APPLICATION OF INTERACTIVE LEARNING MEDIA MATHEMATICS ASSISTED BY PREZI APPLICATION TO IMPROVE LEARNING OUTCOMES OF GRADE IV ELEMENTARY SCHOOL STUDENTS

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Abstract

This study aims to determine the process of applying and improving learning outcomes, activities in the use of prezi applications in grade IV students of MI Muhammadiyah 25 Surabaya. This type of research is Class Action Research (PTK). The subjects of this study are 26 students of grade IV MI Muhammadiyah 25 Surabaya for the 2022 academic year. This research can improve mathematical performance, especially in expressing mathematical sentences. The data collection process is carried out through observation and testing methods. The implementation of this study took place in two cycles. The results obtained from the action on cycle I averaged 53.8% increased to 80.8% in cycle II. The improvement in cycle II has reached classical completion so that there is no need for the next cycle, so it can be concluded that the application of interactive mathematics learning media assisted by the prezi application can improve student learning outcomes and student activities.

Keywords: interactive learning media, prezi application

Abstrak

Penelitian ini bertujuan untuk mengetahui proses penerapan dan peningkatan hasil belajar, aktivitas dalam penggunaan aplikasi prezi pada siswa kelas IV MI Muhammadiyah 25 Surabaya. Jenis penelitian ini yaitu Penelitian Tindakan Kelas (PTK). Subjek Penelitian ini yaitu siswa kelas IV MI Muhammadiyah 25 Surabaya tahun pelajaran 2022 sebanyak 26 siswa. Penelitian ini dapat meningkatkan kinerja matematika khususnya pada menyatakan kalimat matematika. Proses pengumpulan data dilakukan melalui metode observasi dan pengujian. Pelaksanaan penelitian ini berlangsung dalam dua siklus. Hasil yang diperoleh dari tindakan pada siklus I rata-rata 53,8% meningkat menjadi 80,8% pada siklus II. Peningkatan pada siklus II ini sudah mencapai ketuntasan secara klasikal sehingga tidak perlu dilakukan siklus selanjutnya, sehingga dapat disimpulkan bahwa penerapan media pembelajaran interaktif matematika berbantu aplikasi prezi dapat meningkatkan hasil belajar siswa dan aktivitas siswa.

Kata kunci: media pembelajaran interaktif, aplikasi *prezi*

INTRODUCTION

Education is a process of activity that is very important in human life, because basically education is an attempt to teach people or to glorify humans. For the implementation of good and appropriate education, it is necessary to have a knowledge that studies thoroughly as it should be carried out (Afiani & Faradita, 2022). (Law of the Republic of Indonesia Number 20 of 2003:6) "The National Education System states that Education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual power, self-control, personality, intelligence, noble character, as well as the skills needed for themselves, society, nation and state".

The term education according to (Law of the Republic of Indonesia No. 20 of 2003 Article 1 Point 1) regarding the national education system which reveals that education is a conscious effort and is designed to create a learning atmosphere or learning process so that students are actively able to develop the potential abilities that exist in themselves" (Anwar, 2019) . To realize the general objectives of basic education can be pursued through subjects that are taught every day in the learning process. Mathematics is the basic science of all fields, and it is very important to learn. Mathematics can also be interpreted as a science that underlies the development of science and technology, therefore mathematics needs to be taught from the elementary level to the college level (Anwar, 2019).

Mathematics is one of the components of a series of subjects that have an important role in education. Mathematics is one of the fields of study that supports the development of science and technology. (Sundayana, 2018) But until now there are still many students who feel mathematics as a difficult, unpleasant subject, Even a terrifying scourge. They also think they are not talented in mathematics. This assumption can make them give up when facing difficulties, while the way to overcome difficulties is still not optimal. (Afiani, 2015).

Mathematics is a science that studies abstract concepts. Many students think that way because teachers do not teach mathematics differently but use many formulas and examples, so students are easily confused and bored. Based on further research, the results of the daily math test scores of grade 4 students in elementary schools, showed the average scores obtained by students, namely, 14 students (53.8%) who received KKM below 76, while 12 students (46.2%) received KKM above 76. Based on the percentage of learning outcomes in the material states mathematical sentences, it shows that students experience some common mistakes such as, sentence comprehension, calculation rules, and errors in calculations.

Based on the above problems, there is a need to change the teaching style of teachers in a way that is more realistic or more creative and easy for students to understand. So that students are not bored during learning. An educator must be able to adapt to the development, mastery and knowledge of technology, because technology is a competency that must be mastered to support the improvement of the learning process. There are also other factors that cause low student learning outcomes, namely being busy talking to their friends, teachers not using the right models or methods, then it could also be that teachers

are very monotonous because they do not use interesting media so that students do not focus on the teacher. In the implementation of mathematics learning, there are obstacles that can make students not understand concepts in mathematics. One of the causes of students' lack of understanding of mathematics is the lack of learning variations such as the use of learning media which has an impact on students' lack of interest in learning during the learning process (Kurniawan et al., 2022).

One alternative that can help teachers in increasing students' interest in learning is to use learning media. This is in accordance with what was stated by (Dewi & Surur, 2021) who stated that media is needed to help teachers in conveying learning concepts. However, in reality there is still a lack of use and lack of development of learning media so that students' interest in learning also decreases (Sari et al., 2020). Interest in learning is needed by students in learning so that the planned learning goals can be achieved (Muharram & Fajrin, 2021). The use of learning media is a significant part of learning in the era of society 5.0 along with the rapid development of science and technology. The use of various learning media appropriately will maximize and make the teaching and learning process more effective, so that learning objectives can be achieved. This is supported by preliminary studies conducted that there is still a lack of use and development of learning media, especially in mathematics subjects. The use of learning media can attract students' attention, which can stimulate students' interest in learning, which in turn has an impact on learning outcomes. (Alviyaturrohmah et al., 2017); (Karim & Savitri, 2020).

For students, mastery of technology can support the process of thinking and mastery of science and technology according to (Centauri, 2019). In the current era, technology is mandatory for teachers as the spearhead of learning in order to adapt to the development of very fast and sophisticated technology which aims to provide convenience in implementing the learning process. The success of the learning process carried out by students depends largely on the teacher creating a learning atmosphere by using all learning resources and learning methods that are effective and efficient according to (Afiani & Faradita, 2021).

The Indonesian government now has to rack its brains on how to deal with the era of society 5.0 rolled out by Japan. The idea of society 5.0 is a technology-based human-centered society concept (Mukhtar, 2021). The rolling of the era of society 5.0, signifies and requires mankind to make technology a part of everyday life. The internet is not only an intake of

information enrichment, but also a tool in living life. Unlike the case with revolution 4.0, which is more visible in the aspect of business competition through the internet (almost all the necessities of life can be obtained through the touch of a finger), the 5.0 era pays attention to the humanitarian side that relies on big data into all aspects of life including social problems. The adaptation of the concept of learning in this era of society must be revolutionized. This aims to make learning updated and innovative follow the era that changed from era 4.0 to 5.0.

Along with the rapid development of science and technology, there are currently several choices of applications that teachers can use to create interesting learning media and encourage students to be actively involved in learning. An example of a learning media maker application that can be used by teachers is the Prezi Presentation application, which is software that brings presentation media through the Zooming User Interface so that we can make presentations by zooming in and out of the point to be presented. This software is very useful for creating learning media because it offers interesting features. Prezi is a software that functions to create web-based presentations, both in the form of structured presentations (linear presentations) and mind map presentations as examples of non-linear presentations. Prezi application, there are text, images, videos, and other presentation media that can be placed on the presentation canvas and can be grouped in the frame provided. We can determine the size and relative position between all the presentation objects and can surround and highlight them. One of the benefits of Prezi in addition to presentations, Prezi can also be used as a tool to explore and share ideas on a virtual canvas. And also the Zooming User Interface (ZUI) feature, which allows us to zoom in and out of presentation media, such as mind mapping (Sele & Dewi, n.d.) .

Based on previous research, several studies have been carried out in the use of the Prezi application. For example, research conducted by (Alviyaturrohmah et al., 2017) states that the use of prezi software as a learning medium can increase students' interest in learning. In addition, there is also research conducted by (Nirfayanti & Syamsuriyawati, 2019) regarding the effectiveness of the application of Prezi learning media to learning outcomes. This research is said to be effective and has a profound effect on student learning outcomes. In addition, there is also research conducted by (Imani et al., 2022) regarding the influence of

the use of prezi software media on student learning outcomes. This research shows that the results are accepted, which means that prezi software media has a positive effect on student learning outcomes.

Based on the problems and solutions obtained, researchers want to provide alternative improvements to change by using interactive mathematics learning media assisted by the prezi application to improve the learning outcomes of grade IV elementary school students.

The objectives of this study are to 1) To determine the process of applying interactive learning mathematics assisted by prezi application for grade IV elementary school students; 2) To improve the learning outcomes of grade IV elementary school students in interactive learning of mathematics assisted by the application of prezi; 3) To find out how student activities in the application of interactive learning media mathematics assisted by the prezi application   in grade IV elementary school students.

METHODS

The type of research used is Classroom Action Research (PTK), which is one of the efforts that teachers can make to improve the quality of teacher roles and responsibilities, especially in Sanjaya learning management, (Parasamya & Wahyuni, 2017). The research design used was the Kemmis and Mc Taggart model research (Fahrudin et al., 2018). Kemmis and Mc Taggart Model Class Action Research consists of four components, namely planning, acting, observing, and reflecting, in a spiral system, which are intertied between one step and the next which can be seen in figure 1 below.

Figure 1.1

Classroom Action Research Design

Model Kemmis & Mc Taggart

In this Class Action Research there are several cycles, one cycle containing one meeting. If the first cycle does not meet some completeness criteria, then the second cycle can be continued to meet the predetermined completion criteria. If completion is not met in cycle II, then the next cycle can also be carried out until the desired target is achieved with the listed criteria. Each cycle follows stages or procedures, namely planning, implementation, observation, and reflection (Suwandi, 2017).

In the first stage is planning (Planning), the activities carried out by researchers are 1) making a Learning Implementation Plan (RPP), making test question sheets and observing student activities; 2) preparing the facilities of the necessary supporting facilities in the classroom; 3) prepare instruments to record and analyze data regarding the process and results of actions. In the second stage is the action (Acting), at this stage the researcher carries out the actions that have been formulated on the RPP in the actual situation, including initial activities, core activities and closing activities. The third stage is to carry out observations (Observing). At this stage, researchers carry out several activities, namely 1) observing the behavior of students in participating in learning activities; 2) observe each student's mastery of the subject matter that has been designed according to the objectives of PTK. Furthermore, the last stage is to reflect. At this stage, what the researcher does is 1) analyze the learning outcomes; 2) evaluate the results of observations; 3) record the results of observations.

This Class Action Research was conducted at MI Muhammadiyah 25 Surabaya. The subjects in this study were grade IV students with a total of 26 students, and consisted of 11 male students and 15 female students for the 2022/2023 academic year Semester 2. This research will be carried out from October to November 2022.

The data collection technique in this study used the following techniques;

1. Test, aimed at knowing the learning outcomes of students. The research instrument that will be used is a test question sheet in the form of 10 multiple-choice questions. (Islami et al., 2021)

2. Observation, which aims to observe student activities during learning. The research instruments to be used are student activity observation sheets;

The data analysis techniques used are quantitative and qualitative obtained in each cycle:

1. Analysis of student learning outcomes test data is determined from individual completeness and classical completion. Individually, students can be said to be complete if they get a KKM score, which is 76. Meanwhile, classically, students are said to be successful if student completion reaches 76%.

   a. Individual values are obtained using the formula:

   $$N = \frac{R}{SM} \times 100\%$$

   Information:

   N= value searched

   R= student-earned score

   SM= maximum score

   100 = fixed number

   b. The average grade of the class is obtained by the formula:

   $$X = \frac{\Sigma x}{\Sigma n}$$

   Information:

   X = average value searched for

   Σx = number of student grades

   Σn = number of students

   c. Classical learning completion (Kb) used formula

   $$Kb = \frac{the\ number\ of\ students\ who\ complete\ the\ study}{total\ number\ of\ students} \times 100\%$$

Tabell 1. Student Grade Range

No.	Value Range	Criterion
1.	86 – 100	Excellent
2.	76 – 85	Good
3.	60 – 75	Enough
4.	55 – 59	Less
5.	≤ 54	Less Than Once

The indicator of success is if the average score of student learning outcomes reaches or exceeds the school's KKM, which is 75 and the percentage of classical learning completion is at least 75%. Positive activity of students can be said to be good if it reaches a minimum of 75%.

1. Data analysis of student activity observation results is interpreted based on the following formula (Royani, 2015):

$$PA = \frac{\text{the total score of the observations}}{maximum\ total\ score} X\ 100\%$$

PA = Percentage of Activity

Tabell 2. Learning Completion Criteria

No.	Value Range	Criterion
1.	86 – 100	Excellent
2.	76 – 85	Good
3.	60 – 75	Enough
4.	55 – 59	Less
5.	≤ 54	Less Than Once

RESULTS AND DISCUSSION

Learning Outcomes Test Data Results

Pre cycle

Precycle learning will be held on October 24, 2022. In this stage, the researcher takes a number of learning outcomes data on the material stating mathematical sentences. At the time of observation, the teacher who will be the researcher will meet discusses the material. There the researcher saw that the teacher who taught was still using the teacher center learning model and focused on the discussion to be delivered by him and the students were not given space to be active. So that students are not active in learning. Then the learning outcomes of students are obtained as follows:

Table 3. Precyclical Math Scores

No.	Value Range	Many Students	Presented
1.	86 – 100	2	7,7%
2.	76 – 85	10	38,4%
3.	60 – 75	8	30,8
4.	55 – 59	2	7,7%
5.	≤ 54	4	15,4%
	Sum	26	100%

Based on table 3 above, in the interval 86 - 100 as many as 2 students (7.7%), intervals 76 - 85 as many as 10 students (38.4%), intervals 60 - 75 as many as 8 students (30.8%), intervals 55 - 59 as many as 2 students (7.7%), intervals ≤ 54 as many as 4 students (15.4%). Then it can be seen in table 4 which shows the completeness of student learning, the following:

Table 4. Completion of Precyclical Mathematics Learning Outcomes

No.	Completeness	Number of Students	Presented
1.	Complete	12	46,2%
2.	Incomplete	14	53,8%
	Sum	26	100%

Based on the table above, in the pre-cyclethere were 14 students (53.8%) who were complete and 12 students (46.2%) who were not completed.

Cycle I

The results of the students' daily tests in cycle I can be seen in table 5:

Table 5. Mathematics Value Cycle I

No.	Value Range	Many Students	Presented
1.	86 - 100	8	30,8%
2.	76 - 85	9	34,7%
3.	60 - 75	4	15,3%
4.	55 - 59	2	7,7%
5.	≤ 54	3	11,5%
	Sum	26	100%

Based on table 5 above, in intervals 86 – 100 as many as 8 students (30.8%), intervals 76 – 85 as many as 9 students (34.7%), intervals 60 – 75 as many as 4 students (1 5.3%), intervals 55 – 59% as many as 2 students (7.7%), intervals ≤ 54 as many as 3   students (11.5 %). Then it can be seen in table 6 which shows the completeness of student learning, the following:

Table 6. Completion of Mathematics Learning Outcomes Cycle I

No.	Completeness	Number of Students	Presented
1.	Complete	17	65,3%
2.	Incomplete	9	34,7%
	Sum	26	100%

Based on the table above, in the first cycle there were 17 students (65.3%) who were complete and 9 students (34.7%) who were not completed.

Cycle II

The results of the students' daily tests in cycle I can be seen in table 5:

Table 5. Mathematics Value Cycle II

No.	Value Range	Many Students	Presented
1.	86 - 100	9	34,6%
2.	76 - 85	12	46,2%
3.	60 - 75	5	19,2%
4.	55 - 59	0	0%
5.	≤ 54	0	0%
	Sum	26	100%

Based on table 5 above, in intervals 86 – 100 as many as 9 students (34.6%), intervals 76 – 85 as many as 12 students (46.2%), intervals 60 – 75 as many as 5 students (19.2%), intervals

55 – 59% as many as 0 students (0%), intervals ≤ 54 as many as 0 students (0%). Then it can

be seen in table 6 which shows the completeness of student learning, the following:

Table 6. Completeness of Mathematics Learning Outcomes Cycle II

No.	Completeness	Number of Students	Presented
1.	Complete	21	80,8%
2.	Incomplete	5	19,2%
	Sum	26	100%

Based on the table above, in cycle II there were 21 students (80.8%) who were complete

and 5 students (19.2%) who were not completed.

Student Activity Observation Data Results

Cycle I

As for calculating the student activity data score, it can be calculated through the following

formula:

Activity Score = x 100% $\frac{\text{Acquired score}}{\text{Maximum score}}$

$$= \frac{5,7}{100} \text{ x } 100\% = 57\%$$

Cycle II

Activity Score = x 100% $\frac{\text{Score obtained}}{\text{Maximum score}}$

$$= \frac{8,7}{100} \text{ x } 100\% = 87\%$$

Application and Learning Outcomes

The pre-cycle stage is a stage that has not yet implemented interactive learning media

mathematics assisted by the prez i application. The learning process at the precyclical stage,

researchers use the Teacher Center where the teacher is still focused on learning, so that

students are not given space to be active. In the application of precyclical student learning

outcomes are still low which has an average in precyclical new students reached (46.2%). The

learning process in the first cycle uses interactive mathematics learning media assisted by the

prezi application where students begin to be given space to actively participate in learning.

Learningactivities begin with appreciation, delivery of learning objectives and student

motivation and provide direction to process the media. In the core activities, the teacher

explains the systematics in the learning to be carried out. The teacher will apply the media

that has been created to explain the material and understand the material. The last activity is

to reflect on the material. In cycle I there was an average increase of (65.3%). Learning in cycle II is not much different from cycle I. Learning in cycle II is carried out based on the results of reflection from cycle I. Reflection results in order to find out the shortcomings that occur during learning when using   interactive mathematics learning media assisted by prezi applications. Cycle II increases student learning achievement on average (80.8%) so it can be seen that this medium makes it easier for students to understand the material and media applied by the teacher.

DISCUSSION

In class action research that has three stages, it can be seen from the interval of students' scores in mathematics subjects, starting from pre-cycle to cycle II achieved, there tends to be a very good increase. This increase occurs, of course, inseparable from the application of interactive mathematics learning media assisted by the application of prezi in the material stating mathematical sentences. To be clearer of the results of the increase in student grades, it is presented on the following graph:
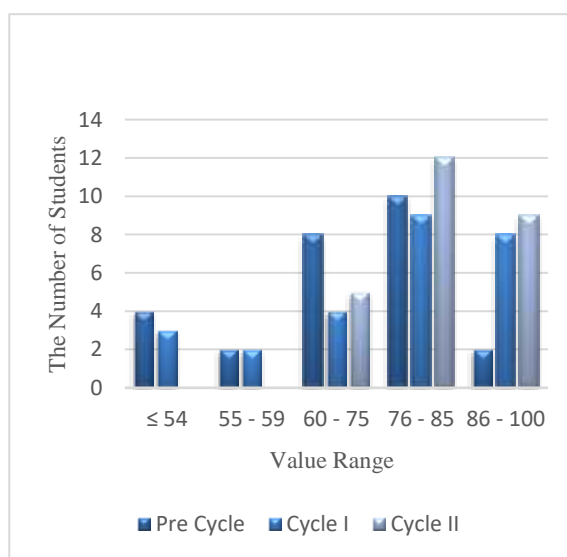

Figure 1. Student Learning Outcomes

It can be seen the completeness of learning for grade IV students of MI Muhammadiyah 25 Surabaya in mathematics subjects from pre-cycle to cycle II, so it can be presented as the following graph:
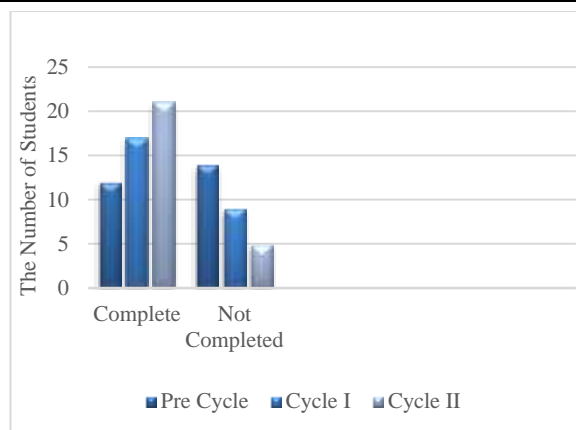
Chart 2. Completion of Student Learning Outcomes

Based on graphs 1 and 2, it can be seen that the use of prezi application in student learning outcomes and completeness has greatly increased. Observation data on the activities of students in the first cycle in the form of assessment sheets are within sufficient criteria. These criteria have reached success indicators but need improvement, because there are still shortcomings to improve. Things that are considered less active are asking about things that are not yet clear and actively answering the teacher's questions, students are less active in asking, when teachers ask many students who do not answer and some answer but are not quite right. Therefore, in the next cycle, the teacher motivates students who are less active by asking to explain how to work in front of their friends so that it is known which students do not understand the teacher's explanation. In cycle II, the assessment of the results of observations of student activities is better than cycle I. Every aspect of the assessment is carried out properly in order, such as when the teacher applies the media, students look calm. In this case, students are directed to pay attention to explanations from the media so that later they are able to answer questions when the teacher gives the opportunity to explain how to work and complete the test sheet. To be clearer than the results of the increase in student activity, it is presented on the following graph:
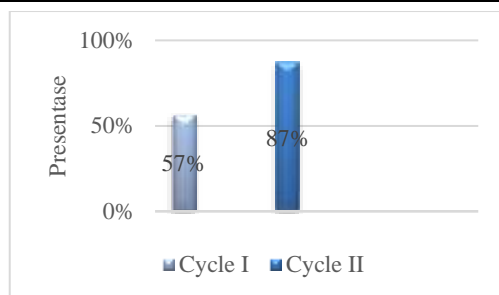
Figure 3. Student Activities

Based on graph 3, it can be seen that student activity in participating in learning interactive media mathematics assisted by the prezi application shows an increase and it can be said that student activity follows learning, on average in the criteria is very good. The use of media in the learning process will be more interesting, because students not only hear, but also see the application of the concepts learned.

From the results and discussion above, it is very clear that student learning outcomes and activities in mathematics subjects have achieved maximum results in cycle II. This is certainly a positive impact of the application of interactive mathematics learning media assisted by the application of prezi to the material of expressing mathematical sentences. Therefore, the author does not continue the next cycle.

CONCLUSION

Based on the results and discussion above, it can be concluded that:

1. The prezi application is applied in mathematics learning to the material stating mathematics sentences face-to-face which is attended by all students of grade IV MI Muhammadiyah 25 Surabaya. The process of applying media is carried out for two cycles, namely cycle I and cycle II, after the teacher applies prezi media, at the end of the learning the teacher distributes question sheets and the teacher asks students to do the questions on the material stating mathematical sentences.

2. Based on the results of this study, it is stated that the application of interactive mathematics learning media assisted by the prezi application can improve learning outcomes siswa. There was an increase in student learning outcomes in the first cycle reaching 65.3% completion to 80.8% cycle II so that the increase in learning outcomes increased by 15.5%.

3. In the results of observations of student activities with the percentage of classical completeness in the first cycle reached 57% then in cycle II to 87% so that an increase of 30%.

As for the advice from researchers, namely, the media that can be used in learning mathematics are very diverse, one of which is the Prezi application. As a result of learning mathematics in the material stating mathematical sentences, this medium is an alternative that can be used in elementary school learning, useful during and offline learning.

ACKNOWLEDGMENTS

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