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Application of Interactive Multimedia Assisted by Wordwall to Increase Learning Motivation and Student Learning Outcomes in Indonesian Language Learning

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ABSTRACT

This research was conducted to describe the increase in student learning outcomes, describe the increase in learning motivation in Indonesian language learning and also describe the differences in results between children who learn by applying interactive multimedia with the help of wordwalls compared to children who learn with conventional media. The mixed method for testing student learning outcomes is carried out using normality tests, homogeneity and difference tests (t tests). Student learning outcomes in learning Indonesian using interactive multimedia with the help of wordwall are higher than those of children who learn with conventional media. It is hoped that teachers can apply and try more varied interactive multimedia, with the aim that student learning outcomes and character can be improved.

Keywords: Interactive multimedia, Wordwall, Motivation to learn, Learning outcomes Indonesian

INTRODUCTION

Indonesian education is currently implementing an independent curriculum. Learning in the independent curriculum has the spirit to realize independent learning. This curriculum comes with a new spirit in the world of Indonesian education. Different from its predecessor curriculum, the independent curriculum emphasizes freedom of learning, both for students and educators. The main characteristic of learning in the independent curriculum is student-centered learning. This means that learning is designed by considering students' needs, interests and talents.

Learning media is a tool that can help in the learning process so that learning is easy to understand. Teachers should create media that is easy to use so that students understand the material quickly and easily accept it as new knowledge. Learning media includes tools that are physically used to convey the content of learning material, consisting of books, tape recorders, cassettes, videos, video recorders, films, slides (photo frames), photos, pictures, graphics, television and computers. Learning media also influences literacy skills, especially reading skills (Kurniawan, Rohini, and Triyanto 2021). Interactive multimedia is a learning media that combines various media elements such as text, images, audio, video and animation in one display. The factor that differentiates it from ordinary multimedia is the element of interactivity, where users can interact directly with the media.

Wordwall is an alternative choice from various interactive multimedia that can make the learning process fun and not boring for

students and teachers. Because this Wordwall application emphasizes a learning style that involves the role of student learning activities through participation with their peers in a competitive manner regarding the learning they are currently or have studied. (Sardiman, 2020). Wordwall is an application presented in the form of a game which aims to involve students in answering quizzes, discussions and surveys.

Learning Indonesian is often considered boring and less relevant to students' daily lives. As a result, students' interest in learning becomes low. So it has an impact on learning outcomes that are less than optimal. The solution that can be used is the application of interactive multimedia with the help of Wordwall to help students increase learning motivation and learning outcomes. The use of interactive multimedia as a tool to help students in the learning process can utilize Wordwall. This is because in interactive multimedia with the help of Wordwall there are interactive educational games that can help students learn Indonesian in a more enjoyable way.

The use of interactive multimedia with the help of Wordwall as a learning medium has several advantages. Among other things, the presentation is more interesting and stimulates students to find out more information about teaching materials presented visually and educational games in the Wordwall application. Apart from that, teaching materials can be reproduced according to needs, used repeatedly, and can be stored on a flash disk so they can be taken practically anywhere (Frisca Anantiya, Nur Asyiah 2024).

Based on the results of observations at SD Muhammadiyah 1 Tegal City, class III students still use conventional media in implementing learning which has an impact on low student learning activities. Furthermore, most of the average scores of student learning outcomes in Indonesian language subjects have not reached the Criteria for Completion of Learning Objectives (KKTP). The aim of this research is to determine the increase in motivation and learning outcomes of class III students at SD Muhammadiyah 1 Tegal City in learning Indonesian.

MATERIALS & METHODS

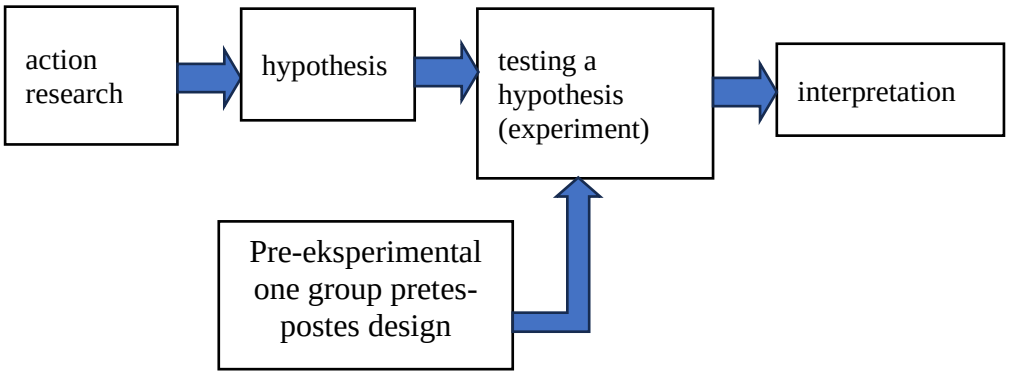
The research method used is mixed methods. This research is an approach that combines qualitative and quantitative elements in one study (Paramitha and Subrata 2024). In line with this, Puspitasari et al (2024) added that mixed methods research is an approach to the research process that combines qualitative and quantitative research methodologies. According to Sugiyono, mixed methods is an approach that combines quantitative and qualitative methods to be used simultaneously in one research, so that it can produce more comprehensive, valid, reliable and objective data (Septentriwati and Dwikurnaningsih 2024). According to Creswell, there are six mixed methods research designs, namely the convergent parallel design, the explanatory sequential design, the exploratory sequential design, the embedded design, the transformative design, and the multiphase design (Alwiyyah, Purbasari, and Amaliyah 2024).

This research uses the explanatory sequential design, namely a data collection method that begins with quantitative data collection, which is then analyzed qualitatively, so that the results provide a clearer and more detailed general picture (Sopandi, Arga, and Nurfurqon 2024).

In this research, researchers used a mixed method research, which is a combination of action research and experimental research. This research combines two methods that combine elements of quantitative and qualitative approaches with the aim of broadening and deepening the understanding and meaning of the facts obtained. Action study research uses observation data on the course of the learning process in the classroom. This data is then analyzed through stages in the action cycle. The stages in each cycle include: planning, implementation, observation, and reflection. The experimental research carried out was

Pre-experimental One Group Pretest-Posttest Design.

There are several types or types of mixed research methods, as explained by Creswell and Plano Clark, the first is Covergent Parallel Design, the second is Explanatory Sequential Design and the third is Exploratory Sequential Design. Convergent Parallel Design is a type of research model where the implementation of quantitative and qualitative research is carried out together but separately from one another. Explanatory Sequential Design is a research design where the implementation of qualitative and quantitative is carried out sequentially with quantitative provisions carried out first then followed by qualitative (Waruwu, M, 2023). This research is a combination research or mixed method research of the Exploratory Sequential Design type which begins with conducting an initial study followed by action research (Action Research) to find hypotheses from the problems found in the initial study and then the hypothesis must be tested for truth using Pre-experimental model experiments. One Group Pretest-Posttest Design. This research is collaborative between PTK and experimentation. The general design outline of this research is described as follows:



This research was conducted at SD Muhammadiyah 1, Mangkukusuman Village, East Tegal District, Tegal City in September-October, first semester of the 2024/2025 academic year. The subjects of this research were students of Class III At-Tobary SD Muhammadiyah 1 Tegal City. With a total of 30 students, consisting of 19 male students and 11 female students. Meanwhile, the experimental class was held in class III Al-Rozy with a total of 28 students consisting of 15 male students and 13 female students.

In line with the research model that the author uses, there are two types of data collection techniques in the research that the author carries out, namely qualitative techniques (PTK) followed by quantitative techniques (experiment). According to Sugiyono (2020:105) states that in general there are 4 (four) types of data collection techniques, namely observation, interviews, documentation and combination/triangulation. The technique used in the research is direct observation of student behavior related to their learning motivation. The aim is to understand more deeply the factors that influence student learning motivation, as well as to identify patterns and trends that can be used to increase student learning motivation. The observation data obtained is used to reflect on the actions that have been taken. To analyze the observation data, it was carried out on student observation sheets. The data obtained is used to reflect on the actions that have been carried out in learning activities. Student learning motivation in this research can be analyzed using the formula:

Average value of children's motivation

$X = (\sum x)/N$

Information:

X = Average value

∑x = Number of scores of students with good motivation
N = Total number of students
Percentage of classical student motivation
X = (∑x)/N x 100%
Information:
X = Percentage of student learning motivation
∑x = Number of students with high learning motivation
N = Number of students
The resulting data from the student observation sheet for each aspect observed with the score provisions is presented in the following table:

Table 1 Scores for each aspect observed on the student learning motivation observation sheet.

No.	Criteria	Score
1.	High learning motivation	1
2.	Low learning motivation	2

The highest score for each observation item is 1, the lowest score for each observation item is 2. The number of observation items is 5, so the highest score is 5 and the lowest score is 10. The percentage of classical student learning motivation assessments can be seen in the table below:

Table 2 Interval criteria for assessing student learning motivation classically.

No.	Total Score Interval	Category
1.	50%-70%	Low motivation
2.	80% -100 %	High motivation

Summative test data on student learning outcomes can be analyzed using the formula below:
Average value
X = (∑x)/N
Information:
X = Average value
∑x = Number of values obtained
N = Number of student
Percentage of classical learning completeness
KB = N1/N x 100%
Information:
KB = Completeness of classical learning
N1 = Number of students who scored ≥70
N = Number of Students
The criteria for completing the learning objectives (KKTP) at SD Muhammadiyah 1 Tegal City for learning Indonesian are as follows:

1. Student's individual absorption capacity, that is, students are said to have completed individually if they get a minimum score of 70 out of a maximum score of 100.
2. Classical absorption, that is, a class is said to be classically completed if there are at least 70% of students who have achieved a score of 70.

The analysis technique used in this research is quantitative analysis. Data on student learning outcomes in the form of tests is quantitative data and is analyzed using normality tests and homogeneity tests on Indonesian language learning outcomes and overall student learning motivation for both PTK classes and comparison classes.
The normality test helps determine whether the data meets the assumptions of a normal distribution or whether alternative methods for analysis are necessary. The normality test aims to determine whether the data obtained from the pre-test and post-test follow a normal distribution. This is an important step before performing inferential statistical analyzes that require the assumption of normality, such as a t test or ANOVA. In an effort to ensure that the pre-test and post-test data meet the normality assumptions required for inferential statistical analysis, a normality test was carried out. This test can be carried out using methods such as the Kolmogorov-Smirnov or Shapiro-Wilk test.
Kolmogorov-Smirnov test uses the formula:

$D = \sup_x |F_n(x) - F_x|$

D is the test statistic, F_n(x) is the sample cumulative distribution function, and F_x is the theoretical cumulative distribution function. The results of this test are compared with critical values at a certain level of significance to determine whether the data follows a normal distribution. If the p value of the normality test is greater than the significance level (for example, 0.05), then the data can be considered normally distributed, so further analysis can be carried out using parametric methods. If the data is not normal, non-parametric methods such as the Wilcoxon or Kruskal-Wallis test can be considered for further analysis.

The testing hypothesis in this research is as follows:

Null Hypothesis (H_0) Pre-test and post-test score data on learning outcomes (denotative, connotative and figurative) for class students III at SD Muhammadiyah 1 Tegal City with normal distribution.

Alternative Hypothesis (H_1) Pre-test and post-test score data on learning outcomes (denotative, connotative and figurative) for class III students at SD Muhammadiyah 1 Tegal City are not normally distributed.

The homogeneity of variance test aims to ensure that the variance between the groups being compared is uniform. This test is important to ensure that the basic assumptions for analysis of variance (ANOVA) or t test are met. The method used, namely the Levene test, is often used to check the homogeneity of variants. The following formula is used:

W=((N-k))/((N-1)). (∑_(i=1) ^k 〖n_i (y¯_i-y¯) ^2 〗)/(∑_(i=1) ^ k∑_(i=j) ^(n_i) (y_i-y¯) ^2)

The similarity of means test aims to compare the means between two or more groups to see whether there are significant differences. The t test method is used to compare the means between two groups. ANOVA (Analysis of Variance) is used to compare means between more than two groups.

T Test Formula (for two independent groups):

t (X¯_1-X¯_2)/(√((s_1^2)/n_1) +(s_2^2)/n_2)

Difference Test (t-test)

If a hypothesis is accepted or rejected, the significance test between variables must be tested using the t test. Meanwhile, to see the results of use.

The model and learning media developed for student learning outcomes is by using the t test (Ghozali, 2021: 196).

Formula:

t= (Md¯)/√ ((∑X^ (2 d))/(N(N-1)

Next, the t-count value is compared with the t-table according to the number of subjects in the research sample at a significance level of 0.05 and 0.01. If the t-count is greater than the t-table then the hypothesis is accepted and vice versa. The mean difference test (t-test) is used to test whether there is a significant difference between learning outcomes using interactive multimedia using Wordwall and learning outcomes using conventional learning. This ant-test examiner uses SPSS 20.

RESULT and DISCUSSION

In the initial study, descriptive research was carried out. Research emphasizes obtaining an overview of (a) the learning used by teachers in learning Indonesian, (b) students' learning motivation during the learning process, (c) the condition and use of infrastructure and the environment in the school. Furthermore, the results of this initial study will be used as consideration in making learning plans in the context of implementing interactive multimedia.

Data was obtained from interviews, observations and documentation studies at SD Muhammadiyah 1 Tegal City. The subjects of this research were class teachers and class III students at the school. The following are the results of an initial study conducted at SD Muhammadiyah 1 Tegal City.

Interpretation of Preliminary Study Results

Based on the description of the data from the initial study, both the data from the

documentation study and the data from observations can be interpreted that: Indonesian language learning in Class III Al-Rozy SD Muhammadiyah 1 Tegal City is still unsatisfactory because it is based on summative value data on the scope of the material obtained when the researcher conducted the study. The practice of learning Indonesian is still low with an average of 60. Class III students, based on their middle to upper family economic background, are already used to sophisticated technology. However, parental attention and support for students' learning development is still lacking because parents are busy and rarely accompany their children in learning.

There were several things that did not go well during the learning process. One example is when asking students a question, the students answer the question simultaneously. Then, when pointed out, the student still does not want to answer what the teacher asks. In group discussions, students generally do not follow well. However, the discussion lacked time, causing students to answer as they were. The assessment is carried out by giving individual tests. The test consists of questions distributed by the teacher. Meanwhile, students only write the answer below the question. After checking, it turned out that there were still students who got low and below average scores.

First Cycle Implementation

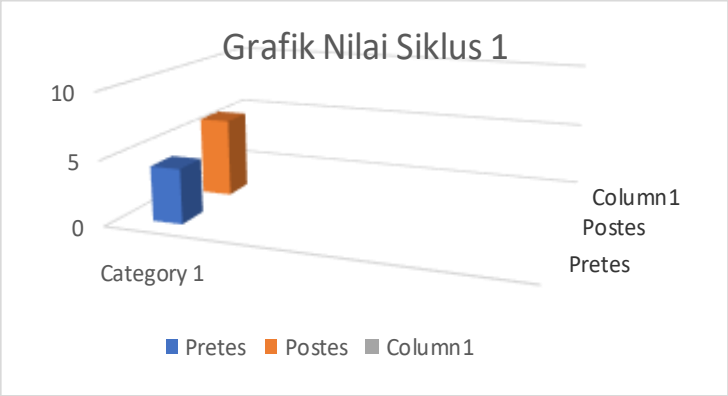
The description and interpretation of the results of the initial study are used as a reference in preparing the first cycle learning plan. However, before action is taken, you must equalize your perception of the learning model with the partner teacher. Because the teacher concerned has never implemented and fully understood the research design to be carried out.

The lesson begins with reading a prayer led by the class leader, then the teacher asks about the news classically, then the teacher asks about the students' attendance classically and continues by taking attendance of the students individually while playing with the students' attention to create familiarity and closeness at the beginning of the lesson. Light questions and answers are carried out to build students' knowledge about the material to be studied, this activity is carried out accompanied by the display of Power Point slides. Next, the teacher continues showing slides on the material and asks students to take the pre-test individually. After the time given to take the pre-test is up, students submit their answers to the teacher. Next, the teacher delivers the lesson material using power point media. After the material is finished, the teacher then asks the students classically to form four groups containing 4 or 5 students in each group. The group division was complete, even though it took a lot of time, so the time for group work was reduced, after that the teacher distributed worksheets that all groups had to answer. The next activity the teacher gives assignments to all groups to be done in groups and present the results of his work. Students work with their respective groups, complete assignments and prepare presentations of results. During group work, the teacher observes all students and makes assessments through direct observation. Assessment is carried out using two forms, namely first assessing group work and second assessing individual student motivation seen from the ongoing learning process.

Observation Results

Student learning outcomes were obtained using a learning evaluation test which was carried out after the learning was implemented to determine students' understanding of the learning material and the average data obtained for student learning outcomes in this first cycle was 6,1. To determine the improvement that occurred in students' understanding of the material, before the learning process they were given the same test and the average data obtained from the pre-test results was 4,2, so it can be concluded that the increase in student learning outcomes reached 1.9. Based on the t test, the result obtained is 9,179, if you consult the t table with dk 23 at a significance level of 0,05 or 95% of 1,714 then the t count

of 9,179 is greater than the t table so it is concluded that there is a significant difference between the pre-test average values with an average post-test score or a significant increase in student learning outcomes in the first cycle. From the results of observations or observations made by the teacher (as observer), a lot of information or data was obtained regarding the application of interactive multimedia Wordwall in PTK classes, that the learning implementation score at this first meeting was obtained. score 147 or average 6,1. Based on the observation guide, the teacher's ability to implement learning is still included in the good category with an average score of 4,2. In principle, the implementation of learning in class using interactive multimedia Wordwall runs well and is in accordance with the learning plan made. The average pre-test and post-test scores in the first cycle are depicted in the graph below.



Graph 1 Average score of pre-test and post-test

Meanwhile, the results of observations on student learning motivation in the first cycle show that students still feel unfamiliar with interactive multimedia, so that students' attitudes are only limited to following learning well while understanding is still neglected. In the first cycle, the average student learning motivation score was obtained at 3.8 out of a maximum average score of 5 in the sufficient category, this is still considered low or less based on the five-scale rating scale range or determining the classification of ideal score learning values, namely in the top order. basic total score, highest value and lowest total score.

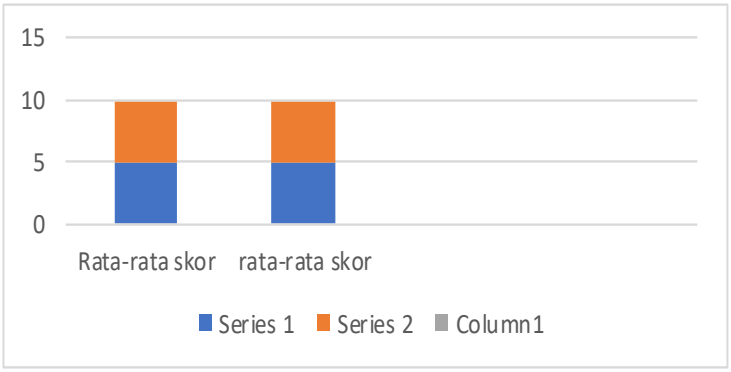
Second cycle learning outcomes

Student learning outcomes were obtained using learning evaluation tests which were carried out after the learning was implemented to determine students' understanding of the learning material and obtained data on average student learning outcomes. in the second cycle it was 7.5 and the average data obtained from the pre-test results was 4.5 so it is known that the increase in student learning outcomes reached 3.0. Based on the results of the t test, the t-count is 8.746. If we consult the t table dk 23 at a significance level of 0.05, the data obtained is that the t-count is 8.746, which is greater than the t-table, namely 1.714, therefore it can be concluded that there is an increase which is significant for student learning outcomes in this second cycle.Data analysis regarding the significance of increasing student learning outcomes between the third and fourth cycles was also carried out with the following results: the average learning outcome in the third cycle post-test was 7.4 and the average learning outcome in the fourth cycle post-test was 7. 5, this shows an increase in student learning outcomes from cycle one to cycle two.

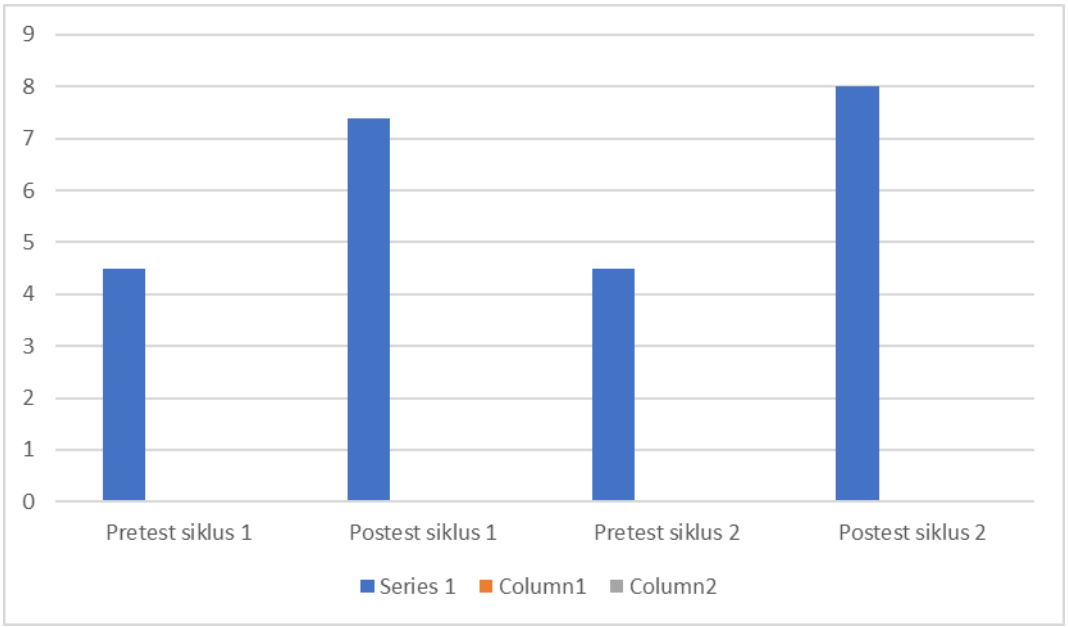
Observation Results

From the results of observations made by the teacher (as observer), a lot of information or

data was obtained about the effectiveness of implementing interactive multimedia. Based on the observer's observations, the teacher's ability to apply the learning that the teacher has done is good. It can be seen from the teacher's attitude that he can create interactive multimedia and is used to using technology. Based on the scores, the results of the observations carried out showed an average score of 4.9, which means there has been an increase of "very good".



Graph 2 The teacher's ability to implement learning In the Second Cycle



Graph 3 Average score of pretest and posttest values Discussion of Research Results First Cycle

Analysis of student learning outcomes was obtained using a learning evaluation test which was carried out after the learning was implemented to determine students' understanding of the learning material and obtained data on the average student learning outcomes in this first cycle was 6,1 to determine the improvement that occurred in students' understanding of the material, so Before the learning process, the same test was given and the average data obtained from the pre-test results was 4,2, so it can be concluded that the increase in student learning outcomes reached 1,9.

Based on the t test, the result obtained is 9,179 when consulted on the t table with dk 23 at a significance level of 0,05 or 95% of 1,714, the t count is 9,179 which is greater than the t table so it is concluded that there is a significant difference between the average value of the pre-test and post-test average score or a significant increase in student learning outcomes in the first cycle.

The results of observations carried out by the teacher (as observer) obtained a lot of information or data about the application of interactive multimedia in PTK classes. The learning implementation score at this first meeting was a score of 147 or an average of 6,1 based on the observation guide. The teacher's ability to implement learning using interactive multimedia was still included in the good category with an average score of 4,2.

Student learning motivation in the first cycle obtained an average student activity score of 3,8 from a maximum average score of 5 in the sufficient category, this is still considered low or less based on the five scale rating scale range or determining the classification of learning values, the ideal score, which is compiled on the basis of the highest total score and the lowest total score. Student activity is classified as not yet optimal, this is in accordance with what Winasanjaya (2021:249-251) wrote that the success of group learning with efforts to develop group awareness requires a fairly long period of time. This cannot possibly be achieved with just one or one-time implementation of this strategy.

Second Cycle

Student learning outcomes were obtained using a learning evaluation test which was carried out after the learning was implemented to determine students' understanding of the learning material and the average data obtained for student learning outcomes in this second cycle was 7,5 and the average data obtained from the pre-test results was 4,5 so it is known that the increase in student learning outcomes reached 3,0 based on the results of the t test, it was obtained that the t count was 8,746. If you consulted the t table dk 23 at a significance level of 0,005, the data obtained was that the t count was 8,746 more. is large when compared to the t table, namely 1,714, therefore it can be concluded that there is a significant increase in student learning outcomes in this second cycle. The observer's results show that the teacher's ability to implement interactive multimedia is good, as can be seen from the attitude of the teacher who is used to using interactive multimedia. Based on the scores, the results of observations made show an average score of 4,9, which means it is in the "very good" category. Observations of student learning activities in the second cycle were 4.8 in the "very good" category.

Table 3 Recapitulation of the Paired Sample t-test on the use of interactive multimedia in the main idea of paragraph material on the learning outcomes of class III students at SD Muhammadiyah 1 Tegal City for the 2024/2025 academic year.

Tabel 3 Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Eksperimen_Pretest & Eksperimen_Postest	28	0,415	0,028

Based on (Table 3), the significance value between the pretest experiment and posttest experiment was obtained at 0.028 <0.050, meaning Ho was rejected. From the decision to test the hypothesis, Ho was rejected, so it was said that there was a significant difference in the administration of the pretest and posttest on the use of interactive multimedia on the learning outcomes of class III students at SD Muhammadiyah 1 Tegal City in 2024/2025.

Table 4 Recapitulation of the Paired Sample t-test on the use of conventional media in the main idea of paragraph material on the learning outcomes of class III students at SD Muhammadiyah 1 Tegal City for the 2024/2025 academic year.

Tabel 4 Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Kontrol_Pretest & Kontrol_Postest	30	0,378	0,039

Based on (Table 4), the significance value between the pretest experiment and posttest experiment was obtained at 0.039 < 0.050, meaning Ho was rejected. From the decision to test the hypothesis, Ho is rejected, so it is said that there is a significant difference in giving the pretest and posttest on the use of conventional media on the learning outcomes of class III students at SD Muhammadiyah 1, Tegal City, academic year 2024/2025. So from the two treatments of providing teaching materials between those using interactive multimedia and conventional media on the learning outcomes of class III students at SD Muhammaadiyah 1 Tegal City there is a significant difference, because the hypothesis test decision Ho was rejected.

Student learning outcomes were obtained using a learning evaluation test which was carried out after the learning was implemented to determine students' understanding of the learning material and the average data obtained for student learning outcomes in this experiment was 8,1 and the average pre-test result data was 4,2. and it was found that the gain was 3,9, then in the control class the average post-test data was obtained at 6,3 and the average data from the pre-test results was 4,2 and it was found that the gain was 1,9 based on the results of the t test to determine the effectiveness of the implementation learning obtained t count of 18,881 if you consult the t table with dk 48 of 1,684 then the calculated t is greater than the t table so it is concluded that there is a significant difference between the results of implementing interactive multimedia and conventional learning.

This is an advantage of learning using interactive multimedia in line with what was stated (Education et al. 2021) which states that the role of technology in learning is learning media which helps teachers to relate teaching material to students' real world situations, which can encourage students to make connections between knowledge. which is learned with its application in the lives of students as members of the family and community.

CONCLUSION

Based on the results of the research and discussion described in the previous chapter, several conclusions can be drawn that:

The application of interactive multimedia assisted by wordwall can significantly increase student activity. This can be seen in the development of student activities in applying interactive multimedia in the first cycle to the second cycle, there is an increase in student learning outcomes in each cycle.

The application of interactive multimedia can significantly increase teacher activity. This can be seen in the development of teachers' abilities in implementing learning using interactive multimedia each cycle which is accompanied by an increase in student learning outcomes each cycle.

At the experimental stage, information was obtained that the application of interactive multimedia could improve student learning outcomes. This can be seen from the results of the analysis carried out using t test statistics to determine the effectiveness of implementing interactive multimedia compared to conventional media. From the results of the analysis, it is known that the better the teacher's ability to apply learning media and learning models, the better the students' understanding of the material will be. This means that the better the teacher's ability to apply learning media, the better the student learning outcomes will be and the improvement will occur significantly.

Declaration by Authors

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