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The Effect Of The Quizizz Assisted Paikem Approach On Student's Motivation In Mathematics Learning

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***Abstract**: A rigid and less varied learning approach is one of the causes of low student motivation in learning mathematics. This situation will indirectly have an impact on the low achievement of learning objectives and student learning outcomes of mathematics. The purpose of this research is to determine the effect of the Quizizz-assisted PAIKEM approach on students' learning motivation in learning mathematics. This research includes quantitative research whose research method is a quasi-experimental design with Non-Equivalent Control Group Design. The population in this study were all eighth-grade students at SMPN 1 Kragilan, while the samples were experimental and control classes with 34 students each. The data collection technique in this research uses a non-test instrument in the form of a learning motivation questionnaire which will be given in the form of a pretest and posttest. Analysis of research data using descriptive and inferential statistical analysis. Descriptive statistical analysis was carried out to describe the research and to obtain descriptive data such as the mean, minimum and maximum scores, standard deviation, variance and range. Meanwhile, inferential statistics will test the research hypothesis by using the independent sample t-test. The results of the t-test analysis showed that there was a significant difference between the group of students whose learning was carried out using the Quizizz-assisted PAIKEM approach and the group of students whose learning was carried out using the conventional learning approach.*

***Keywords**: mathematics; motivation to learn; paikem; quizzzz.*

INTRODUCTION

One of the goals of the Unitary State of the Republic of Indonesia is to educate the nation's life, this is also stated in the goals of national education, namely developing the potential of students and building character in order to educate the nation's life. Successful education will produce qualified, competitive and superior human resources who can develop Indonesia in the future (Rohmah & Sumarsih, 2017). However, in reality, currently the quality of education in Indonesia is still relatively low. It can be seen from the many problems in the process of teaching and learning activities. While Sumi'at is inside (Latief, Rohmat & Ningrum, 2014) explained that what is at the heart of formal education is learning, because it contains several components that interact with each other. Classroom learning that is still teacher-oriented is one of the problems encountered in learning because it causes students to be less able to develop their abilities and potential. Apart from that, the learning conditions where the teacher is the center of attention make the learning atmosphere seem monotonous so that most students do not have the motivation to learn. In accordance with Winataputra in (Utami & Basir, 2015) who said that learning applied in class was still textual in nature resulting in low student learning motivation. Meanwhile, learning motivation will indirectly affect student learning outcomes.

Referring to the KBBI, motivation can be interpreted as a treatment in the form of effort that arises from oneself in achieving something that is done either consciously or not. Irwanto inside (Sholihatunnisa, Darmawansyah, & Susilawati, 2018) interpret motivation in the context of learning is something that spurs someone to learn. In the learning process, the existence of motivation is an important part because the existence of motivation to learn will

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be a support in achieving optimal learning outcomes (Sardman, 2012). (Khodijah, 2014) explained that the psychological condition that directs students to take action to acquire knowledge or learn something is called learning motivation. (Sardiman, 2012) mentions that there are two types of motivation namely motivation from within and from outside or often known as intrinsic and extrinsic. In the context of learning, things that include intrinsic learning motivation are determination, passion, ambition to succeed, feeling the need to learn and having hopes and aspirations. While things that come from outside then affect learning motivation including giving awards such as prizes or praise, giving punishment, learning environment or learning atmosphere and activities in the process of learning activities.

A problem regarding the low motivation of student learning can be seen in subjects that many students consider difficult, one of which is mathematics. Based on research conducted by (Bahri, 2018) states that when learning mathematics takes place, students look less enthusiastic when working on problems. In addition, there are students who are afraid to ask questions and even fall asleep during learning. Furthermore, in the research conducted by Soedjadi cited by (Sholihatunnisa, Darmawansyah, & Susilawati, 2018) shows the fact that the absorption of junior high school students in learning mathematics is only 42%, which is a low level. This happens because the learning approach used by the teacher is not appropriate, the teacher does not give reinforcement but instead gives punishment. Therefore, it is necessary to update the learning. Because based on research that has been conducted by (Rizqi, Yusmansyah, & Mayasari, 2018) said that school is a factor that influences students' learning motivation dominantly compared to family factors. Learning updates are carried out with the aim of improving mathematics education, especially in terms of learning. The learning approach is one of the components that needs to be set to suit the conditions and learning objectives to be achieved, which is also part of the effort to develop motivation to learn in students.

According (Rohmah & Sumarsih, 2017) explained that applying a new approach is part of learning renewal and can improve the quality of education. Soedjadi inside (Sholihatunnisa, Darmawansyah, & Susilawati, 2018) said the magnitude of the ability to be able to foster willingness and enthusiasm for learning through a fun strategy is the real goal of the education system, especially in the field of mathematics. One of the learning approaches that can be applied is the Active, Innovative, Creative, Effective and Fun Learning approach or often known as PAIKEM. This is based on the consideration that the approach generally used by teachers so far is a conventional approach whose learning stages seem rigid, namely explaining material, giving examples of questions and practicing questions.

PAIKEM is an extension of the active learning approach whose name has become more widely known since the end of 2007. This approach contains active, innovative, creative, effective and fun learning elements. According to (Slameto, 2011) PAIKEM is a learning that in its design includes ways to make students active and able to carry out creations and innovations in an effective and fun way. In its application, the PAIKEM approach can be integrated with various methods, models and learning media. This was also stated by (Sari, Sudargo, & Sutrisno, 2019) that the PAIKEM approach is an approach that makes teaching and learning activities active by mixing and matching various methods, media, and strategies such as utilizing the environment to be able to develop students' knowledge and attitudes. In PAIKEM there are four points or principles that guide the course of the learning process, namely interaction, communication, reflection, and exploration. Meanwhile, (Khairunnisa & Son, 2018) mentions the stages of implementing PAIKEM learning, namely starting from the introduction, then presenting the material, followed by providing guidance and carrying out exercises, then students study and understand in detail, after that there is feedback from the teacher which is continued with further training to implement learning and develop it, and ends with the process of analysis and evaluation.

The PAIKEM approach is different from the conventional learning approach because in the PAIKEM approach the students are the center of learning, whereas in conventional learning the teacher is the center of learning. Conventional in another sense is also defined as traditional. According to Ruseffendi in (Kurniawan & Suryana, 2015) in addition to teaching centered on the teacher, conventional mathematics learning prioritizes memorization, numeracy skills, and the results obtained rather than understanding concepts and the learning process. Besides that, Authority and Mukti in (Latief, Rohmat & Ningrum, 2014) explained that the approach by providing descriptions, examples, then exercises is a learning approach that is on average used by many schools which is a conventional approach. While the PAIKEM approach is characterized by the learning center being located on the students, the learning is contextual, discussed in a continuous, thorough manner, and aims to achieve certain competencies but is still packaged in fun. The PAIKEM approach can increase student motivation and learning outcomes, according to previous research conducted by (Santoso, 2017) who found that the paikem approach had an influence on the motivation and learning outcomes of class XI MA Al-Hikmah students in mathematics learning material, namely the function of composition.

The PAIKEM approach is expected to have a more positive influence on student learning motivation if it is integrated with the right learning media. One of the learning media that can be integrated with PAIKEM is Quizizz media. Quizizz can be played on a Smartphone or on a Web Browser. Android applications are things that are a bit commonplace for teachers to use as learning media. Quizizz was chosen to be integrated with PAIKEM because it will help the presentation of tests or evaluations which are generally tense into fun interactive quizzes. According to research (Aini, 2019) who explained that student learning outcomes and motivation were better when Quizizz was chosen as a learning medium because it was creative, innovative and fun. Then Panggabean and Harahap inside (Wijayanti & Hermanto, 2021) has also proven in his research that the use of Quizizz media has a positive effect of 78% on student learning outcomes. In its use, Quizzz provides easy and simple access, both for teachers as quiz makers and for students as users. Educators will find it easier to collect quiz scores because they are already contained in an excel file that can be downloaded by the teacher. In addition, the presentation of quizzes can be made to provide an attractive appearance, such as adding pictures, animations, memes, and sounds. It is intended that students can feel more happy and interested when working on problems in learning mathematics. Having a leaderboard on the Quizizz feature will also make students enthusiastic about occupying the top positions.

One of the junior high schools in Kragilan District, Serang Regency, Banten, namely SMPN 1 Kragilan, was chosen as the research subject on the basis of previous observations, which showed that during mathematics learning many students were lethargic, unenthusiastic and had difficulty solving problems. After conducting interviews with subject teachers, it was found that the majority of students did not have good learning motivation, especially in mathematics, especially after the Covid-19 pandemic, students became more lazy to study, not enthusiastic, lethargic, sleepy and many chatted with friends when learning.

Based on the explanation and problems above, research has been carried out on the PAIKEM approach which has an effect on student learning motivation, and also on Quizzz which has an influence on student learning motivation, but there has been no research that combines the two, so researchers aim to conduct experimental research by applying the PAIKEM is assisted by Quizizz with the aim of seeing its effect on students' learning motivation in learning mathematics.

RESEARCH METHODS

This research was conducted in the second semester at SMPN 1 Kragilan, Serang, Banten. This research belongs to a quantitative type whose research method is a quasi-experimental design with a Non-Equivalent Control Group Design. The population in this study were all students of class VIII at SMPN 1 Kragilan, while the sample consisted of two classes (experimental and control classes) with 34 students each. In this research the sample was selected by random sampling technique. Based on random results, two classes were obtained as samples in this study, namely class VIIID and class VIIIE. Furthermore, the two classes were given a pretest in the form of a non-test questionnaire regarding learning motivation. After the pretest data was collected, a group equalization test was carried out. After it was proven that they were equal, a draw was carried out for the 2 classes to determine the experimental and control classes. The research conducted will provide treatment to the experimental class in the form of learning by applying the Quizizz-assisted PAIKEM approach, while the control class will be taught by conventional learning. The research procedure was to identify problems, study literature, conduct licensing with schools, observe and interview mathematics teachers, coordinate regarding lesson plans and research instruments, after the learning tools and research instruments were ready then proceed with carrying out research, giving pretests to experimental and control classes, teaching the experimental class with the Quizizz-assisted PAIKEM approach and the control class with a conventional learning approach,

In this research, the data collected is data on students' learning motivation in learning mathematics. Data was collected by administering a non-test instrument in the form of a questionnaire regarding learning motivation which would be divided into a pretest questionnaire given before treatment and a posttest questionnaire given after treatment. The learning motivation questionnaire given was a closed questionnaire containing 33 statements with 5 answer options, namely strongly agree, agree, disagree, disagree, and strongly disagree. Questionnaires were given to students in the form of an online google form.

In this study, the instrument grid was prepared based on the indicators of learning motivation presented by (Uno, 2016) namely the desire and desire to succeed, the encouragement and need for learning, the aspirations and hopes for the future, the appreciation in learning, the activities that attract students' attention in learning, the existence of a conducive learning environment and supports the process of learning activities, so students can learn optimally.

Before the students filled out the questionnaire/questionnaire on learning motivation, this questionnaire had already been tested for validity and reliability so that in terms of research principles this learning motivation instrument was appropriate to be used as a research instrument because it proved valid and reliable in measuring student motivation in learning mathematics. After the pretest and posttest data have been collected, a prerequisite test is carried out which consists of a normality test and a homogeneity test. Then do the t test with the type of test independent sample t test. In this study, each data test was carried out with statistical software.

RESULTS AND DISCUSSION

This study discusses the effect of the Quizizz-assisted PAIKEM approach on students' learning motivation in learning mathematics. In conducting this research, the Nonequivalent Control Group Design research design was used which used the independent sample t test to test the hypothesis. In this study, the data analyzed were data on motivation to learn mathematics in learning mathematics obtained from the results of the posttest after treatment. The experimental class is VIIID class with 34 students while the control class is VIIIE class

with 34 students. The non-test instrument contains 33 statements regarding student motivation. After the data is collected, the data is processed using statistical software and a description of the data is obtained.

Table 1. Data Description of Students' Learning Motivation in Learning Mathematics

No.	Analysis Results	Experiment Class	Control Class
1	Means	129.00	116,26
2	Standard Deviation	10.85	15.09
3	Variance	117,81	227.83
4	Minimum	110	80
5	Maximum	162	141
6	range	52	61

Based on the table 1, it can be seen that the average value of the experimental class is 129.00, which is greater than that of the control class, which is 116.26. Furthermore, the minimum value for the experimental class is 110 while the control class has a minimum value of 80, for the maximum value of the experimental class is 162, while the control class is 141, while the variance and standard deviation scores of the control class are greater than the experimental class. The difference between the variances is 110.02, while the standard deviation for the control and experimental classes is 4.24, which is greater than the control class. From the statistical description of the data that has an important value is the average score. Furthermore, to describe the category or quality level of student learning motivation, the score obtained is transformed into a scale category of five theoretical ideals. and obtained the following results:

Table 2. Categories of Student Motivation Data for Experiment Class and Control Class

No.	Category	Score Range	Control Class Frequency	Control Class Frequency
1	Very high	$132 \leq M \leq 165$	14	4
2	Tall	$110 \leq M \leq 132$	19	17
3	Currently	$88 \leq M \leq 110$	1	11
4	Low	$66 \leq M \leq 88$	0	2
5	Very low	$33 \leq M \leq 66$	0	0

After conducting descriptive analysis, the next data analysis is inferential statistical analysis consisting of prerequisite tests and hypothesis tests. Testing the data in this study was carried out with statistical software. In the prerequisite test, normality and homogeneity tests were carried out. The normality test uses the Kolmogorof-Smirnov test technique and the Shapiro-Wilk test, the test rule for the normality test is that if the significance value ≥ 0.05 means the data is normally distributed, the following are the results of the normality test.

Table 3. Data Normality Test Results

Sample	Kolmogorof-Smirnov Significance	Shapiro-Wilk Significance	Conclusion
Experiment	0.200	0.126	Normal
Control	0.200	0.213	Normal

Based on the table 3, the variable significance value is ≥ 0.05 both in the Kolmogorof-Smirnov test and in the Shapiro-Wilk test. This shows that data on student motivation in this

research is normally distributed both in classes taught with the Quizizz-assisted PAIKEM Approach and classes taught with conventional learning approaches. Furthermore, homogeneity testing was carried out using the Levene's Test technique, with the test rule that if the significance value ≥ 0.05 means the data is homogeneous, the following are the results of the homogeneity test.

Table 4. Homogeneity Test Results

Motivation to learn	Statistical Value on Levene's Test	Significance	Conclusion
Based on average	3,431	0.068	Homogeneous
Based on the median value	3,279	0.075	
Based on mid value with adjusted df	3,279	0.075	
Based on the mid value trimmed	3,332	0.072	

Based on the table above, the significance value is ≥ 0.05, which indicates that the data on student motivation in this research is homogeneous in both classes taught using the Quizizz-assisted PAIKEM approach and classes taught using conventional learning approaches. After the prerequisite test has been completed and the data is declared to be normally distributed and homogeneous, then the next step is to test the hypothesis with a parametric statistical test or t test with the Independent Sample t Test technique.

The hypothesis to be tested in this study is as follows, H_0 : There is no difference in learning motivation between students who are taught through the Quizizz-assisted PAIKEM approach and students who are taught through conventional learning. H_1 : There are differences in learning motivation between students who are taught through the Quizizz-assisted PAIKEM approach and students who are taught through conventional learning.

The criteria for testing the t test in this study are if the significance (sig 2-tailed) is <0.05, then H0 is rejected and the opposite applies. The following are the results of the t test.

Table 5. Hypothesis Test Results

Independent Sample Test					
Sample	**n**	**F**	**Significance**	**Significance (2-tailed)**	**Information**
Experiment	34	3,431	0.068	0.000	H0 is rejected
Control	34				

Based on the table above, it can be seen that the results of the independent sample t-test show a significance value (2-tailed) of 0.000. In accordance with the testing rule of 0.000 <0.05, it can be concluded that there is an average difference in students' learning motivation in learning mathematics in the experimental class and the control class. Or it can be interpreted that students who are taught with the PAIKEM approach have better learning motivation than students who are taught with conventional learning approaches.

According to the results of the hypothesis testing, it was found that there was an influence of the Quizizz-assisted PAIKEM approach on students' learning motivation in learning mathematics. In the implementation of learning, the PAIKEM approach focuses on learning that is designed to make students active, innovative, creative, effective and fun. Santoso and Setyowati in (Rianti, & Dibia, 2020) also explained that PAIKEM learning with learning stages that have been designed in such a way will make students learn actively and then bring up innovation with student creativity which will make ongoing learning more effective and still be fun for both students and teachers. In research conducted by (Indrayati, 2019) explained that the PAIKEM approach has a significant influence on competence,

quality, efficiency and effectiveness of learning. The following is an overview of the learning process in the experimental class which was taught using the Quizizz-assisted PAIKEM approach in class, can be seen in Figure 1.

Figure 1. Experimental Class Active Learning

In Figure 1. is the stage of presenting the material to students, students are active in answering questions from the teacher by raising their hands and then answering and expressing their opinions about the learning material being taught because the teacher provides the opportunity to discuss with students in finding and solving a problem. During the lesson the students already looked enthusiastic, enthusiastic, not lethargic and not sleepy or chatting. Students focus and get involved in learning.

In this case the teacher initially delivered the material which was then directed so that the learning center shifted from what was originally located on the teacher, to student-centered. According to opinion (Lasiati, 2016) learning that was originally centered on the teacher will turn to be student-centered so that it will make students more enthusiastic when learning is the application of the PAIKEM approach. Then this PAIKEM approach not only makes students active in learning, but also makes students innovate and create effectively but still fun. In everyday life to find sample points, sample spaces and opportunities for an event, the teacher as a facilitator plays a role in providing assistance or often known as Scaffolding, can be seen in Figure 2.

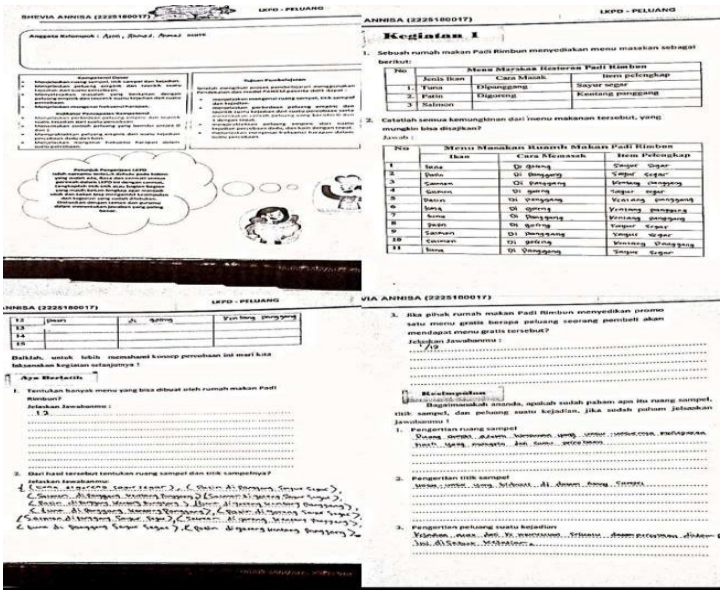

Figure 2. LKPD Experiment Class Students

To make students carry out direct learning experiences, in the PAIKEM approach applied in the experimental class, students in groups carry out hands-on practice in finding relationships and differences between theoretical opportunities and empirical opportunities using teaching aids in the form of dice and coins, can be seen in Figure 3.

Figure 3. PAIKEM Experiment Class Activities

By doing direct learning with the help of teaching aids, students will find concepts about learning so that the material understood is not only limited to theory but also can understand the concept clearly.

In addition, the PAIKEM approach is a flexible approach because it can be combined with various models, methods and learning media. One of the alternative learning media that is aligned with PAIKEM is Quizizz, which in learning has been designed so that students are active, innovative, creative, effective and fun involving the application of learning evaluation which is also interesting and interactive because according to research that has been explained by (Bahri, 2018) mentions that when working on math problems students look less enthusiastic, so it needs updating both in the learning approach and learning media. Student activities in learning mathematics with the Quizizz-assisted PAIKEM approach can be seen in Figure 4.

Figure 4. Experiment Class Quizizz Work Activities

Quizizz, can have a variety of positive impacts on learning, including by integrating the PAIKEM approach, Quizizz makes the evaluation stage more interesting and fun so it doesn't make students afraid when working on math problems. Then Quizizz with its leaderboard feature can make students more motivated in answering questions, because students compete with each other to occupy the top rankings. The positive impact of using Quizizz next is that the teacher as a facilitator can monitor the course of the quiz when it is being played and

Quizizz provides assessment output in the form of a file in excel format which can make it easier for the teacher to make assessments of students. So that the use of Quizizz is an evaluation tool solution that is appropriate for use with the PAIKEM approach because it can provide various conveniences and can increase student motivation in learning, especially in learning mathematics. After students have finished working on natural learning activities, the next stage is to provide feedback in the form of reinforcement to students who have done learning with enthusiasm. The following is an example of displaying Quizizz work activities in the experimental class which can be seen in Figure 5.

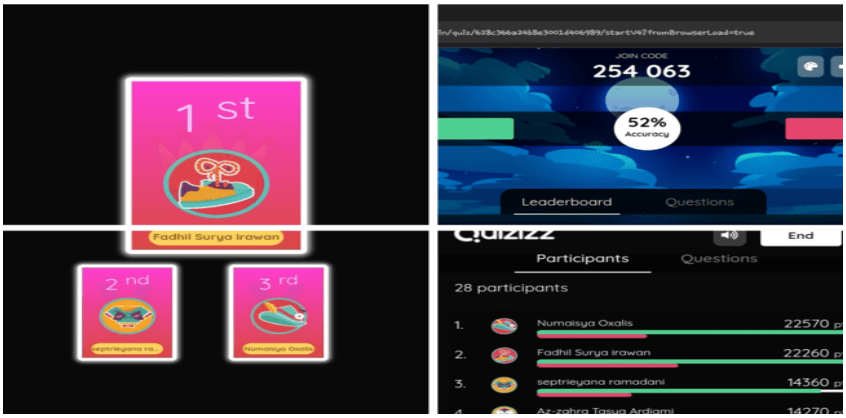

Figure 5. Display of Experimental Class Quizizz Work

Meanwhile, in the control class where learning was carried out using a conventional learning approach, the students looked unenthusiastic in learning, many students looked bored, sleepy and chatted with friends. In this control class, the active students were only students who already had a learning base or who had great intrinsic motivation, while most of the other students were passive during learning, because in conventional learning the methods used seemed rigid only to provide material, sample questions, then practice. This makes students less able to explore their potential. According to the explanation (Souhoka, Ayal, & Laamena, 2019) that in conventional learning students only listen to the teacher's explanation it is not ineffective to use but looks monotonous which makes students unenthusiastic when learning. Such learning is of course not good if it continues without any renewal of learning, because it will have an impact on the quality of education for the Indonesian nation. Learning activities in the control class using a conventional learning approach can be seen in Figure 6.

Figure 6. Control Class Conventional Learning Activities

Based on the results of the research and explanation above, this research provides findings that the application of the Quizizz-assisted PAIKEM approach has a positive influence on students' learning motivation, especially in learning mathematics compared to learning with conventional approaches. The results of this study are reinforced by several previous findings, including in research conducted by (Utami & Basir, 2015) who also found that there was an influence on the PAIKEM approach to student learning motivation as evidenced by the acquisition of a t_{count} of 6.62 and a t_{table} of 1.99, a study conducted by (Santoso & Setyowati, 2017) who also explained that there was an influence of active, creative, effective and fun learning approaches on learning motivation and student learning outcomes, then research conducted by (Handayani & Susanti, 2022) which explained that there was a significant effect on both classes and the Paired Sample t-Test yielded a result of 0.000 so that it could be concluded that the use of the Quizizz application had an influence on student learning motivation.

CONCLUSION AND SUGGESTIONS

In accordance with the results of the hypothesis testing as well as the discussion, it was concluded that there was a significant influence from the application of the Quizizz-assisted PAIKEM approach to student learning motivation in learning mathematics, based on the acquisition of an average score of the experimental class was greater than the control class, namely 129.00 > 116 .26 and also the acquisition of t-test results which show a significance value of 0.000 <0.05.

Educators can apply the Quizizz-assisted PAIKEM approach as an alternative in overcoming low student learning motivation, especially in learning mathematics, because according to the results of this research which gives the result that the Quizizz-assisted PAIKEM approach has proven to have an effect on students' learning motivation in learning mathematics compared to the application of learning conventional methods that have been commonly carried out in learning.

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