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THE EFFECT OF THE FLIPPED CLASSROOM MODEL TO IMPROVE CRITICAL THINKING AND READING COMPREHENSION FOR FIFTH-GRADE STUDENTS

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Abstract: This paper is motivated by the condition of students who lack Literacy and Critical Reasoning in the learning process and learning outcomes that are still many under KKM because teachers are less familiar with several methods and have yet to use the Flipped Classroom Model. This study aims to improve Reading Comprehension and Critical Thinking using the Flipped Classroom model. This research was conducted in class V of SDN Cibabat Mandiri 1 Cimahi City. This study uses quantitative research methods with the Quasi Experiment Design model using observation, interview, pretest, posttest, and documentation assisted by SPSS 29.0 to calculate the data obtained. With a population of 74 students. The technique used is collecting data on this test method before and after treatment. A live question-and-answer technique was used to find out the test results from the study. After that, samples were taken for the Experimental class, namely the VA class with 37 students and the VB class as the control class with 37 students, so a total of 74 students. Based on the Hypothesis Test results, there is a viable data variant after treatment. The data collection techniques used were observation, interview, pretest, and posttest. The results showed a significant influence on the use of flipped classrooms to improve the reading comprehension and critical thinking skills of grade V students of SDN Cibabat Mandiri 1 Cimahi City. Based on the results of the independent sample T-test, Sig was obtained. (2-tailed) Alternatively, (Significance Two Side-p) of 0.001 > 0.05 means Ho is rejected, and Ha is accepted. This is supported by the average score of the experimental class of 81.16 and the control class of 72.64.

Keywords: Critical Thinking, Flipped Classroom, Reading Comprehension

INTRODUCTION

Along with technological advances, learning paradigms also develop to adapt to students' needs in facing global challenges (Miranda et al., 2021). One learning model that is increasingly attracting attention is the flipped classroom model. This model reverses traditional learning by utilizing technology to present material independently outside of class, while class time is used for in-depth discussions, concept exploration, and application of knowledge (Long et al., 2017).

The importance of critical thinking skills and reading comprehension at the elementary education level, especially in fifth-grade students, must be addressed. These skills are the foundation for developing strong literacy and deep analytical abilities (Asfahani, 2019). The flipped classroom model promises the potential to improve both of these aspects by allowing students to learn independently, building an understanding of basic concepts outside of class, and then utilizing class time to apply that knowledge in the context of discussions and problem-based projects (Al-Samarraie et al., 2020); (Akçayır & Akçayır, 2018).

However, despite various claims about the potential benefits of the flipped classroom model, in-depth empirical research is still needed to understand its true impact at the elementary education level, especially at the fifth-grade level. Therefore, this study specifically explores the effects of implementing the flipped classroom model on improving fifth-grade students' critical thinking skills and reading comprehension. Through this research, new insights can be found that are useful for developing more effective learning approaches at the basic education level (Romero & Ventura, 2020). Then, with the Independent Learning Curriculum as an option for education units in the context of learning recovery in 2022-2024, the Learning curriculum refers to the approach of talents and interests. Here, students can choose what lessons they want to learn according to their talents and interests (Krisnawati et al., 2022). The Merdeka Curriculum was previously known as the curriculum Prototype. It was developed as a more flexible curriculum framework and focuses on essential materials and the development of students' character and competence (Hadi et al., 2023). The Merdeka Curriculum, which is claimed to be able to support learning recovery due to the Covid-19 pandemic, which has caused learning loss, has the following characteristics (Ditsmp, 2022):

1. Project-based learning for developing soft skills and character according to the Pancasila student profile.
2. The focus of learning on essential materials will make learning more in-depth for basic competencies such as literacy and numeracy.
3. Teachers can conduct differentiated learning according to student abilities and adapt to local contexts and content.

However, in reality, our national education system still faces various kinds of problems. The problem will never be solved because the substance transformed during the process of education and learning is always under the pressure of the progress of Science, technology, and society (Cheng, 2017); (Abdurahman et al., 2023). One of the problems in our education that is still prominent today is the existence of a curriculum that changes and burdens children too much without any direction of development that is implemented according to the desired changes in the curriculum (Kosassy, 2017).

Meanwhile, the results of PISA 2018 show that 70% of Indonesian students need help to achieve level 2 in the PISA framework. The results of Indonesian students are alarming. In fact, on average, only about 23% of students in 79 PISA-participating countries cannot master level 2 reading skills. The questions at level 2 PISA expect students to be able to determine the main idea in the text, look for relationships between various information in the text, and determine simple conclusions from the reading text (Ministry of Education and Culture, PISA, 2018); (Fırat & Koyuncu, 2023).

Low literacy rates are a fundamental problem that has far-reaching repercussions for the nation's progress, as most of the more up-to-date skills and knowledge are acquired through reading activities. A skilled reading community able to read, understand, evaluate, and filter information will reap the greatest benefit from reading sources.

Low literacy contributes to the country's low productivity, that is, the country's output in a period. Low productivity will affect the level of welfare characterized by low per capita income, which is the income level of everyone in a country if distributed equally (Bilan et al., 2020); (Jeuland et al., 2021). Low literacy also contributes significantly to poverty, unemployment, and inequality. The results of the RISE–The SMERU Research Institute program predict that the average reading ability of Indonesian students will only be equivalent to the average ability of students in OECD countries in 2090 if there are no serious efforts to improve the quality of education in Indonesia (Badan et al., 2021); (Edi et al., 2021).

In addition, Merdeka Belajar also develops Literacy and Numerization as the ability to apply concepts in everyday life. Literacy also includes the ability to translate quantitative information around us (Ministry of Education and Culture, Literacy, 2020); (Ismail et al., 2020). The state of literacy and numeracy in Cimahi City needs to be improved again after the implementation of the Cimahi City E-book for the community, but it also needs to be improved for elementary school students; there is information, namely that 2,060 elementary school students (SD) grades 3-5 in Cimahi City are not fluent in reading and writing. This condition is caused by them studying from home for too long due to the COVID-19 pandemic (Jabarekspres. 2022).

Talking about critical Thinking in children is an action to mature slowly so that students can deepen their understanding of the content and meaning of a text or reading and understand how to think critically. It can also be called rational Thinking. Critical Thinking, according to Hussaein et al. (2019), is a higher-order thinking skill that involves a systematic approach using an intense understanding of a problem, reviewing relevant information, drawing conclusions, and providing a solution to be analyzed and evaluated (Marttunen et al., 2017); (Randolph, 2019).

They are linking the flipped classroom with Bloom's taxonomy, where in home learning activities before entering class, students will learn independently related to low-level competencies C1 and C2, which are included in the low-order Thinking (LOT) category, which includes memory and understanding competencies. Meanwhile, in face-to-face meetings in class, students will increase in C3 and C4 competencies, namely applying and analyzing, which is included in the high-order Thinking (HOT) category (Saefullah et al., 2020) (al Aliyawinata et al., 2021). Develop a flipped classroom model by utilizing video media as learning materials at home before students (students) enter class. By listening to the video show, students can understand the material to be discussed or studied further in class so that the learning process in the classroom becomes more efficient (Jeong & So, 2020); (Kamelia, 2019).

Advantages of Flipped Classroom Based on the description above, the advantage of the Flipped Classroom strategy is that students are more free to learn independently at home and can repeat learning the material until they understand. Students are more responsible for what has been learned independently at home, so they are freer and not depressed (Basal, 2015).

Based on previous researchers entitled Application of the Flipped Classroom Model with Video Interactive Media to the Understanding of Mathematical Concepts, Students stated that the results of Flipped Classroom can improve Mathematics learning in SMP Batanghari East Lampung (Yang et al., 2021). Then, with the title The Effect of the YouTube Flipped Classroom Learning Model on Science Literacy Skills, students stated that the results of the Flipped Classroom can improve Science learning at MTS Guppi Banjit Lampung (Purnama et al., 2023). Then with the title The Effectiveness of the Application of the Flipped Classroom Learning Model on Improving Students' Critical Thinking Skills stated that it can improve students' critical Thinking in science learning in grade VIII Junior High School UPI Bandung pilot laboratory (Maolidah et al., 2017). Then, the title Effect of the Flipped Classroom Model on the Critical Thinking Skills of Elementary School Students on Style Material stated that it could improve the quality of independent students in learning Science onStylee material (Hidayah & Mustadi, 2021). Then, the title The Effect of the Flipped Classroom Learning Model on Improving Students' Critical Thinking Skills on Electrolyte and Non-Electrolyte Solution

Materials, states that it can improve the quality of student thinking in these learning at SMA Negeri 12 Jambi City (Alfidyah & Mawardi, 2021).

Therefore, this study aims to design a Flipped Classroom learning model or flipped class to be applied to learning in class V SDN Cibabat Mandiri 1. Design, formative evaluation, revision, redesign, and summative evaluation. This research shows that the Flipped Classroom learning model can be implemented in six stages of activities: Two activities before class (lower-order thinking skills) and four activities in class (higher-order thinking skills). Flipped classroom learning has the potential to be applied in teaching and learning activities in elementary schools, aiming to build a culture of independent learning, critical thinking, and reading comprehension (Yean, 2019).

Based on the above problems with several problems and comparisons, make initial observations at SDN Cibabat Mandiri 1 Cimahi. So, the researcher intends to conduct a study entitled "The Use of the Flipped Classroom Model to Improve Reading Comprehension and Critical Thinking in Grade V Elementary School Students (Quantitative Research Method with Quasi-Experimental Design Approach in Class V SDN Cibabat Mandiri 1)." So, this study aims to improve reading comprehension and critical thinking using the flipped classroom model.

METHODS

The method in this study uses quantitative research, where research data in the form of numbers and analysis uses statistics. Quantitative research methods are used to test a theory, which is then presented a theory and describe statistics to show relationships between variables and develop concepts (Sugiyono, 2019). The type of research used in this study is quasi-experimental research design. So also stated that the main characteristic of quasi-experimental design is the development of true experimental design, which has a control group but cannot fully function to control outside variables that affect the conduct of experiments.

This research describes the flipped classroom model to improve fifth-grade elementary school students' reading comprehension and critical Thinking. It uses a Quantitative Research Method with a Quasi-Experimental Approach. The design was conducted at the research location in Class V of SDN Cibabat Mandiri 1. Based on the explanation above, a quasi-experimental design is a type of research design with a control group and an experimental group that is not randomly selected. Researchers use a quasi-experimental design because, in this study, there are external variables that researchers cannot control. This study employs descriptive and verification analyses, testing the validity using the SPSS 29.0 application. The descriptive analysis involves statistical computations to summarize the standard deviation regarding variables and sample data. The primary objective of

the descriptive analysis is to ascertain respondents' responses to each indicator variable under examination. This analysis involves determining the actual score percentages, which can be calculated by assessing the average response based on the evaluation of each answer provided by the respondents.

RESULTS AND DISCUSSIONS

Result

Instrument Test Results

1. Test Validity Test Results

The results of the validation test of a total of 40 questions by one expert lecturer of FKIP Pasundan University Bandung and old teachers of SDN Cibabat Mandiri 1 Cimahi City are intended as follows:

Table 1. Test Results Validation of Tests by Experts

Expert	Revision	Information
Expert Lecturer 1	Change the font of the text PG All	It is worth using with revisions
Guru Ahli 1	-	Worth using No revision

By expert considerations, the researcher made improvements to the test instrument. After everything is corrected, all question items are tested for students above grade 5, namely in grade 6 SDN Cibabat Mandiri 1 Cimahi City, which is continued with validity testing using the help of the SPSS 29.0 application with the Pearson Product Moment formula. The results of calculating the validity of each item of the Reading Comprehension and Critical Thinking questions are addressed in the following table:

Table 2. Reading Comprehension Test Validity Test Results

No	Criterion	No. Butir Soal	Sum
1	Valid	1, 2, 5, 6, 7, 8, 9, 12, 13, 14, 16, 18, 19, 20, 21, 23, 24	17
2	Invalid	3, 4, 10, 11, 15, 17, 22, 25	8
	Total		25

From the test validity test results on the Multiple Choice Reading Comprehension questions with the Pearson Product Moment formula on SPSS, there are 17 valid questions, namely at numbers 1, 2, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 21, 23, 24. Furthermore, test the validity using the SPSS 29.0 application on the Critical Thinking problem, as follows:

Table 3. Critical Validity Test Results

No	Criterion	No. Butir Soal	Sum
1	Valid	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15	15
2	Invalid	0	0
	Total		15

The test results validate the test on essay questions with Pearson Product Moment. There are 15 valid questions.

Based on the results of the multiple-choice test validity test using the SPSS 29.0 application, the questions used to determine students' Reading Comprehension and Critical Thinking skills in this study were 32, including 15 multiple-choice questions, 17 Reading Comprehension questions, and 15 Critical Thinking questions. The results of the complete calculation of the test validity test with the Pearson Product Moment formula in the SPSS application can be seen in the appendix.

2. Test Reliability Test Results

The results of reliability testing of multiple-choice tests and essays using the help of the SPSS 29.0 application are shown in the following table:

Table 4. Reliability Test Results of Reading Comprehension Test

No	Reliability Coefficient	Reliability Criteria
1	0,750	Easy

Furthermore, the results of the reliability test on the Critical Thinking question using the help of the SPSS 29.0 application are shown in the following table:

Table 5. Critical Thinking Test Reliability Test Results

No	Reliability Coefficient	Reliability Criteria
1	0,723	Easy

Mudanta et al. (2020) state that if the reliability test score is 0.40-0.60, the reliability data criteria are moderate. In the multiple-choice reliability test above, both stated that the questions had easy reliability criteria. The results of the complete calculation of the test validity test with the Pearson Product Moment formula in the SPSS application can be seen in the appendix.

3. Test Results Differentiating Power Test

The results of different power tests using the help of the SPSS application are addressed in the following table:

Table 6. Reading Comprehension Discriminating Power Test Results

No	Criterion	No. Butir Soal	Sum
1	Bad	-	0
2	Signs	-	0
3	Enough	14, 18, 19, 20, 23, 24	6
4	Good	1, 5, 6, 7, 9, 21	6
5	Very good	2, 8, 12, 16, 17,	5
	Total		17

Next, different power testers use the help of SPSS 29.0 applications on essay questions, as follows:

Table 7. Critical Thinking Discriminating Power Test Results

No	Criterion	No. Butir Soal	Sum
1	Bad	-	0
2	Signs	-	0
3	Enough	4, 8, 12	5
4	Good	1, 2, 3, 5, 6, 7, 9, 10, 11, 13, 14, 15	2
5	Very good	-	0
	Total		15

The complete calculation results of the differentiating power test with the SPSS 29.0 application can be seen in the appendix.

4. Test Results Test Difficulty Level

The results of the difficulty level test using the help of the SPSS 29.0 application on multiple-choice questions are as follows:

Table 8. Reading Comprehension Difficulty Test Results

No	Criterion	No. Butir Soal	Sum
1	Difficult	-	0
2	Keep	-	0
3	Easy	1, 2, 5, 6, 7, 8, 9, 12, 14, 16, 17, 18, 19, 20, 21, 22, 23,24	17
	Total		17

Furthermore, the results of the difficulty test calculation using the SPSS 25.0 application on the Critical Thinking problem are as follows:

Table 9. Critical Thinking Difficulty Test Results

No	Criterion	No. Butir Soal	Sum
1	Difficult	-	0
2	Keep	1, 2, 3, 4, 5, 6, 7, 10, 14	9
3	Easy	8, 9, 11, 12, 13, 15	6
	Total		15

The results of the complete calculation of the difficulty level test with the SPSS 25.0 application can be seen in the appendix.

5. Observation Sheet Validity Test Results

Testing observation sheets of teacher activities in learning using the Problem-Based Learning model was carried out by four expert lecturers of FKIP Pasundan University Bandung with the following results:

Table 10. Expert Observation Validity Test Results

Expert	Value Criteria	Conclusion
Expert Lecturer 1	Excellent	The observation sheet is excellent and usable
Teacher Expert 2	Excellent	The Observation Sheet is excellent and usable

According to experts, some things need to be improved. After all is corrected, the observation sheet can be used, and the validation results from expert lecturers can be seen in the appendix.

6. Interview Sheet Validity Test Results

Testing the validity of student interview sheets was carried out by 4 FKIP expert lecturers of Pasundan University Bandung with the following results:

Table 11. Expert Interview Validity Test Results

Expert	Value Criteria	Conclusion
Expert Lecturer 1	Excellent	The interview sheet is excellent and usable
Teacher Expert 2	Excellent	The interview sheet is excellent and usable

By the experts' considerations, something on this student interview sheet needs to be improved. Once all is fixed, the observation sheet can be used. Please see the attachment for the results of the validation of interview sheets from expert lecturers.

Data Analysis of Students' Critical Thinking

1. Data Normality Test Results

The data used in the normality test in this study used the pretest and posttest values of the experimental and control classes. In this test, researchers used the Shapiro-Wilk test on SPSS. Here are the results of the data normality test:

Table 12. Data Normality Test Results

Class	Significance	Kritea
Experiment (Pretest)	0,057	Usual
Experiment (Posttest)	0,199	Usual
Control (Pretest)	0,205	Usual
Control (Postest)	0,309	Usual

For normality test decision-making, if the significance value is > 0.05, then the data is normally distributed, but conversely, if the significance value is < 0.05, then the data is not normally distributed. The table above shows the significant values of the pretest and posttest experimental and control classes> 0.05. The results of the normality test calculation using the SPSS application can be seen in the appendix.

2. Homogeneity Test Results

The results of the homogeneity test in this study used the help of the SPSS application; the following are the results of the homogeneity test calculation:

Table 13. Homogeneity Test Results

Class	Significance (Sig)	Criterion
Experiments and Controls	0,235	Homogeneous

The test criteria are if the sig value < 0.05, then the data has an inhomogeneous variance; if the sig value > 0.05, then the data has a homogeneous variance. Based on the table above, the significance value can be obtained as 0.235, which is 0.235> 0.05; it can be concluded that both samples come from a homogeneous population.

3. Hypothesis Test Results

Hypothesis testing aims to test whether the hypothesis in this study is accepted or rejected. The hypothesis in this study is the effect of using the Flipped Classroom Model to improve students' Reading Comprehension and Critical Thinking.

The formulation of statistical hypotheticals in this study is as follows:

Ho: There is no effect of using the Flipped Classroom Model to improve Reading Comprehension and Critical Thinking

Ha: There is an influence of using the Flipped Classroom Model to improve Reading Comprehension and Critical Thinking

The results of hypothesis testing using the help of the SPSS 29.0 application with the T-Test formula are as follows:

Table 14. Hypothesis Test Results

Student Learning Outcomes	T	Df	Sig.(2-tailed)/ Significance Two-Side p	Mean Difference
Equal variances assumed	3.612	59	0,001	8,537
Equal variances not assumed	3.679	52.521	0,001	8,537

The decision-making is if the value of Sig. (2-tailed) < 0.05, then Ho is rejected, and Ha is accepted. Based on the table above, the value of Sig. (2-tailed) is 0.001. The experimental and control classes' data variants are known to be homogeneous. Hence, the value of Equal variances guides the interpretation of the output table above assumed, where the value of Sig. (2-tailed) 0.001< 0.05.

It can be concluded that most of the decision-making in the Independent Sample T Test Ho was rejected, and Ha was accepted. The results of calculating the hypothesis test using the SPSS application can be seen on the slab.

Discussion

The research site was at SD Negeri Cibabat Mandiri 1 Cimahi City. The research subjects in this study were students of grades 5A and 5B of SDN Cibabat Mandiri 1 Cimahi City. Each class has 25 students. In this study, class 5A is the Experimental class, and class 5B is the Control class. Researchers gave pretests to the two classes on the first day of the study. The average score for the experimental class was 35.97, while for the control class, the average score was 34.56. Then, the discussion based on the results of the researchers' observations of student achievement in doing pretest and posttest questions reveals that several students significantly increased scores. Four

students increased their pretest score to posttest 50% from their initial fairly low score. Then, for other achievements from the results of objective observations in the field, researchers assessed that students in experimental classes became more active during learning, especially when discussing, in contrast to control classes, who tend to be more individualistic in completing tasks.

This discussion includes important findings regarding the flipped classroom model's impact on fifth-grade students' critical thinking and reading comprehension. In looking at the positive effects on critical Thinking, this research shows that implementing the flipped classroom model provides a learning environment that supports the development of students' critical thinking skills. Using home learning materials before class gives students time to reflect, analyze, and question information before engaging in class discussions. These results contribute significantly to understanding critical concepts at the fifth-grade level.

Additionally, the positive impact on reading comprehension highlights the effectiveness of the flipped classroom model in improving students' reading skills. Early access to reading materials allows students to process information at different speeds and depths, allowing them to build stronger understanding. This supports the literature showing that learning approaches that utilize technology and online resources can improve students' reading abilities.

This research contributes significantly to our understanding of the impact of the flipped classroom model on critical thinking and reading comprehension in fifth-grade students. The research findings align with learning theory, emphasizing the importance of students' active participation and early access to information to improve the learning process.

Constructivism theory, for example, emphasizes that learning should involve students actively in building their understanding. The results showed that the flipped classroom model allowed students to process information independently before class, providing a strong foundation for deeper discussion and reflection. In this way, the flipped classroom model aligns with the principles of constructivism by giving students an active role in their learning.

Digital literacy theory can also be used to discuss the effectiveness of the flipped classroom model in improving reading comprehension. By leveraging technology and online resources, this model creates an environment where students can develop their digital literacy, namely the ability to assess, access, and use information from various sources (Ungerer, 2016); (Blau et al., 2020). Therefore, the flipped classroom model improves traditional reading skills and helps students become critical and skilled consumers of digital information.

Furthermore, it should be noted that previous theories and research also highlight the challenges that can be faced in implementing the flipped classroom model. Some learning theories emphasize the importance of direct social interaction in learning, while the flipped classroom model reduces direct face-to-face time. Therefore, comparing research results and relevant theory can provide richer insight into the successes and challenges of implementing the flipped classroom model at the fifth-grade level.

CONCLUSION

The Flipped Classroom model to improve Reading, Comprehension, and Critical Thinking of grade V students of SDN Cibabat Mandiri 1 Cimahi City, judging from the results of experimental research, stated that the average scale of KBM in the experimental class was 81.16, while results of the control class were 72.64 after the results were 0.001 < 0.05, meaning that Ho was rejected and Ha was accepted. Thus, the hypothesis stating the use of flipped classrooms to improve grade V students' reading comprehension and critical thinking in primary school is accepted. Based on the theoretical studies that have been discussed above and the results of the research that has been described above, it is recommended to other researchers who want to continue learning model research Flipped Classroom It is better to carry out different research and different grade levels because each level has different characteristics from each individual. Then, it is recommended that the flipped classroom model be studied and modified more deeply by its application in elementary schools.

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