Proceedings Series of Educational Studies

The 4th International Conference on Educational Management and Technology (ICEMT) 2025

THE EFFECT OF FLIPPED CLASSROOM WITH GAMIFICATION ON STUDENTS' LEARNING ACTIVENESS

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Abstract

This research discusses the effect of the flipped classroom with gamification on students' learning activeness. This research aims to determine the differences in the level of students' learning activeness when the flipped classroom with gamification is implemented. This type of research is Quantitative research using a Quasi-Experimental Design. This research used the Independent Sample T-Test to analyze data. From the results, it can be seen that there is a significant difference from the research data, which shows that the class that implemented flipped classroom with gamification has a higher level of students' learning activeness compared to the class that didn't use gamification in the implementation of the flipped classroom. From these results, it can be concluded that there is a significant difference in the level of students' learning activeness from the implementation of the flipped classroom with gamification to students' learning activeness.

Keywords: Flipped Classroom; Gamification; Students' Learning Activeness

1. Introduction

The low level of students' learning activeness in learning activities is an important and fundamental problem that must be recognized and understood by every teacher in learning activities. Problems with students' learning activeness, such as students not paying attention to the teacher's explanation while in class, not responding to questions given by the teacher, are problems that are often encountered in learning activities, which ultimately can be the cause of students not understanding the material delivered by the teacher (Rikawati & Sitinjak, 2020). In essence, students' learning activeness has a very important role because students' learning activeness is one of the supporting factors for success in learning activity (Elma, 2024).

Based on these problems regarding students' learning activeness, there are indicators of students' learning activeness that can be seen from several things, namely: (1) Students participate in carrying out their learning tasks during learning activities; (2) Students are willing to get involved in problem-solving during learning activities; (3) Students ask the teacher or friends when they have difficulty understanding the material and also experience difficulties; (4) Students can dig up the information needed to solve the problems they are experiencing; (5) Students carry out group discussions according to teacher's instructions; (6) Students understand how to assess their abilities and the results they get obtained; and (7) Students have the opportunity to apply what they have learned in completing tasks or problems they are facing (Sudjana, 2010). However, at this time, the level of students' learning activeness is still relatively low or hasn't fulfilled the indicators of learning activity. One example is what happened at SDN Sribit.

Based on the research conducted by (Rofisian, 2020), the level of students' learning activeness at SDN Sribit is still relatively low. This can occur because the learning activity is only centered on the teacher. In addition, passive students who tend to sit quietly without asking questions when the teacher explains the material can be one of the triggers for low student activeness in learning activities. This low student learning enthusiasm will effect student activeness in learning activities. Meanwhile, the research conducted by (Mustika et al., 2022) found that the most prominent problem was student activeness, where students tend to be less active during the learning process because the teacher only delivered material according to thematic books, and there is a lack of interesting variations when delivering learning materials. This can cause students to be less enthusiastic and tend to get bored, and some even don't pay attention when the teacher delivers the material. This makes students tend to be more passive and no one tries to be active, such as asking questions to the teacher and so on. Therefore, it is necessary to use appropriate learning models and methods to be implemented in learning activities to overcome these problems, one of which is by using the flipped classroom learning model assisted by gamification.

The flipped classroom is a learning model that uses a mixed learning model, namely when the teacher uses this flipped classroom learning model, students are required to study and understand the material provided from home before the learning activities in the classroom take place. Then, during classroom learning, students will engage in discussions and complete their assignments (Ekayana et al., 2021). A study conducted by (Situmeang et al., 2021) stated that there was a significant increase in students' mathematical creative thinking skills before and after implementing the flipped classroom learning model. Likewise, research conducted by (Listianti & Rahim, 2022) stated that there was a significant effect of the flipped classroom learning model on student independence in history subjects, and it is also explained that the implementation of the flipped classroom learning model (Experiment Class) has a greater effect than the PBM Model (Problem-Based Learning Model) (Control Class). From this research, it can be said that the flipped classroom learning model has a significant effect on supporting classroom learning.

Meanwhile, the gamification method is one of the learning methods that combines elements of learning and games (Tyaningsih et al., 2022). Gamification-based learning is a new format in the flipped classroom model (Nalyvaiko et al., 2021). In a study conducted by (Pahlawan & Tambusai, 2023), mentioned that students showed more active participation and high enthusiasm for learning when the gamification method was implemented and also had a tendency to take the initiative to acquire new knowledge and skills. In addition to increasing students' learning activeness, the application of gamification methods was also proven to have a positive impact on learning achievement. Furthermore, a study conducted by (Mahbubi, 2025) explained that learning using the gamification method can have a significant positive impact on students' learning motivation. Game elements implemented in learning activities, such as points, leaderboard, badges, and challenges can stimulate students' interest and enthusiasm in engaging in learning activities. In the context of learning using gamification methods, game elements acted as triggers that activate students' intrinsic motivation, so that students can feel encouraged to learn because they can enjoy the learning activities (Lutfi & Winata, 2020). Therefore, it can be said that the gamification learning method not only increases students' learning activeness and motivation, but can also improve the quality and effectiveness of the learning itself.

Based on this, as explained above in previous research, there has been a lot of discussion about the flipped classroom learning model (Ekayana et al., 2021), (Situmeang et al., 2021), (Listianti & Rahim, 2022), but not many have discussed the integration with gamification and students' learning activeness. In addition, there are also similar problems regarding students activity at SMP Negeri 19 Malang. Based on the results of observations with teachers conducted by the researcher, several problems were found, such as: (1) Students are less active in learning activities; (2) Students tend to feel bored with the ongoing learning; (3) Students are less responsive when asked questions by the teacher; (4) Students do not understand the material presented by the teacher; and (5) The lack of application of learning models that are appropriate to student characteristics. From these problems, it can be said that the level of student learning activity at SMP Negeri 19 Malang is still relatively low or does not meet the indicators of learning activity. Thus, more in-depth research is needed regarding the implementation of the flipped classroom learning models with gamification, especially its effect on students' learning activeness. Therefore, this study takes the title "The Effect Of Flipped Classroom With Gamification On Students Learning Activeness" in order to find out how the integration between flipped classroom and gamification affects students' learning activeness.

2. Method

This research is a research with quantitative research approach that involves independent variables, namely "Flipped Classroom and Gamification" and the dependent variable, namely "Students' Learning Activeness". Data collection will be carried out in the form of numbers (numerical data) based on observable actions or behaviors from the sample, and then processing data with numerical analysis as proposed by (Setyosari, 2016). This type of research is Quasi-Experimental with design Posttest-Nonequivalent-Control Group Design. That is giving a posttest after treatment to each group that was not randomly selected. In conducting this study, the researcher did not randomly select samples to be involved in the experiment group and the control group (Setyosari, 2016). The groups were divided into two classes, namely the experiment class and the control class.

Table 1. Research Design

Class	Independent Variable	Posttest
Experiment	X	O1
Control	-	O2

Information:

X : Treatment (Implementation of the flipped classroom learning model with gamification in learning)

O1 : Posttest of the experiment group

O2 : Posttest of the control group

The effects of implementing the flipped classroom with gamification will be seen from the scores obtained by students' learning activeness. If there is a difference in the scores of the two classes, where the experiment class score has a higher result than the control class and

there is a significant difference then it can be formulated that the implementation of the flipped classroom with gamification affects students' learning activeness.

With the hypothesis that has been made by the researcher as follows:
H_1: There are significant difference in the implementation of the flipped classroom with gamification on the level of students' learning activeness.

H_0: There is no significant difference in the implementation of the flipped classroom with gamification on the level of students' learning activeness.

3. Results and Discussion

3.1 Result

In the previous research instrument, the validity and reliability tests were carried out first, calculated using IBM SPSS Statistics 25. To test the validity of the instrument, the questionnaire was tested on 31 respondents. The respondents were 8th-grade students of SMP Negeri 19 Malang. The results of the validity test of the students' learning activeness instrument were adapted from the students' learning activeness instrument adapted from (Sudjana, 2010). Of the 35 students' learning activeness questions tested, 12 question items were found invalid and 23 question items were valid, so they could be used in collecting research data. Meanwhile, the reliability test showed a Cronbach's Alpha of 0.900, so it can be seen that the r value is greater than 0.6. Therefore, it can be seen that the reliability of the student learning activeness questionnaire, with 23 valid question items out of 35 question items, is included in the reliable category and is accepted for use in research.

Descriptive Analysis

Table 2. Descriptive Analysis

	N	Minimum	Maximum	Mean	Std. Deviation
Experiment	30	64	113	89,43	12,533
Control	30	64	101	80,83	9,941
Valid N (listwise)	30				

Based on Table 2, it can be seen that the statistical data showed the scores of the two sample groups, namely the score of the level of students' learning activeness in the Science subject of Substance Pressure. The experiment class and the control class each had 30 subjects. In the experiment class, the average score is 89.43, the minimum value is 64, and the maximum is 113, with a standard deviation is 12.533. The Control Class has an average is 80.83, the minimum value is 64, and the maximum value is 101, with a standard deviation is 9.941. The data obtained above shows that the average score of the level of students' learning activeness from the experiment class that was given gamification in the implementation of the flipped classroom was superior compared to the control class that was not given gamification in the implementation of the flipped classroom.

Normality Test

Based on the data that has been obtained from both classes, the researcher conducted a prerequisite test for data analysis by conducting a normality test to determine whether the data was normally distributed or not.

Table 3. Normality Test

Shapiro-Wilks Test			
Class	**Statistic**	**df**	**Sig.**
Experiment	,965	30	,420
Control	,963	30	,369

Based on Table 3, it is shown that the statistical data of the experiment class obtained a significance value is 0.420, the results indicate that the significance value in the experiment class is above 0.05, so it is concluded that the experiment class data is normally distributed. Meanwhile, the significance value in the statistical data of the control class is 0.369. From the results obtained, the significance value is above 0.05 in the control class data, so it is concluded that the control class data is normally distributed. This shows that the data from both groups have a normal distribution.

Homogeneity Test

The homogeneity test in this research is an important step that must be taken before conducting a hypothesis test. This test aims to ensure that the data groups used come from a population with uniform variance (homogeneous). If the Sig. value > 0.05, it can be concluded that the data variance is homogeneous, which means the homogeneity test has been fulfilled. The results of the homogeneity test can be seen in the following table.

Table 4. Homogeneity Test

Levene Statistic	**df1**	**df2**	**Sig.**
1,480	1	58	,229

Based on Table 4, the significance value obtained from this research data is 0.229. This value meets the established criteria, namely if the significance value is greater than 0.05 (0.229 > 0.05), then it is concluded that the data is homogeneous, or has the same variance.

Hypothesis Testing

The results of the prerequisite data analysis test showed that the data in this research were normally distributed and homogeneous. Thus, further data testing was carried out by hypothesis testing using the Independent Sample T-Test parametric test. The criteria applied in the hypothesis testing are that if the significance value is < 0.05, then H_1 is accepted and H_0 is rejected, while if the significance value is > 0.05, then H_0 is accepted and H_1 is rejected. The hypotheses tested in this study are:

H_1: There is a significant difference in the implementation of the flipped classroom with gamification on the level of students' learning activeness.

H_0: There is no significant difference in the implementation of the flipped classroom with gamification on the level of students' learning activeness.

The results of the hypothesis tested can be seen in Table 5, below:

Table 5. Independent Sample T-Test

		Levene's Test for Equality of Variances		t-test for equality of Means		Sig. (2-tailed)
		F	Sig.	t	df	
Results	Equal variances assumed	,480	,229	2,944	58	0,005
	Equal variances not assumed			2,944	55,143	0,005

Based on Table 5, the results of the Independent Sample T-Test showed a significance value is 0.005. It can be concluded that 0.005 < 0.05, so that H_0 is rejected and H_1 is accepted. If H_1 is accepted, it can be interpreted that there is a significant difference, so it can be concluded that there is an effect in the implementation of a flipped classroom with gamification on students' learning activeness.

3.2 Discussion

One indicator that significantly affects teaching and learning activities in the classroom is students' learning activeness. Students' learning activeness plays a crucial role in the learning process in the classroom. Students who are active in the learning process are not only physically present, such as entering the classroom, reading, writing, completing assignments, or simply listening to the teacher's explanations. They also participate in analysis, problem-solving, and decision-making. This means that students' psychological, mental, and emotional aspects are also involved in the learning process (Halik & Aini, 2020).

After the data processing was carried out, the results showed that the significance value is 0.005. From the test results of the Independent Sample T-Test, it can be said that if the number is < 0.05, it can be concluded that H_0 is rejected and H_1 is accepted. From the results of the data processing, it can be said that there was a significant difference in the data above, so it can be said that there was an effect in the implementation of the flipped classroom with gamification on students' learning activeness. Data in the experiment class has an average is 89.43, the minimum value is 64, and the maximum value is 113, with a standard deviation is 12.533. The control class has an average is 80.83, the minimum value is 64, the maximum value

is 101, with a standard deviation is 9.941. The data obtained above showed that the average score of the level of students' learning activeness in the experiment class that implemented the flipped classroom with gamification is superior compared to the control class that implemented the flipped classroom without gamification.

From the results of the research that has been done, it is found that the experiment class that implemented the flipped classroom with gamification has a higher level of students' learning activeness compared to the control class that did not implemented gamification. This may be effected because, in the context of learning using gamification methods, game elements act as triggers that activate students' intrinsic motivation so that students can feel encouraged to learn because they can enjoy more interactive and challenging learning activities (Lutfi & Winata, 2020).

The results of the above research prove that there difference in the level of students' learning activeness in the experiment and control classes, where the experiment class that implemented the flipped classroom with gamification has a higher level of students' learning activeness compared to the control class that implemented the flipped classroom without gamification. From these results, it can be concluded that there is a significant difference in the level of students' learning activeness when the flipped classroom learning model with gamification is implemented. This statement is also supported by research conducted by (Gómez-García et al., 2020) which stated that the combination of the flipped classroom and gamification has an effect that showed positive results on increasing learning motivation, autonomy, and self-control in students.

4. Conclusion

Based on the results of the research that has been conducted, it can be concluded that the implementation of the flipped classroom with gamification has a significant effect on the level of students' learning activeness, as shown by the results of the Independent Sample T-Test parametric test. From the test results, it can be seen that there is a significant difference from the research data, so it can be concluded that there is a difference in the level of students' learning activeness from the application of the flipped classroom with gamification on students' learning activeness. The results of the research showed that classes that implementated the flipped classroom with gamification has a higher level of students' learning activeness compared to classes that do not use gamification in their implementation of the flipped classroom.

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