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Implementation of Project Based Learning with a Culturally Responsive Teaching Approach to Increasing Cooperation Ability among Primary School Students

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1. Abstract

This research aims to improve student cooperation in mathematics for first-grade students by implementing the project-based learning model and the Culturally Responsive Teaching approach. The research adopts a classroom action research design according to Kemmis and Robbin McTaggart, with two cycles, each comprising the stages of planning, implementation, observation, and reflection. The research subjects are 25 first-grade elementary school students, and the research object is the students' cooperation ability. Data collection techniques involve observation and documentation, while the data analysis technique used is qualitative descriptive analysis.

The pre-cycle results show that the average student's cooperation ability is 43.40% (insufficient). In the first cycle, the average student's cooperation ability reaches 65.10% (enough) but has not yet achieved the expected success indicator. In the second cycle, the average student cooperation ability increases to 81.50% (good), and it has already reached the expected success indicator of 75%. Thus, there is an improvement of 16.40%. Therefore, it can be concluded that the implementation of the project-based learning model with the Culturally Responsive Teaching approach can enhance students' cooperation abilities.

Keywords: Project Based Learning, Culturally Responsive Teaching, Mathematic, Cooperation Ability

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2. Introduction

The implementation of the "Merdeka" curriculum requires teachers to create learning activities that challenge students, are fun and enjoyable, meaningful, and not monotonous. According to Rahyu and Puspitaningsih (2020), learning is the interaction between teachers and students during the knowledge development process. Teachers can cultivate students' scientific attitudes during learning activities. Cooperation is an important scientific attitude that needs to be developed. Additionally, cooperation is one of the dimensions in the Pancasila Student Profile concerning the spirit of togetherness. Cooperation cannot thrive if each student in a group prioritizes their ego (Santoso et al., 2023).

The Ministry of Education and Culture Regulation Number 21 of 2016 regarding the Content Standards for Primary and Secondary Education states that the Elementary School Curriculum includes various subjects, including mathematics. Based on research conducted by Alisnaini et al. (2023), mathematics is perceived as a challenging subject, as students often encounter difficulties in understanding its concepts. This difficulty is also experienced by first-grade students studying at a school in D.I. Yogyakarta. According to interviews with the class teacher, many first-grade students find learning mathematics challenging. The project-based learning model can be an alternative solution for teachers teaching mathematics.

The project-based learning model is an innovative learning approach that involves projects as activities in the learning process. Ritawati (2019: 529) mentions that the characteristics of the project-based learning model include students discovering understanding through group processes based on assigned tasks, and the resulting

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product is generated through creative, critical, and skillful thinking. At the end of the learning process, students summarize the material and connect it to real-world problems to demonstrate the practicality of the learned material.

Another problem faced by teachers in mathematics teaching is the difficulty of conditioning first-grade students, as the majority of children are highly active and eager to assert themselves dominantly. This situation hinders students' ability to cooperate effectively and requires improvement and habituation. Pre-cycle observation results on students' cooperation abilities show an average of 43.40% (below average), indicating the need for improvement. As social beings, humans are inherently involved in the process of cooperation among individuals for their survival. According to Apriono (2011: 161), cooperation is the ability of several students to help each other, creating a sense of togetherness and unity in achieving common goals. During the process of cooperation, students can interact with others without competing within the group. This is because cooperation fundamentally involves mutual assistance, peer interaction, nurturing relationships, fostering respect for others, solving problems collectively, and taking responsibility.

As the world is continuously developing due to the effects of globalization, the virtual world knows no bounds. Nowadays, children prefer to play with gadgets rather than with friends in their neighborhood. This has led to a reduction in their interactions with others around them. Gadgets are enticing for children as they provide access to various entertaining online games. Consequently, local cultural values may change as they face various challenges brought about by the modern era (Nurhaidah, 2017). Hafizah (2023) states that the impact of this phenomenon includes the erosion of cultural values, decreased nationalism and patriotism, diminishing family bonds and mutual cooperation,

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as well as a lifestyle that doesn't align with the national identity. Therefore, the contemporary learning process needs to incorporate the cultivation of local culture among students.

The Culturally Responsive Teaching approach emphasizes that every student has an equal right to learn without discriminating against their cultural backgrounds. Thus, students of minority cultures have an equal right to education. This approach helps students understand and appreciate their own culture (Arif et al., 2021). Hernandez et al. (2013) suggest that the Culturally Responsive Teaching approach in mathematics teaching can be implemented by integrating culture into the content of the material being studied. Content Integration involves incorporating both local and national cultural elements. Content integration can also develop students' soft skills, such as curiosity and love for their homeland.

Based on the various explanations above, it can be concluded that mathematics remains a challenging subject for first-grade students, hence requiring a teaching model that can facilitate their understanding of the material. Additionally, the majority of firstgrade students are active and eager to assert themselves in the classroom, sometimes being more dominant than their peers. This situation indicates the need for improvement in students' cooperation skills. Therefore, a learning process that can enhance students' cooperation skills is necessary. Furthermore, education that introduces culture is also essential to implement, as children need to be aware of their cultural identity. It is crucial to preserve existing cultures as part of their individual identities and as Indonesian citizens. Hence, the researcher is interested in conducting research on the application of

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Project-Based Learning with a Culturally Responsive Teaching approach to enhance students' cooperation skills.

3. Methods

3.1. Participants and context

The subject of this study is the first-grade students, totaling 25 students, consisting of 13 male students and 12 female students. According to Arikunto (2013: 161), the object of research refers to the core aspect of the research problem. The object of this research is to increase cooperation ability in Mathematics learning through the implementation of the Project-Based Learning model with the Culturally Responsive Teaching approach.

3.2. Material

The instruments used in this research were observation sheets for students' cooperation abilities and documentation. Observation is a data collection technique that involves observing ongoing events and recording them using observation tools according to the aspects that will be observed or researched (Sanjaya, 2012: 86). The researcher used systematic observation. Before starting, the researcher prepared an instrument containing the observed indicators and determined the time for conducting the observation. Documentation is a record of past events (Sugiyono, 2015: 240). Documents can be in the form of writing, photos, images, or other works. In this research, the data obtained from the documentary study consisted of photos, videos, and product work results showing the learning process to enhance students' cooperation abilities.

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3.3. Data Collection and analysis

This study is an action research that applies a research design according to Kemmis and Robbin McTaggart (in Hanifah, 2014) with two cycles, each consisting of the planning, implementation, observation, and reflection stages. Each cycle comprises two meetings. At the end of the first cycle, a reflection is conducted, which is used as a reference for improvement in implementing actions in the second cycle. According to Indriani (2017), the research can be considered successful if it achieves the research performance indicator, which means the achievement of improvement reaches more than 75%.

The data analysis technique used in this research is qualitative descriptive analysis. According to Winartha (2006), qualitative descriptive analysis involves describing, analyzing, and summarizing data obtained from interviews and observations related to the research problem. The data collected from each observation activity during this research cycle is analyzed descriptively using percentage techniques. The results of this data analysis are also calculated and presented to demonstrate the increased cooperation ability.

In the first stage, the data is reduced, meaning that it is selected based on the focus of the problem. In this step, the researcher eliminates data that is considered irrelevant. The second stage involves describing the data so that the organized data becomes meaningful. Describing the data is done in narrative form based on the data presented in tables. The third stage is drawing conclusions based on these descriptions (Sanjaya, 2009).

The data obtained from the observations in this research are in the form of scores from the observation sheets. The percentage of score acquisition on the observation sheets is accumulated to determine the extent of the researcher's success in efforts to

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increase cooperation ability. The percentage is obtained from the average percentage of both Cycle I and Cycle II. The observation data obtained is then calculated and converted into percentages to determine the extent of improvement achieved. The observation sheets are analyzed using qualitative descriptive analysis with the following formula:

Percentage (%) = $\frac{\text{obtained score}}{\sum \text{maximum score}} x 100\%$

The observation results data is classified using the following criteria, as described by Khoiriyatun (2014: 34):

No	Percentage	Criteria
1.	90% - 100%	Very good
2.	75% - 89%	Good
3.	50% - 74%	Enough
4.	35% - 49%	Insufficient
5.	≤ 35%	Very insufficient

 Table 1. Observation Criteria Data

4. Results and Discussion

This research was conducted over two cycles, with each cycle comprising two sessions. Prior to implementing classroom learning, the teaching materials were prepared using the project-based learning model with a Culturally Responsive Teaching approach. The instructional module served as a guide for conducting classroom learning to increase cooperation abilities. The instructional module incorporated the following project-based learning steps: 1) students received fundamental questions related to the upcoming learning; 2) students developed project plans; 3) they collectively agreed on the project's

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schedule; 4) they monitored the progress of the project; and finally, 5) they assessed the outcomes.

The implementation of project-based learning with a Culturally Responsive Teaching approach made students more active and increased their awareness of Indonesian culture. By applying the steps of the project-based learning model, the learning process became student-centered. The group project activities proved effective in fostering interactions among students. They collaborated within their groups to complete the assigned project tasks. By the end of Cycle I, students' cooperative ability had increased compared to the pre-cycle stage. They began to demonstrate active participation within their groups, stayed engaged during project activities, encouraged peers to participate in group tasks, assisted fellow group members, and made efforts to complete project tasks on time. In Cycle I, the percentage of students' cooperation ability reached 65.10%, categorized as "enough." There was a 21.70% improvement from the pre-cycle. However, the results of Cycle I did not meet the success criteria, leading to the continuation of Cycle II.

The obstacles encountered during Cycle I were related to some students competing to take charge of their group project tasks, leading to occasional minor disturbances. Additionally, there were students who wandered around and did not stay with their assigned groups. To address the challenges that arose during Cycle I, the researcher and teachers discussed and sought alternative solutions. In Cycle II, improvements were made by appointing one student as the group leader responsible for assigning tasks to the group members. This approach aligns with Roestiyah's opinion (2001: 17) that one of the advantages of group work is its ability to develop leadership and teach discussion skills. When students have clear task allocations within their groups, a sense of responsibility emerges.

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In Cycle II, students' cooperation abilities showed improvement, reaching a percentage of 81.50%. This enhancement was influenced by several factors, including the implementation of the project-based learning model with a Culturally Responsive Teaching approach throughout the learning process, the provision of rewards, enjoyable learning experiences through technology integration, and the improvements made based on reflections from Cycle I. The comparison of students' cooperation abilities percentages from pre-cycle, Cycle I, and Cycle II can be seen in the following table.

No	Indicator	Pre- cycle score total	Cycle I score total	Cycle II score total	Pre-cycle results (%)	Cycle I results (%)	Cycle II results (%)
1	Take part in completing the project tasks	44	64	79	44.00	63.50	79.00
2	In a working group area during project activities	42	63	81	42.00	63.00	81.00
3	Encouraging friends to participate in group tasks	43	65	83	43.00	64.50	83.00
4	Assisting fellow members within the group	46	67	81	46.00	66.50	80.50
5	Able to complete project tasks on time	42	68	84	42.00	68.00	84.00
Average student's cooperation ability					43.40	65.10	81.50
Crite	ria				Insufficient	Enough	Good

Table 2. Comparison of Pre-cycle Results, Cycle I, and Cycle II

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According to the table above, it can be presented in the form of a bar diagram as follows:



Student's Cooperation Abilities Diagram

Image 1. Student's Cooperation Abilities Diagram

The classroom action research on the implementation of project-based learning with a Culturally Responsive Teaching approach to increase students' cooperation abilities was concluded after Cycle II. The results from Cycle II showed that students' cooperation had reached 81.50%, surpassing the set success indicator of 75%.

5. Conclusion

Based on the conducted action research, it can be concluded that the implementation of project-based learning with a Culturally Responsive Teaching approach can increase students' cooperation abilities. This conclusion is drawn from the data analysis results, which indicated that during Cycle I, the average percentage of students' cooperation ability was 65.10% (sufficient). However, in Cycle II, the average percentage

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of students' cooperation ability increased to 81.50% (good). It can be stated that the research was successful since the percentage surpassed the predetermined target of 75%. As a result, the average student's cooperation ability increased by 16.40% from Cycle I to Cycle II.

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