

Analysis of Interactive Multimedia Needs for Mathematics Subjects at *Madrasah Ibtidaiyah Al-Hunafa Palangka Raya*

¹*Gusti Nida Nurkhaliza., ²Fathul Zannah., ³Tazkiyatunnafs Elhawwa
Universitas Muhammadiyah Palangkaraya, Kalimantan Tengah, Indonesia.

Article Information	ABSTRACT
Received: October 2023	<p><i>Background:</i> Mathematics is a subject that almost all students consider to be difficult, boring, and unpleasant. Teachers are essential in packaging learning and using engaging media to make learning fun and memorable. <i>Aim:</i> This research analyzes the need for interactive multimedia and student learning outcomes. <i>Method:</i> This research uses a qualitative approach, with a qualitative descriptive method, for data collection techniques carried out using teacher and student interview instrument sheets, direct observation, and distributing interactive multimedia needs questionnaires. <i>Results and Discussion:</i> The results of the need for interactive multimedia (indicator 1 of the causes of low mathematics learning outcomes) show that 56% (14 out of 25 students) think mathematics is too complicated. For (Indicator 2 methods that teachers often use), the results showed that 64% (16 of 25 students) answered that the teacher explained the lesson and gave practice questions. For (Indicator 3, the impression of mathematics learning), 48% (12 of 25 students) thought that mathematics is a tough lesson, 24% (6 out of 25 students) said it was boring, 20% (5 out of 25 students) said it was challenging but fun and 8% (2 out of 25 students) said learning mathematics made them curious. In (indicator 4, Frequently used learning resources) there were 56% (14 out of 25 students) stated that worksheets were the primary learning source, and 44% (11 out of 25 students) answered textbooks. <i>Conclusion:</i> This research concludes that students need new learning resources such as interactive multimedia in speed and discharge subjects, indicating that 100% of students support and need this media in learning.</p>
Accepted: November 2023	
Published: December 2023	

Keywords: Interactive Multimedia, Animation, Learning Results.

Corresponding Author:

Gusti Nida Nurkhaliza
Postgraduate Basic Education, Faculty of Teacher Training and Education,
Universitas Muhammadiyah Palangkaraya,
Milon RTA Road, Palangka Raya City, Central Kalimantan Province, Postal Code: 73111, Indonesia.
Email: Gustidanurkhaliza@gmail.com

Citation Information: Nurkhaliza, G. N., Zannah, F. ., & Elhawwa, T. (2023). Analysis of Interactive Multimedia Needs for Mathematics Subjects at *Madrasah Ibtidaiyah Al-Hunafa Palangka Raya*. *Tunas: Jurnal Pendidikan Guru Sekolah Dasar*, 9(1), 10–14. DOI. 10.33084/tunas.v9i1.6203

INTRODUCTION

When they hear the word "Mathematics," almost all students will mention mathematics as a subject that is difficult, boring, unpleasant, and so on. Even though learning mathematics is very important for students because in learning mathematics, students are not only required to be able to count, but the application of mathematics learning at school can also train discipline and advance students' thinking power. According to Hariwijaya (2009), teaching mathematics is not just the ability to quickly calculate but the cultivation of concepts so that you understand the meaning of mathematics and can reason to solve problems in various ways. Apart from that, according to Sari and Noer (2017), mathematics needs to be understood and mastered by every student because it can help students solve various life problems. Susanto (2013) said that mathematics can improve thinking and argumentation skills, contribute to solving daily problems in the world of work, and support the development of science and technology. The things above prove that mathematics lessons are very important to be taught and studied by all humans because, in everyday life, we always use mathematics to solve problems that require calculations or mathematical concepts.

Seeing the importance of mathematics lessons, it is not surprising that they are one of the lessons that always exist from elementary school to university level. Therefore, as a basic science that needs to be mastered by students, it is very natural that the application of mathematics learning should be taught as early as possible in elementary school. At around elementary school age (7-13 years), students generally experience difficulty understanding abstract mathematics. Mathematics lessons need to be taught with examples that are concrete/easy for students to understand.

Students' ability to master mathematics in elementary school is greatly influenced by the quality of the learning process carried out by teachers in the classroom. Most teachers in elementary schools in mathematics learning process still use books as the primary teaching material and only use the lecture method in the learning process. Amir and Risnawati (2015) state that learning outcomes are the abilities that children gain after going through learning activities.

Learning presented using books can make students less interested in the learning process. This is because books are only a collection of text and images that cannot be visualized well, especially if the use of books is given to elementary school

students who are essentially still in school. The world of play is attracted by pretty striking colors and images that are easy to visualize, such as animation. With this statement, it can be understood that using inappropriate media can cause students to be less interested in the learning process. Along with technological developments, learning media can be used in the learning process by utilizing modern technology. Learning media can be presented in videos, graphics, images, animations, and slides displayed attractively, including interactive multimedia. Interactive multimedia learning is a learning program that combines text, images, video, animation, etc., integrated with computer assistance to achieve learning objectives, and users can interact with the program actively (Sarjono, 2017).

Interactive multimedia can be used in the learning process because, compared to other media, multimedia can summarize various media such as sound, text, images, graphics, and animation in one digital presentation. In addition, in interactive multimedia, the process takes place. The user can control the use of this media by selecting and determining what they want to learn first. According to Munir (2013), interactive multimedia uses computers to combine text, graphics, audio, and moving images (video and animation) into one unit with appropriate link tools to allow multimedia users to navigate, interact, create, and communicate.

According to Sanjaya (2014), interactive multimedia is equipped with a controller so users can navigate and interact. Animation-based interactive multimedia has several advantages so that it can be used as an alternative learning medium in elementary schools. The benefits of interactive multimedia include the use of interactive multimedia, which can support the learning process and increase student interest and learning outcomes (Hakim & Windayana, 2016).

Based on the description above, mathematics learning, especially for elementary school students, requires media that can attract students' attention to maximize learning, such as interactive multimedia, which can support the learning process and students' interest in learning mathematics. So, researchers are interested in conducting an Analysis of the need for animation-based interactive multimedia for mathematics subjects in elementary schools, especially *Madrasah Ibtidaiyah Al-Hunafa Palangka Raya*.

METHOD

This research uses qualitative research methods such as a case study approach, especially at *Madrasah Ibtidaiyah Al-Hunafa Palangka Raya*. For the method, researchers used descriptive qualitative. Data collection techniques were carried out using interview instrument sheets with teachers and students at elementary schools, direct observation at the target elementary schools, and the distribution of interactive multimedia needs questionnaire sheets to all students. This research focused on class V students at the *Madrasah Ibtidaiyah*

AL-Hunafa Palangka Raya school, which has 25 students and one homeroom teacher for class V students who also taught mathematics directly in that class.

RESULTS AND DISCUSSION

The results and discussion in this research will explain in detail the extent of the need for animation-based interactive multimedia in mathematics learning and determine the learning outcomes in class V mathematics subjects in one of the private elementary schools in the Palangka Raya area. To analyze student needs, researchers used observations, interviews with teachers and students, and questionnaires consisting of several aspects such as identifying problems in Mathematics learning activities in class V, availability of learning resources and learning media, ownership of personal facilities to support learning, and interest in developing resources. Learning or learning media that will be developed and supported from the school environment in learning activities.

At the observation stage, the school used as the research site had learning facilities that were sufficient to support the use and development of learning media, such as the availability of projectors and other facilities. However, these facilities are not utilized properly in the learning process. Apart from that, students in certain subjects at the school are allowed to use cell phones to support the learning process.

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The interview was conducted with the class V teacher, who also teaches mathematics in that class. Apart from conducting interviews with teachers, the researcher interviewed three selected students based on their rankings. The first student the researcher interviewed was a student who was ranked 1st in the class, the second student who was ranked 14th, and The third-ranked last in the class. The selection of students by ranking was done because the researcher wanted to get accurate interview data. Interviews were conducted to find out in-depth several aspects such as the way teachers teach, the media that is often used, the obstacles that teachers face, the enthusiasm and activeness of students in the learning process, sub-material that is difficult for students to accept, the solutions that teachers use in dealing with problems and teacher's knowledge of interactive multimedia.

The results of interviews with the teacher stated that during the learning process, the teacher only used books and worksheets as a reference. This was reinforced by the results of interviews with three students who stated that they only used books and worksheets as media in the learning process. Teachers only occasionally change mathematics material into a story to make students more interested. The obstacle teachers face during the current learning process is the low learning outcomes of students caused by the pandemic, which requires students to do online learning for three years. He explained that the consequences of online learning mean that many students do not have a strong foundation for learning, especially mathematics learning. Apart from that, it takes quite a long time for the teacher to attract the attention of students to be active in the face-to-face learning process.

According to the teacher, student activity can be significantly lacking during the learning process if the ongoing learning process does not attract students' attention. This is reinforced by the results of interviews with three students who *stated that they wanted a fun learning process that attracted students'*

attention. Apart from that, according to teachers, the mathematics learning sub-materials that are considered difficult for students to accept are speed and discharge. This was reinforced by questions from two interviewed students who stated that the material on speed and discharge was quite difficult to learn. For the question about interactive multimedia, the teacher stated that he did not know and had never used this media in the learning process. Students also stated that the teacher had never used interactive multimedia in the learning process, but students knew about interactive multimedia through the games they had used.

On the interactive multimedia needs questionnaire sheet, for some questions, students are allowed to provide more than one answer, such as questions about mathematics material that is considered difficult to learn in class V, methods that are often used by teachers, and learning resources that students often use. Based on the interactive multimedia needs questionnaire, the following results show:

Table 1. Results of Analysis of Animation-Based Interactive Multimedia Needs for class V students

Aspect	Indicator	Results
Identifying problems with mathematics learning in class V	Factors causing low learning outcomes	<ol style="list-style-type: none"> 1. Counting is too difficult (56%) 2. Hard to understand (28%) 3. Confusing (8%) 4. Haven't memorized the formula (4%) 5. Answer too Long (4%)
	Methods often used by teachers (<i>each student is allowed to answer more than one</i>)	<ol style="list-style-type: none"> 1. Explaining the lesson and giving questions (64%) 2. Explain and divide students into groups (36%)
	Students' impressions of learning	<ol style="list-style-type: none"> 1. Very Difficult (48%) 2. Boring (24%) 3. Quite Difficult but fun (20%) 4. Makes curious (8%)
Availability of learning resources or learning media	Learning resources that students often use (<i>each student is allowed to answer more than one</i>)	<ol style="list-style-type: none"> 1. Lks (56%) 2. Package Books (44%)
	The student's opinion is that there is a need for new learning resources	<ol style="list-style-type: none"> 1. Need (100%) 2. No need (0%)
	Students need animation-based interactive multimedia.	<ol style="list-style-type: none"> yes (100%) No (0%)
Ownership of personal facilities that support learning	Personal facilities that students have	Handphone (100%)
Support of students in teaching and learning activities	Students' opinions about using interactive multimedia in mathematics learning	<ol style="list-style-type: none"> 1. To make learning easier (36%) 2. Make learning more fun (44%) 3. Learning while playing (20%)

Based on the results of the answers to the first indicator, namely the factors causing low student learning outcomes caused by several things, 56% of students stated that they had

difficulty in calculating, and 28% of students stated that they had difficulty understanding explanations regarding learning material. From this data, it can be seen that the participant

factors students who have difficulty calculating are the biggest cause. This is in line with the results of interviews with teachers who stated that the consequences of online learning mean that students do not have a strong foundation in mathematical calculations apart from that in learning activities of students such as not being interested in learning mathematics, which is already considered difficult for students. This data is in line with Rismawati and Khairiati (2020), who stated that until now, mathematics is still the first class of subjects that students least like. This is due to students' lack of interest in participating in mathematics learning. According to Agustyarini and Jailani (2015), mathematics subjects emphasize learning on understanding concepts and understanding mathematical concepts apart from mathematics, which is abstract, so it is difficult to accept in students' minds.

The second indicator is the method that teachers often use. Based on the questionnaire results, 64% of students stated that the teacher explained the lesson and gave practice questions. 36% of students answered that the teacher explained and divided students into groups. This result aligns with the teacher's statement during the interview, which stated that learning was carried out using the lecture method, after which students were asked to work on questions in groups/independently. Methods that tend to be monotonous and less than optimal in using learning media will affect students' impressions, interests, and understanding of the material they have studied. This is in line with Nurlaila (2018), who states that in education, teachers are at the forefront, play an important role, and are one of the key factors in supporting students' success in teaching and learning activities. A teacher must be creative and innovative in selecting models, methods, strategies, and learning media suitable for the teaching material to achieve the learning objectives (Mangelep, 2017). In the third indicator, namely students' impressions of mathematics learning, 48% thought mathematics learning was challenging, 24% said it was boring, 20% said it was pretty tricky but fun, and 8% said they were curious. Based on the indicators of students' impressions of mathematics learning, it can be seen that mathematics learning is considered very difficult and boring.

Regarding the availability of learning resources or learning media, the fourth indicator is students' learning resources. The questionnaire results showed that as many as 56% of students still depended on worksheets, and 44% of students used textbooks during learning. This is in line with the teacher's statement during the interview, which stated that learning only focused on using books and worksheets, and the teacher indeed noted a lack of understanding in using learning media. Meanwhile, Kustandi et al. (2020) stated that the use of media in learning is a learning and teaching process that can trigger students' desires and interests, provide motivation, stimulate the learning process, and have a psychological impact on students. This is in line with Kustandi and Sujipto (2011), who

stated that learning media is a tool to improve teaching and learning activities by clarifying the meaning of the messages conveyed, thereby enabling learning objectives to be achieved better and more precisely.

The fifth indicator, namely students' need for new learning resources, shows that 100% of students need new learning resources. In the sixth indicator, namely ownership of personal facilities to support learning, the results of the questionnaire revealed that 100% of students had mobile phones, and in the seventh indicator, namely students' support for animation-based interactive multimedia, received a very positive response, 100% of students supported the existence of animation-based interactive multimedia in the process learning. In the eighth indicator, namely students' opinions about using interactive multimedia in mathematics learning, there are 36% of students say they want to use interactive multimedia to make learning easier, 44% of students say they want to use interactive multimedia to make learning fun and 20% of students who want to use animation-based interactive multimedia so they can learn while playing. This aligns with the teacher's statement, which states that students will be active in the learning process if the learning is fun and attracts their attention. This is in line with Darmawan (2014). The learning process using interactive multimedia can increase students' motivation to be more active because of their interest in multimedia, which is able to present displays in the form of text, images, video, sound, and animation.

The advantages of interactive multimedia include, firstly, the fact that it can support the learning process and increase student interest and learning outcomes. The second advantage of integrating interactive multimedia into learning is that it changes students' perceptions of learning material that is considered difficult, thereby making students happy and motivated to learn (Hakim and Windayana, 2016). The third advantage is that interactive multimedia learning helps students understand mathematical concepts (Aris et al., 2017). The ability of interactive multimedia to increase understanding of concepts is related to the use of animation, which helps students visualize abstract mathematical concepts, thereby improving students' way of thinking (Salim and Tiawa, 2015). The use of animation effects in interactive multimedia can facilitate cognitive processes, thereby increasing students' learning abilities (Luzon and Leton, 2015).

Based on the average score of learning outcomes for all class V students at *Madrasah Ibtidaiyah Al-Hunafa Palangkaraya*, it shows that in mathematics learning, the average score is 62.52 for addition and subtraction of fractions, 60.18 for multiplication and division of fractions, 52.36 for speed and discharge material and 73.84 for scale material. Based on the results of the average scores of all students, the material on speed and discharge is the learning material that has the lowest average score, in line with the fact that students' scores, based on teacher interviews, state that the material on speed and

discharge is material that is difficult for students to understand learner. Based on this, animation-based interactive multimedia

CONCLUSION

The media used by teachers in mathematics learning still uses books and worksheets, which results in the learning process being less than optimal and creating a lack of interest, activeness, and student learning outcomes in mathematics subjects. Materials that are considered difficult based on the results of research and review are speed and discharge. Based on the results of the Analysis of interactive multimedia needs and interviews with homeroom teachers and students, it is recommended to develop animation-based interactive multimedia on speed and discharge material in class V, which can develop skills and improve student learning outcomes.

ACKNOWLEDGMENTS

In particular, the author would like to thank (Dr. Fathul Zannah, M.Pd, and Dr. Tazkiyatunnafs Elhawwa, M.Pd) as supervisors for being patient, taking their time, giving up their energy and thoughts, and also paying attention in assisting with the writing process article.

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is expected to solve problems found in mathematics subjects with the sub-material speed and discharge in class V.

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