

Research Article

The role of flash mathematics learning media in mathematics learning at Darur Rahmah Middle School

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ABSTRACT

Learning Media is a learning tool that is used by someone with the aim of facilitating the delivery of information in learning. This is very helpful for teachers in their teaching and can be a solution to eliminating boredom when students are happy during learning activities. Flash media is a program that produces interactive and animated media that can combine images, audio, and video and give an effect that makes it interesting for students. This study aims to determine the effectiveness of flash learning media in learning mathematics at Class VII Junior High School, Darur Rahmah, Jember Regency. The method uses descriptive language by examining the teacher's ability to manage learning, responses, activities, and student learning outcomes. Based on the results of the analysis related to the effectiveness of flash learning media in mathematics learning at Darur Rahmah Junior High School, it can be concluded that (1) The ability of teachers to manage mathematics learning using flash media is categorized as very good; (2) Student activity is categorized as good with a percentage of student activity of 81.4%; (3) Student response to positive mathematics learning with a percentage of 94.29%; and (4) student learning outcomes meet the criteria of classical completeness with students completing 85.2%. Thus, the role of flash media in learning mathematics for class VII at SMP Darur Rahmah can be said to be effective.

Keywords: Learning Media; Mathematics Learning; Flash

1. INTRODUCTION

The development of a nation can be seen in the development of its education. Education is very important for humans and cannot be separated from life; it is absolute for everyone, both within the family and the nation and state. Education is a conscious and planned effort to educate and develop the potential of students. Education has an important role in forming intelligent, capable, creative, faithful, and noble human resources. Education determines the development and realization of human resources, especially the development of the nation and state. Thus, education is a conscious and planned effort to enliven the learning atmosphere and learning process so that students can develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character, and the skills needed by themselves and society, nation, and state.

Learning activities are basically an attempt to direct students into the learning process so that they can obtain learning objectives in accordance with what is expected and so that teaching and learning activities can run properly. Teaching and learning activities are processes in which teachers and students interact with each other in a reciprocal relationship that influences and is influenced. The success of a learning process can be seen from many factors within the teacher and the students themselves. Learning activities are also interpreted as the interaction of individuals with their environment; the environment in this case is other objects that allow individuals to gain experiences or knowledge, either new experiences or knowledge or something that has been obtained or found before but raises attention again for the individual, so that allows interaction.

In mathematics lessons, students are required to be able to grow their knowledge so that it is more meaningful. Teaching mathematics in schools does not only provide an understanding of the material being taught. The difficulty of understanding concepts is also a separate problem for students learning mathematics, thus making mathematics a difficult and boring subject. Mathematics is a subject that is difficult to teach or learn. Because of these problems, students become lazy about practicing math problems. Learning mathematics should start with contextual problems or something that is around life, close to the minds of students, and relevant to society so that it has human values. Learning mathematics is an activity built by students themselves and must be carried out so as to provide opportunities for students to rediscover mathematical concepts. Thus, learning mathematics is in accordance with the characteristics of mathematics itself, namely the existence of a logical flow of reasoning and having a consistent deductive mindset. Learning mathematics is an activity

to acquire knowledge by means of which students build themselves and must be carried out so that this activity can provide opportunities for students to rediscover mathematical concepts. The purpose of learning mathematics is to assist students in preparing themselves to be able to deal with changes in life that are always developing through training on the basis of logical and critical thinking and preparing students to be able to use mathematics and a mathematical mindset in everyday life and in studying various sciences. With this aim, students are expected to be able to understand mathematical concepts, explain the interrelationships between concepts, apply them, and solve problems that surround their lives.

But in reality, the goal of learning mathematics has not been fully achieved. Many obstacles are experienced at school; students have difficulty understanding mathematics. This is what happened at Darur Rahmah Junior High School. At the time of the observation activities, it was seen that the activities of students tended to be passive. Students do not look conspicuous in teaching and learning activities. Student test scores show low student learning outcomes. This value is classically calculated: students who complete are 51.85%, or 14 students out of 27 students as a whole. On the other hand, teachers are also lacking in utilizing infrastructure facilities to convey mathematics material to students. At the time the researchers made their observations, the lack of use of the media was the main thing. Because the media is one of the external factors that can channel complete information to students,

Learning media is one of the factors that also determines the success of the mathematics learning process. Currently, the use of instructional media can be used by teachers to take advantage of it by helping to increase students' attractiveness in the process of learning mathematics. This can make it easier for teachers to convey material to students, one of which is the use of flash media. Flash media that is done on a computer or digital device has the characteristics of media with animation and interactive displays. Through digital media and various types of learning media, technology can support students with various learning abilities, providing more educational opportunities (Molnar, 2014; Lehtola et al., 2014; Kingry et al., 2015; Russell, 2016). Learning media is one of the factors that support the success of the learning process; this can help the process of delivering information from teachers to students or vice versa (Khairani, 2016; Ahern, 2016). With the existence of media in learning, it will have a positive impact on the teaching and learning process, and students tend to be more focused and careful. Macromedia Flash is a multimedia platform and software used for animation, games, and internet enrichment applications that can be viewed, played, and run in Adobe Flash Player (Kusumadewi, 2013; Fahmi, 2014; Sukanto, 2015; Hariyanto, 2016; Khairani, 2016). The benefits of macromedia flash for teachers as a tool for preparing teaching materials and organizing learning.

The application of flash media is able to make a very important contribution to learning activities, especially mathematics. Not only turning abstract concepts into concrete concepts, but understanding, working on, and making them interesting for students. With flash media, teachers can improve their ability to teach mathematics by emphasizing problem solving and understanding that involve students actively. With so many benefits from flash, the application of flash media can make it easier to understand mathematics and solve math problems. Various studies related to flash media in learning mathematics have been carried out and have produced something positive in learning mathematics. Research on The Effectiveness of Macromedia Flash Digital Media in Improving Students' Mathematical Reasoning states that Macromedia Flash learning media with interesting animations makes it easier for students to understand questions with high-level reasoning, so that student learning outcomes are also high (Yunus et al., 2022). Other research related to Macromedia Flash-Based Learning Media and Learning Motivation on Mathematics Learning Outcomes states that there is an influence of macromedia flash-based learning media and learning motivation on student learning outcomes in mathematics (Sari et al., 2023).

The use of flash media in learning mathematics has its own challenges because the process of making flash media is quite complicated and needs to be studied in an ongoing way. However, with the mastery of making interactive flash media, it certainly makes it easier for teachers to convey all mathematics subject matter in an interesting way so that students can understand the mathematics subject matter well. Therefore, teachers need to plan and design flash media appropriately for learning mathematics. According to what has been described, the benchmark for the success of using flash media in learning mathematics at Darur Rahmah Junior High School can be seen from how this flash media has made a major contribution to the achievement of learning objectives. Therefore, the aim of this research is to determine the effectiveness of using flash media in learning mathematics in class VII SMP Darur Rahmah, while the results of this study can be used as a reference regarding the role of flash learning media in learning mathematics.

2. RESEARCH METHOD

The research method uses descriptive and qualitative methods. Descriptive qualitative is a method of describing the problem by utilizing qualitative data, which is described descriptively. This method is used to analyze all events or phenomena in the application of the use of flash media in learning mathematics in class VII, Junior High School Darur Rahmah, with set material. Therefore, researchers will analyze the effectiveness of flash media in learning mathematics with set material at Class VII SMP Darur Rahmah. Flash media on Mathematics Learning in Class VII Junior High School Darur Rahmah is said to be effective if it fulfills the four aspects of the indicators. There are four indicators for determining the effectiveness of flash media in learning mathematics, namely as follows:

1. Student activities in learning mathematics using flash media

The effectiveness of student activities is seen in the suitability of each student activity for learning mathematics in accordance with the activities contained in the learning implementation plan and learning scenarios. This student activity is also idealized with a predetermined time. Student activity is said to be effective if the average is used for the aspects of each student activity in the lesson plans and learning scenarios. Indicators of the success of student activities in this study were that at least 75% of students were actively involved in the learning process.

2. The teacher's ability to manage learning mathematics

The achievement of effectiveness in the aspect of the teacher's ability to manage mathematics learning using flash media is seen from the observation activities carried out by observers. Observers assess all the activities or actions of the teacher during the learning process. Assessment is through observation sheets that are checked against scenarios and lesson plans. The observer gives a score on the observation sheet in the form of a very good score (5), a good score (4), enough (3), not good (2), or not good (1). The best score is then described, referring to the table of the observation sheet through the scenario sheet. Aspects of learning management include delivering prerequisite material and learning objectives, motivating students, implementing flash media, facilitating students who have difficulty, providing opportunities for students to respond to questions and material that they have not understood, guiding students in gathering information, leading discussions and directing students for summarizing activities, and drawing conclusions with students. Learning management by the teacher should be in the minimal good category.

3. Student responses to learning mathematics using flash media

Data on student responses was obtained from response questionnaires to learning activities using flash media. Then it was analyzed by looking for the percentage of student answers for each question in the questionnaire. Student responses were analyzed by looking at the percentage of student responses. Student responses are said to be positive if the percentage of student responses answering happy, interesting, and yes for each aspect is at least 80%. Student responses to the use of flash media included being happy with math lessons using flash media, being enthusiastic about learning mathematics through the use of flash media, being active in participating in math lessons using flash media, listening well to math teacher explanations, liking discussing problems with friends in solving problems on set material, asking the teacher when they did not understand math material, and being active during group discussions.

4. Student learning outcomes after the application of flash media

Student learning outcomes are carried out to describe the completeness of student learning outcomes classically after the application of flash media. Students are said to achieve individual mastery if the score obtained by the student is more than or equal to 75 out of a total score of 100. Meanwhile, classical learning mastery is achieved if the class achieves more than or equal to 80% of students achieving learning completeness on set material.

3. RESULTS AND DISCUSSION

3.1. Results

This research was conducted at Darur Rahmah Junior High School in two meetings with collection material. The data analyzed were data on the teacher's ability to manage mathematics learning, data on student activity in learning mathematics using flash media, data on student responses to the implementation of mathematics learning, and data on student learning outcomes after the application of flash media to learning mathematics. The following is an explanation of the results of this study.

1. Student activities in learning mathematics using flash media

Student activity is said to be effective if the average is used for the aspects of each student activity in the lesson plans and learning scenarios. Indicators of the success of student activities in this study were that at least 75% of students were actively involved in the learning process. Aspects of student activities in the mathematics learning process include listening to teacher or friend explanations during discussions, understanding problems in flash media in mathematics learning set material, drawing conclusions from procedures or concepts, solving problems, actively discussing with group mates, carrying out activities relevant to learning, and actively asking questions during learning activities. There are two observers observing the activities of students learning mathematics with the implementation of flash media. The average obtained in student activity is observer 1 of 82.6% and observer 2 of 80%. From the two observers, it was obtained that the average student activity in learning mathematics through the application of flash media at Darur Rahmah Middle School was 81.4%.

2. The teacher's ability to manage learning mathematics

The following are aspects of managing mathematics learning through the application of flash media that have been observed by observers:

Table 1. Observation of Teachers Activity

Activity	Score	Category
The teacher conveys the learning objectives	4	Good
The teacher delivers prerequisite material	4	Good
Teachers motivate students	4	Good
Teachers can implement flash media in the learning of mathematics	5	Very good
Facilitate students who have difficulty solving problems	5	Very good
Provide opportunities for students to respond to material questions that have not been understood	5	Very good
Guide students in gathering information	4	Good
Lead discussions and direct students to summarize activities	5	Very good
Draw conclusions with students	4	Good

The average in the aspect of managing mathematics learning by teachers is 88.9%. This means that this value is in the very good category. With these results, the management of mathematics learning by teachers using flash media is very positive.

3. Student's responses to learning mathematics using flash media

Student response data to flash media in mathematics learning was analyzed using percentage data. Student responses were analyzed by looking at the percentage of student responses. Student responses are said to be positive if the percentage of student responses answering happy, interesting, and yes for each aspect is at least 80%. Student responses to the use of flash media included being happy with math lessons using flash media, being enthusiastic about learning mathematics through the use of flash media, being active in participating in math lessons using flash media, listening to the math teacher's explanations well, liking discussing problems with friends in solving problems on set material, asking the teacher when they did not understand math material, and being active during group discussions. The following are the results of the percentage of student responses to flash media in learning mathematics at Darur Rahmah Junior High School.

Table 2. Student's Responses

Activity	Score	Category
Happy with math lessons with the use of flash media	4	agree
Enthusiastic about learning mathematics through the use of flash media	5	strongly agree
Actively participating in mathematics lessons with the use of flash media	5	strongly agree
Listen carefully to the math teacher's explanation	5	strongly agree
Likes to discuss with friends solving problems on set material	5	strongly agree
Ask the teacher when you don't understand math material	4	agree
Active during group discussions	5	strongly agree

Based on the data analysis on students' responses to the use of flash media in learning mathematics, a value of 94.29% was obtained. This means that the percentage of student responses is more than 80% and has a positive category in its use.

4. Student learning outcomes after the application of flash media

Based on learning outcomes data, the researcher conducted a final test in class VII at Darur Rahmah Middle School. The test questions used amounted to five. The test was carried out after the second meeting ended. Students who took the final test totaled 27. The percentage of the final test can be seen in **Table 3**.

Table 3. Final Test Results

Students	Percentages	Criteria
23	85,2	Complete
4	14,8	Not finished

The use of flash media in learning mathematics with set material in class VII SMP Darur Rahmah achieves the set classical learning mastery of 85.2%. This is shown by the number of students who complete learning individually-as many as 23 out of 27 students. This indicates that flash media is effective for learning mathematics in terms of classical learning mastery. Based on the results of the four indicators, namely, the teacher's ability to manage mathematics learning obtained very positive results, student responses in mathematics learning using flash media obtained a percentage of more

than 80% and had a positive category in their use, student activity in learning mathematics using flash media obtained an average of 81.4%, and student learning outcomes after the application of flash media achieved classical learning mastery of 85.2%. This indicates that the four predetermined indicators are fulfilled and that the flash media for learning mathematics in class VII at SMP Darur Rahmah is effective.

3.2. Discussion

Based on the research results above, the effectiveness indicators show results above the minimum criteria set. This is shown by data on the teacher's ability to manage learning reaching very good criteria; Student activity also shows that the percentage of student activity is 81.4% obtained from the average of two observers; student responses in learning mathematics using flash media. The percentage of students' responses to flash media in learning mathematics at Darur Rahmah Junior High School obtained a value of 94.29%. This means that the percentage of student responses is more than 80% and has a positive category in its use: student learning outcomes after the application of flash media. The use of flash media in learning mathematics with set material in class VII SMP Darur Rahmah achieves the set classical learning mastery of 85.2%. This is shown by the number of students who complete learning individually—as many as 23 out of 27 students. The results of the research are in accordance with several existing studies that state that the level of effectiveness of flash media in learning mathematics is included in the very effective category. Other research says that the results of the application of learning media based on Macromedia Flash 8 in building materials could improve students' mathematical understanding with a percentage of 94% of 16 students, which can be categorized in the "Very Strong" category (Firdaus et al., 2022). The role of flash media in learning mathematics is an alternative for teachers to convey lesson material to their students in order for them to understand the subject matter being studied. This flash media acts as a tool to help students understand the set material in class VII, SMP Darur Rahmah. Flash media also acts as a tool for discovering and understanding mathematical concepts.

4. CONCLUSION

Based on the descriptive analysis of the results of research on the effectiveness of flash media in learning mathematics at SMP Darur Rahmah Jember with indicators of the ability of teachers to manage mathematics learning, student learning activities, student responses and classical learning outcomes it can be concluded that: (1) The ability of teachers to manage mathematics learning using flash media is categorized as very good; (2) Student activity is categorized as good with a percentage of student activity of 81.4%; (3) Student response to positive mathematics learning with a percentage of 94.29%; and (4) student learning outcomes meet the criteria of classical completeness with students completing 85.2%. Thus, the role of flash media in learning mathematics for class VII at SMP Darur Rahmah can be said to be effective.

CONFLICT OF INTEREST

There are no conflicts of interest declared by the authors.

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