that the use of Pizza Slice Math media in Mathematics subjects on fraction material in elementary schools has never been done.

Interesting learning makes students happier and facilitates the acquisition of knowledge, as evidenced by their reactions during the learning process. As an educator, it is important to know students' reactions to teaching and learning activities. Educators must understand students' thinking and be able to inspire them to change their thinking in a good and correct direction. Teachers must find various ways to deliver learning to achieve learning objectives and help students understand the subject matter (Huda et al., 2021; Parina et al., 2022). In this way, teachers will know where the students' mistakes are. These mistakes can be used as a source of information for students' learning so that they are not repeated. So that students will have a better understanding.

The novelty of this study lies in the innovation in the use of pizza slice learning media, which integrates visual and contextual concepts into mathematics learning. This media presents an approach that is relevant to students' daily lives through contextual teaching and learning, so that it can improve students' understanding of mathematical concepts, such as fractions or geometry. Based on the background above, this study aims to analyze students' responses to the development of Pizza Slice Math android learning media on fraction material in elementary schools.

2. METHOD

This study uses a qualitative approach with a descriptive design (Sutama et al., 2022). The qualitative approach was chosen because this study aims to describe and systematically illustrate students' responses to the development of "Pizza Slice Math" learning media on fraction material. Descriptive design allows researchers to present findings based on data obtained without manipulating variables. The subjects of this study were 15 students of grade 2 at SD Negeri Sugihan 04. The main focus of this study is to gain an in-depth understanding of students' acceptance and responses to the developed learning media. The data in this study were collected using a questionnaire method. The questionnaire technique was chosen because it is considered an efficient and effective method for obtaining information indirectly from respondents. The questionnaire used consisted of a series of structured questions aimed at measuring students' responses to the "Pizza Slice Math" learning media. This instrument was designed to provide relevant data regarding students' perceptions of the practicality, attractiveness, and effectiveness of the learning media. In addition, the instrument used has referred to the beta test or media feasibility test as explained, so that its reliability can be accounted for (Sugiyono, 2012). The data obtained from the questionnaire were analyzed using descriptive analysis techniques. This analysis was conducted to provide a detailed picture of students' responses to the learning media that had been developed. The analysis process included processing questionnaire data with steps such as calculating the total score, determining the average response, and

interpreting the results based on predetermined categories. The researcher also compared the findings with the media feasibility test criteria to evaluate whether the "Pizza Slice Math" learning media met the expected standards. This descriptive analysis is expected to provide in-depth insight into students' acceptance of the developed learning media.

3. RESULT AND DISCUSSION

Result

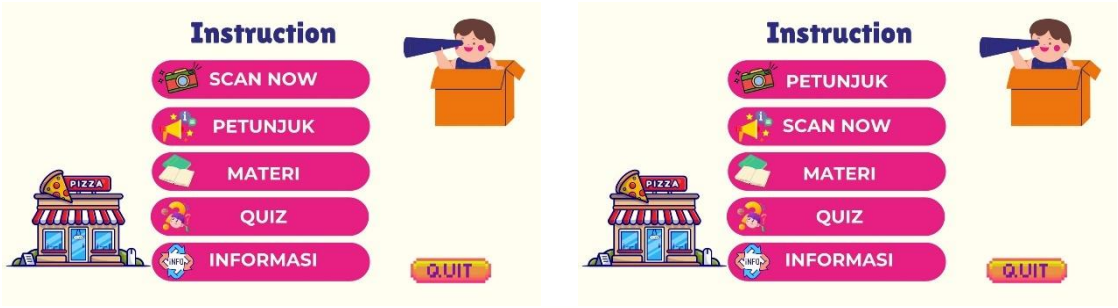
The test was conducted by testing the learning application on students as respondents. The respondents were 15 2nd grade students. Before conducting the test, the researcher briefly explained the testing procedure and how to use the application. Each student then used the Android-based learning media Pizza Slice Math. Respondents were then asked to fill out a questionnaire to provide assessments, suggestions, and comments on the learning media being tested. The results of the student response questionnaire are seen in Table 1.

Table 1. Student Response Questionnaire Results in Beta Testing

Aspect	Indicator	Percentage (%)		Average Percentage		Percentage Criteria	
		Test 1	Test II	Test 1	Test II	Test 1	Test II
Content quality and purpose	Accuracy	83	84	82.57	85.92	Very good	Very good
	Interest	84	85				
	Completeness	82	85.4				
	Interest and attention	81.3	89.3				
Quality of Learning	Providing learning opportunities	81.45	83.4				
	Providing assistance for learning	80.4	83.9				
	Motivating qualities	79.7	83.25				
	Flexibility of learning	78.45	82.6				
	Relationship with other learning programs	76.9	82.4	80.15	85.51	Very good	Very good
	Social quality of learning interactions	77	84.5				
	Test quality and assessment	83	90.55				
	Can have an impact on students	80.5	90				
	Can have an impact on teachers and learning	84	89				
Technical Quality	Legibility	83.5	86				
	Easy to use	81	92.5				
	Display or impression quality	80	89	80.49	86.70	Very good	Very good
	Quality of response handling	79.5	83.3				
	Documentation quality	78.45	82.7				
Average development results				**81.70**	**86.04**	**Very good**	**Very good**

Based on Table 1, there is an increase in the value of the aspects of content quality and objectives, learning quality and technical quality. Overall there is an increase from previously getting an average value of 81.7% to 86.04% in beta II testing. This percentage increase occurs in all aspects. In the aspect of content quality and objectives, the percentage of beta II testing increased to 85.92% from the previous 82.57%. In the aspect of learning quality which previously got a percentage of 80.49% increased to 86.7% in beta II testing. The component aspect that received the largest percentage increase was the technical quality aspect with an average value of 86.7% which was previously 75.73%. In the final stage of beta testing I, final revisions were needed for several aspects that needed to be developed. This final revision was done based on input from respondents in the questionnaire. The input in the first beta test was that the instructions menu was under the scan now menu. Students felt that the instructions menu should be at the very top because it functions as a guideline or guideline in using the application. So a revision was made to move the

instructions menu to the very top of the Pizza Slice Math application. The instructions section before and after the revision is shown in Figure 1.



(a) (b)

Figure 1. (a) Font Size Before Revision, (b)Font Size After Revision

In addition to moving the instructions menu to the very top of the Pizza Slice Math application, respondents also suggested that when working on the questions, time or a timer be given to test, because having time or a timer in the work will motivate students to work on the existing questions. Other revisions are shown in Figure 2.

(a) (b)

Figure 2. (a) Answer Choices Before Revision (b)Answer Choices After Revision

Discussion

According to previous research, learning media that has quality content and objectives with a percentage above 80% is stated to be practical for use (Artanti et al., 2022). This indicates that well-designed learning media not only facilitates the teaching and learning process, but also meets the standards of effectiveness in delivering learning materials to students. The suitability of the content and objectives of learning media is a key factor that influences its usefulness in the context of education. Effective media allows students to more easily understand concepts and apply them in various situations. In addition, other studies have confirmed that good quality learning media has a positive impact on student learning outcomes (Martani, 2020). Media designed with attention to learning needs can increase student engagement and help them achieve optimal learning outcomes. In other words, media quality not only affects the learning process, but also the end result, namely student achievement in understanding and mastering the material (Imam et al., 2018; Rachmawati & Sojanah, 2019). This shows how important the role of learning media is in supporting educational success. Furthermore, other studies explain that the quality criteria of interactive learning media can be assessed in terms of techniques, such as application reliability, ease of use, and visual appeal (Parina et al., 2022). Good interactive media should not only support the learning aspect, but also provide a comfortable and interesting user experience. By paying attention to the quality of this technique, learning media can provide a more enjoyable and effective learning experience. The use of technology in interactive media is an added value that can increase students' motivation to learn independently.

Then the revision in this study moved the instructions menu to the very top of the Pizza Slice Math application. With this revision, it is expected to improve the understanding of its users in accessing the Pizza Slice Math application. According to previous research, the instructions menu is a menu that contains instructions for using the application, including instructions on how to select a menu on the main menu and an explanation of the functions of the buttons in the application (Sintaro et al., 2020). Furthermore, according to other research, placing the instructions menu at the very top can make it easier for users to use the application (Laili et al., 2019). So, the revision moves the instructions menu to the very top of the Pizza Slice Math application, making it easier for users to use the application. Before the revision, there was

no time or timer for working on questions in the Pizza Slice Math application. Then a revision was made by providing time or a timer in the Quiz menu, namely when working on questions. With this revision, it is expected to motivate students in working on questions on the Quiz menu. According to previous research, setting the time for each question can reduce the possibility of cheating by students and can train students' time management (Sitorus & Santoso, 2022). Furthermore, according to other research, having a timer/time in working on questions can test the learning strategies used by students in working on quizzes (Rasmawan* & Erlina, 2021). So, revision by giving time or a timer in the Quiz menu, namely when working on questions, can train students in managing their time.

Based on these opinions, the Pizza Slice Math application meets the criteria as an excellent learning medium. This application is designed with attention to the quality of content, learning objectives, and relevant technical aspects. The suitability between the content and learning objectives in this application ensures that the material presented can be easily understood by students. In addition, the interactive aspects offered by this application also increase students' interest in learning. With all its advantages, the Pizza Slice Math application is highly recommended for use in the learning process to support improving student learning outcomes.

This research has significant implications for the development of innovative learning methods in mathematics. Learning media in the form of "Pizza Slice" can increase students' active involvement in the learning process, especially in materials involving the concepts of division, fractions, or geometry. With a more concrete and visual approach, this media can help students understand abstract concepts more easily. These implications also include opportunities for educators to adopt similar approaches in various other subjects, so as to create an interactive and enjoyable learning atmosphere. However, this study also has several limitations that need to be considered. First, the responses measured are limited to a specific context, such as a small sample size or demographic limitations of the students involved, so the results cannot necessarily be generalized to a wider population. Second, the effectiveness of the "Pizza Slice" learning media is highly dependent on the teacher's ability to integrate it into the learning process optimally. In addition, the implementation of this media may require additional resources, such as production costs or availability of materials, which can be a constraint in some educational environments. This indicates the need for further research to overcome these limitations and expand the scope of application of this learning media.

4. CONCLUSION

The results of testing the Android-based learning application Pizza Slice Math on grade 2 students showed a significant increase in aspects of content quality and objectives, learning quality, and technical quality after revisions were made. Overall, this application experienced an increase in student assessments, indicating that this application is effective and useful in the learning process. This application is recommended for use in learning because it has the right and complete content quality, provides good learning opportunities, and is easy to use. The revisions made, such as moving the instructions menu to the top of the application and adding a timer to the quiz menu, help improve students' understanding and motivation in using this application. Thus, the Pizza Slice Math application is worthy of being used as an interactive learning media. Suggestions for further research are, the development of Pizza Slice Math learning media on fraction material in elementary schools needs further research to test the effectiveness or learning outcomes of students in using this media.

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