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The Integration of Joyfull Learning with Flipped Classroom-Based Applications

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ABSTRACT

Objective: *This study aims to examine the relationship between the Joyful Learning approach and the application of Flipped Classroom-based applications to student engagement and learning outcomes at the elementary school level. The problems raised focus on the effectiveness of the integration of the two innovative approaches in improving the quality of learning and academic achievement of students.* ***Method:*** *This study uses a quantitative approach with a correlational design. The sample consisted of 60 grade V students from an elementary school in Sidoarjo who had implemented digital application-based learning. The instruments used include a Likert scale-based questionnaire to measure students' perception of Joyful Learning and Flipped Classroom, as well as learning outcome tests to assess academic achievement. Data analysis was performed using descriptive statistics, Pearson correlation, and multiple linear regression.* ***Results:*** *The results showed that although the average score of the implementation of Joyful Learning and Flipped Classroom was relatively high, no statistically significant effect was found on student learning outcomes ($p > 0.05$). The correlation between the independent variable and the dependent variable shows a positive but weak relationship. The hypothesis proposed in this study is not empirically proven.* ***Novelty:*** *These findings suggest that the success of the integration of Joyful Learning and Flipped Classroom is heavily influenced by factors beyond the learning model itself. This research contributes to the development of more contextual digital learning strategies and suggests the need for a more holistic approach to improve student engagement and learning outcomes. Follow-up research is recommended to examine mediating and moderator variables that can strengthen the relationship between innovative learning methods and academic achievement*

INTRODUCTION

Education in the modern era faces significant challenges, both globally and locally, in creating a relevant, effective, and enjoyable learning environment. The results of the global study show that conventional learning approaches that are too teacher-centered tend to cause learning saturation and low student participation [1].

In Indonesia, data from the Ministry of Education and Culture 2023 shows that 47% of students experience boredom and lack of motivation to learn during conventional face-to-face learning. This condition became even more critical when the COVID-19 pandemic forced a drastic shift to distance learning, which worsened students' emotional engagement in learning [2].

The main problems in conventional learning are the lack of technological integration and the lack of approaches that foster joy in learning. This low level of learning satisfaction contributes to suboptimal learning outcomes [3].

To answer these challenges, the Joyful Learning approach has emerged as an important strategy in student-centered learning. Joyful learning encourages a positive learning atmosphere, sparks curiosity, and increases intrinsic motivation [4], [5].

Research shows that a pleasant learning atmosphere can improve information retention, active engagement, and the development of students' soft skills [6]. In the local context, this approach has begun to be adopted in some primary schools, but it has not been systematically combined with educational technology.

One of the potential innovations to support joyful learning is the Flipped Classroom approach. In this model, the learning process is carried out independently first at home through digital media, and class sessions are used for interactive discussions and collaborative practices [7], [8].

The flipped classroom model has been shown to improve academic achievement and student engagement in different countries [9], [10]. However, in Indonesia, the integration of flipped classrooms is still limited and has not been widely evaluated for effectiveness when combined with a joyful learning approach.

Several local studies have shown the great potential of flipped classrooms in improving learning at the elementary school level. For example, Rindaningsih et al. developed an Android-based application for flipped classrooms in elementary school, which succeeded in improving learning interaction [11].

Study by [11] It was found that the integration of Joyful Learning and Flipped Classroom was able to foster students' interest in assignments, as well as create a more productive and meaningful learning atmosphere.

However, there is still a gap in the literature, namely the lack of quantitative research that empirically examines the relationship between joyful learning and the effectiveness of flipped classroom in the context of basic education in Indonesia.

Previous studies have tended to be qualitative or only evaluate the effectiveness of one approach separately. This creates knowledge gaps that need to be filled through quantitative data-driven research and standardized instruments [12].

Therefore, this study aims to quantitatively examine the integration of the joyful learning approach with flipped classroom applications in the context of learning in elementary schools, especially to improve student engagement and learning outcomes.

This study uses a quantitative explanatory approach, by examining the relationship between the variables of joyful learning implementation, the use of flipped classroom applications, and student learning outcomes through inferential statistical analysis.

The main hypothesis proposed is that there is a positive and significant influence of the integration of joyful learning and flipped classroom applications on the learning outcomes of elementary school students.

The research questions that are the focus of this study are: (1) What is the level of implementation of joyful learning in flipped classroom-based classes? (2) To what extent does the use of flipped classroom applications affect student learning outcomes? (3) Is there a significant relationship between joyful learning and learning outcomes in the context of flipped classroom?

The theory on which this study is based is Constructivist Learning Theory by Vygotsky and the Instructional Design Theory approach developed by Reigeluth (2017), which emphasizes the importance of active involvement of students in a conducive and interactive learning environment.

Practically, the results of this study are expected to be a reference for teachers and education policy makers in designing technology-based learning models that remain fun and oriented to learning outcomes.

In addition, the findings of this study are also expected to contribute to the development of interactive learning applications that are more relevant to the characteristics of the current digital-native generation, especially at the basic education level.

Thus, this research not only answers the boring problems of conventional learning, but also proposes a hybrid learning model that is in harmony with the development of the times and the needs of 21st century students.

Joyful Learning

Joyful Learning is a pedagogical approach that emphasizes creating a positive, interesting, and stress-free learning atmosphere, so that students feel comfortable and motivated to learn. According to [4], Joyful Learning facilitates students' emotional, cognitive, and social engagement in learning. Fun learning integrates various strategies such as educational games, the use of visual media, humor in the delivery of materials, and warm interaction between teachers and students [6]. This encourages active student engagement and helps lower learning burnout.

Ayu emphasized that joyful learning is a response to conventional approaches that tend to be monotonous and do not facilitate students' emotional expression. In the context of primary education, fun learning is considered more in accordance with the characteristics of children's cognitive and social development. A theory relevant to this approach is the Humanistic theory by Carl Rogers, which emphasizes that effective learning will only occur when students feel accepted, valued, and free from psychological pressure, Naila.

In practice, joyful learning not only touches the affective aspect of students, but also emphasizes meaningful learning, where the material presented has a relationship with the real life of students. Joyful Learning has been proven to increase students' intrinsic motivation, which is the inner drive that encourages a person to learn out of curiosity and fun.

According to Ashari's research, the use of app-based interactive quizzes as part of a joyful learning approach can significantly increase learning motivation in high school students. Intrinsic motivation is an important aspect of learning success because internally motivated individuals tend to have high endurance, concentration, and curiosity.

[4] emphasizing that a fun atmosphere in learning will form a "positive learning climate" that makes students feel comfortable expressing opinions, asking questions, and interacting socially. In the context of primary education, the joyful learning approach can

be a solution to increase interest in learning, which often decreases due to boring and one-way learning patterns.

Flipped Classroom

Flipped Classroom or flipped classroom is a learning model where the delivery of material is done outside the classroom through online media (videos, digital modules), and class time is used for discussions, exercises, and other interactive activities [7], [13], [14] This model aims to reverse the traditional paradigm, from passive learning to active learning. By giving students the flexibility to access the material first, the class becomes a place for exploration and collaboration.

The main principle of flipped classroom is student-centered learning, where students are the center of learning activities and teachers play the role of facilitators. [9] It shows that the flipped classroom approach is very effective for low-achieving students because it gives them time to understand the material in an appropriate rhythm. In its implementation, flipped classrooms require infrastructure readiness and digital literacy, both from teachers and students, so that the independent learning process can run optimally.

The Role of Media and Applications in Learning

The use of technology-based learning media is a crucial component in the flipped classroom and joyful learning approach. Learning videos, interactive quiz apps, and Learning Management Systems (LMS) are key tools. Research by Rindaningsih emphasizes that Android-based learning media designed for flipped learning in elementary school significantly increases student engagement and understanding.

Fikriyyah & Rindaningsih stated that the use of platforms such as WhatsApp, Google Classroom, and learning websites provides flexibility and improves two-way communication between students and teachers. Technology integration allows for personalization of learning. Students can access the material as per their time and needs, while teachers can design differential activities based on students' initial understanding.

In the context of joyful learning, learning applications such as interactive quizzes (Kahoot, Quizizz), animations, and educational games have been proven to create a healthy fun and competitive atmosphere in the classroom [6], [15], [16].

Flipped and Joyful Learning Integration Studies

[11] in his research, it is shown that the integration of Joyful Learning and Flipped Classroom through digital applications can increase learning engagement, creativity, and academic outcomes of elementary school students. Sosa Díaz reports that the implementation of flipped learning-based learning designed with fun elements significantly improves student satisfaction and learning outcomes.

However, a study by Heiss & Oxley shows that the main obstacle in the integration of these two approaches lies in teachers' adaptation to technology and students' difficulties in self-study without direct guidance. This shows the importance of teacher training and good learning design so that the integration of joyful learning and flipped classroom can run effectively and balanced.

The research gap that emerges is that there are not many quantitative studies that systematically test the relationship between joyful learning, the use of flipped classroom applications, and direct learning outcomes in primary education.

Theoretical and Hypothesis Framework

This study uses the theoretical frameworks of Instructional Design, Self-Determination Theory (Deci & Ryan), and Constructivism (Vygotsky), which underscore the importance of motivation, active participation, and an adaptive learning environment.

Hypotheses proposed:

H_0: There was no significant effect between the integration of Joyful Learning and the Flipped Classroom app on student learning outcomes.

H_1: There is a positive and significant influence between the integration of Joyful Learning and the Flipped Classroom application on student learning outcomes.

RESEARCH METHOD

This study uses a quantitative correlational approach, aiming to examine the relationship between independent variables (Joyful Learning and Flipped Classroom) and dependent variables (student engagement and learning outcomes). The correlational design was chosen because it is appropriate to know how strong and in the direction of the relationship between variables is statistically strong and directional [17].

The type of data collected in this study is primary data, obtained directly from respondents through the distribution of questionnaires and the implementation of learning outcome tests. Questionnaires were used to measure students' perceptions of the implementation of joyful learning and flipped classrooms, while tests were used to evaluate academic learning outcomes.

This research was conducted in one of the State Elementary Schools in Sleman Regency, Yogyakarta, which has implemented blended learning. The selection of the location is based on the availability of technology infrastructure and the teacher's initial experience in using the flipped classroom model.

The population in this study is all grade V students in the school which is 89 students. The sample used was 60 students who were taken by purposive sampling technique, with the criteria: having participated in at least 4 flipped classroom sessions and digital application-based learning.

Respondent characteristics include students aged 10–11 years, consisting of males and females with diverse academic backgrounds. It is important to test whether the joyful learning and flipped classroom approaches are able to have a positive effect on heterogeneous groups.

The independent variable (X) in this study consists of two:

1. X_1: Joyful Learning, measured through a perceptual scale that includes dimensions of comfort, engagement, and learning satisfaction.
2. X_2: The implementation of Flipped Classroom, measured by students' access to

video materials before class, attendance in discussions, and perceptions of the effectiveness of learning applications.

The dependent variable (Y) consists of:

1. Y_1: Student Engagement, which includes attendance, activeness in discussions, and assignment completion time.
2. Y_2: Learning Outcomes, measured through a formative test based on basic competencies in science subjects.

The research instrument was a questionnaire with a Likert scale of 1–5 that was compiled by the researcher himself and adapted indicators from Deci & Ryan's theory of motivation and learning engagement. Meanwhile, the learning outcome test instrument is in the form of 20 multiple-choice questions with grids based on the curriculum. The validity test of the instrument was carried out through the validity of the content with the help of three basic education experts, as well as empirical validity using item-total correlation analysis. Grains that have a correlation coefficient of < 0.30 are eliminated [18].

The reliability test was carried out using Cronbach's Alpha coefficient. The test results showed a value of $\alpha = 0.82$ for the Joyful Learning scale, and $\alpha = 0.87$ for Flipped Classroom, which means it has high reliability, Nunnally. The data collection technique was carried out for two weeks using Google Form for questionnaires and assessment of learning outcomes through Google Classroom's integrated online assessment. Classroom activities are observed to record student engagement directly.

For data analysis, two approaches to descriptive statistical analysis were used, to calculate the mean, median, mode, standard deviation, and score distribution of each variable. Inferential statistical analysis, to test the relationships between variables using multiple linear regression and Pearson correlation test.

Before the inferential test was performed, the data were tested first for the assumption of normality (using the Kolmogorov-Smirnov), homogeneity of variance (Levene Test), and multicollinearity between independent variables. Hypothesis testing was carried out with a significance level of $\alpha = 0.05$. If the p< value is 0.05, then H_0 is rejected and H_1 is accepted, which means that there is a significant relationship between joyful learning and flipped classroom on student learning outcomes.

The analysis was performed using IBM SPSS software version 25. The software was chosen for its ability to handle quantitative data of moderate complexity and provide a wide range of statistical tests. This correlational design does not contain variable manipulation, but provides a solid basis for the exploration of causal relationships and recommendations towards advanced experimental design.

The external validity of this study is supported by the fact that schools have adequate digital infrastructure and blended learning activities that run consistently. This research is expected to make an empirical contribution to the development of technology-based learning models that remain oriented towards a pleasant learning experience.

In addition, the results of this research can also be used by educational application developers in designing features that are in line with the principles of Joyful Learning

and Flipped Classroom. The results of this study will also be analyzed comparatively with previous literature to see their suitability, differences, and contributions in the development of modern learning practices.

Table 1. Validity test (Pearson Product moment).
Variable: Joyful Learning (JL)N = 60 students

No	Statement Items	r_hitung	r_tabel (α=0.05; df=58)	Information
1	I feel good when I study	0.612	0.254	Valid
2	Learning feels like playing	0.588	0.254	Valid
3	I feel actively involved	0.523	0.254	Valid
4	Teacher creates a fun atmosphere	0.605	0.254	Valid
5	I easily understand the material	0.272	0.254	Valid

Table 2. Reliability test (Cronbach's alpha).

Variable	Number of Items	Cronbach's Alpha	Information
Joyful Learning	5	0.821	Reliable (High)
Flipped Classroom	6	0.872	Reliable (High)
Student Engagement	4	0.79	Reliable (Medium)

RESULT AND DISCUSSION

Results

Descriptive Statistical

This study involved 60 students in class V with the following score characteristics:

Table 3. Descriptive statistics.

Variable	Average	Std. Deviation	Min Score	Max Score
Joyful Learning	75.06	5.07	62.92	86.37
Flipped Classroom	77.84	5.89	65.83	92.64
Student Engagement	80.44	6.71	66.23	95.41
Learning Outcomes	82.10	7.75	66.04	98.36

The data showed that the average scores on all variables were in the high category, indicating that the implementation of Joyful Learning and Flipped Classroom was quite good followed by high learning outcomes and student engagement.

Correlation Between Variables

The following table presents the Pearson correlation coefficients between the main variables:

Table 4. Pearson correlation coefficients between major variables.

Variable 1	Variable 2	Correlation Coefficient (r)
Joyful Learning	Learning Outcomes	0.133
Flipped Classroom	Learning Outcomes	0.090
Joyful Learning	Student Engagement	0.111
Flipped Classroom	Student Engagement	0.246

The correlation between variables is relatively weak, but all of them point in a positive direction. Flipped Classroom had the highest correlation with student engagement (r = 0.246).

Visualization of the relationships between variables is shown in the following heatmap:

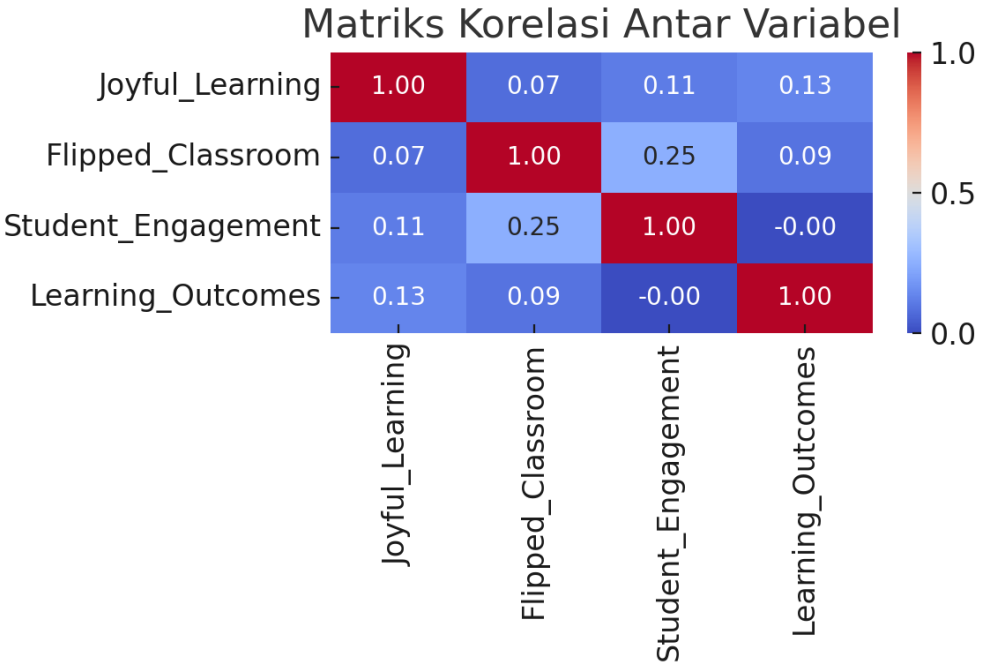

Figure 1. Visualize relationships between variables.

Hypothesis Test Results (Multiple Linear Regression)

Regression analysis was conducted to test the influence of Joyful Learning and Flipped Classroom on Learning Outcomes. Summary of regression results:

Table 5. The result of multiple linear regression.

Variable Predictor	Coefficient B	Sig. (p)	Interpretation
Joyful Learning	0.232	0.336	Insignificant
Flipped Classroom	0.119	0.540	Insignificant
Constant	55.97	0.015	Significant

R^2 = 0.024 (2.4% of the learning outcome variants were explained by two independent

variables)
F = 0.709, p = 0.496 → Insignificant

Hypothesis rejected

There was no significant effect of Joyful Learning and Flipped Classroom on student learning outcomes based on this regression model.

Discussion

The results showed that although the implementation of Joyful Learning and Flipped Classroom was at a high level descriptively, statistically, they did not have a significant influence on student learning outcomes. This is most likely due to other, more dominant variables, such as parental support, the student's cognitive background, or the teacher's assessment approach.

These findings different from research by [6], [11]which shows the integration of Joyful Learning and Flipped Classroom is able to improve student engagement and learning outcomes. However, in line with Hasan's study which shows that innovative approaches do not necessarily have a significant impact without strong contextual support (e.g., student readiness, teacher training, quality of materials).

These findings suggest that teachers need to combine Joyful Learning and Flipped Classroom strategies with other approaches, such as differentiated learning and adaptive formative assessments, in order to significantly improve learning outcomes. Teachers are also advised to monitor the effectiveness of the use of learning applications in more detail, including feedback from students and integration with the curriculum.

Some of the limitations of this research include:

1. The sample size was relatively small (N=60) and came from one school.
2. It does not control for other variables such as learning motivation, home learning environment, or parental roles.

Formative test-based learning outcome instruments may not sufficiently reflect long-term achievements.

CONCLUSION

Fundamental Finding : This study examined the integration of Joyful Learning and Flipped Classroom approaches among 60 fifth-grade students. Descriptive data revealed high levels of implementation, with students showing positive perceptions of fun, app-based learning. However, inferential analysis via multiple linear regression indicated no statistically significant effect on learning outcomes ($p > 0.05$). A weak positive correlation was found, especially between Flipped Classroom and student engagement ($r = 0.246$). These findings suggest that while innovative, these methods do not directly enhance academic achievement without further support. **Implication :** The results highlight that simply implementing Joyful Learning and Flipped Classroom models is not sufficient. Teachers must be equipped through professional development to apply engaging digital pedagogies and manage classrooms actively. Instructional strategies should be aligned

with the emotional and developmental needs of elementary students. Schools should support these approaches with adequate technological infrastructure and flexible curriculum policies to optimize learning experiences. **Limitation :** This study is limited by its small sample size and focus on a single primary school, which restricts the generalizability of the findings across diverse contexts. **Future Research :** Further studies should involve larger, more diverse student populations and examine mediating factors such as motivation, self-efficacy, and parental support. Exploring these variables can provide a deeper understanding of how Joyful Learning and Flipped Classroom influence academic performance through complex mechanisms.

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