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# Efforts to Improve Student Collaboration Skills Using a Problem-Based Learning Model Based on a Culturally Responsive Teaching Approach in Class IV IPAS Materials

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## 1. Abstract

The purpose of this study was to improve collaboration skills in science learning for fourth-grade students by applying the Problem-Based Learning model based on Culturally Responsive Teaching. This research is a collaborative classroom action research (PTKK). The research was conducted in two cycles, with each cycle consisting of planning, action, observation, and reflection. The research subjects were 27 students in grade IV. Sources of data come from teachers and students. Data collection techniques are by interview, observation, questionnaire, and documentation. The data analysis technique uses the interactive Miles-Huberman model. The research procedure is an interrelated spiral model. The results showed that the application of the Problem-Based Learning model based on Culturally Responsive Teaching can improve collaboration skills from pre-action, cycle I, and cycle II. The learning process in pre-action students is not used to doing group activities so students' collaboration skills are still low. Improved collaboration skills occurred in cycle I, although not yet optimal. Implementation of cycle II causes collaboration skills to increase to high so that it can support a quality learning process. This study concludes that the application of the Problem-Based Learning model based on Culturally Responsive Teaching can improve collaboration skills in class IV science learning.

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**Keywords**: collaboration skills, Problem Based Learning model, Culturally Responsive Teaching approach

## 2. Introduction

Currently, our country is entering the era of the 21st century where the use of technology is the hallmark of this era. As an educator, of course, teachers need to teach and train 21st-century skills that their students need to master. According to Assoc. Prof. Suzanne Choo Shen Li (National Institute of Education, Singapore) in a webinar titled "From 4Cs to 6Cs: What Should Teachers Know and Prepare for Successful Language Learning in the 21st Century" which was held on Thursday (29/9/2022) via Zoom and the SEAQIL YouTube channel, 21st-century skills should instill character values so that skills that were 4C are now 6C. The 4C skills that we know are critical thinking, creativity, collaboration, and communication. After adding character and citizenship, the 21st-century skills become 6C.

21st-century skills do not only focus on efforts to transfer knowledge but also on how students are educated to be able to solve problems that may arise in everyday life. For this reason, learning in the 21st century is no longer teacher-centered but oriented towards student learning activities through learning such as practicum activities, problem-based learning, and project-based learning. (Jannah & Atmojo, 2022; Rahayu et al., 2022)

To create meaningful learning for students, collaboration skills are important because they are one of the 6 skills that absolutely must be possessed by the 21st-century generation. Through collaboration skills, students are expected to be able to solve problems given by the teacher. So even when they are not in class they can adapt to society in the form of collaboration so that they can easily solve social problems that they may encounter in everyday life. (Lase, 2019; Mishbah et al., 2020; Sari & Montessori, 2021).

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The importance of collaboration skills as one of the 21st century skills is apparently not in line with the facts in class IV. Based on the results of observations and interviews, it is known that students prefer learning individually than in groups. Teachers also do not routinely introduce learning in groups because they anticipate that students will become busy when grouped. Indeed, students will be calmer if learning is carried out individually with assignments. But indirectly it will foster an attitude of individualism, egoism, and lack of sensitivity towards others. The most unwanted thing is that students are academically good but apathetic and unable to get along with society.

The solution to overcome this problem is to routinely conduct learning with students in groups such as the Problem-Based Learning (PBL) learning model. In the Problem-Based Learning (PBL) learning model, students are gathered in small groups so that they can collaborate to solve the problems given. (Ariani, 2020; Fauzia & Kelana, 2021; Yuniarti & Radia, 2021). Learning steps or syntax in the Problem-Based Learning model allows for interaction between one student and another in the form of collaboration through discussion activities. So that the Problem-Based Learning model is very effective for improving student collaboration skills.

Based on the description above, the researcher took collaborative classroom action research to improve students' collaboration skills with the title "Efforts to Improve Student Collaboration Skills Using the Problem-Based Learning Model Based on the Culturally Responsive Teaching Approach in Class IV Science Subjects".

## 2. METHOD

The research design uses classroom action research which refers to the Kemmis & McTaggart model. The research design of the Kemmis & McTaggart model is a classroom action research model or design consisting of four stages, namely planning, implementing action, observing, and reflecting (Uno, Lamatenggo, and Koni 2011). This classroom action research was carried out through stages

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in the form of cycles with each cycle consisting of planning, action, observation, and reflection activities.

The research subjects were 27 grade IV students with details of 17 boys and 10 girls. This research was conducted in two cycles with each cycle consisting of two meetings. The time allocation given at each meeting is 4 x 35 minutes or four hours of lessons.

Data collection techniques in this study used observation, interviews, questionnaires, and documentation. Data analysis techniques are used to process and compile research data in the form of interviews, observations, questionnaire results, and documentation. The data analysis technique used in this study is an interactive analysis model. The interactive analysis model according to Miles & Huberman (1984) contained in (Sugiyono, 2015: 338) is a model of data analysis techniques which has four stages including the stages of data collection (data collection), data reduction (data reduction), data presentation (data display), and concluding (conclusion/verification).

Indicators of the success of the action can be seen from the average score of the collaboration skills questionnaire which reaches more than 50 and the value of collaboration skills based on teacher observations reaches more than 80%.

## 3. RESULTS AND DISCUSSION

### Results

Based on the observations, students' collaboration skills have increased from pre-cycle, cycle 1, and cycle 2 as shown in Table 1.

Table 1. Collaboration Skills Results

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| Aspects | Cycle I (%) | Cycle II (%) |
|---|---|---|
| Active contribution | 80,55 | 88,89 |
| Working productively | 76,85 | 87,96 |
| Responsible | 74,07 | 83,34 |
| Flexibilit | 79,63 | 87,04 |
| Respect for others | 82,41 | 84,25 |
| Average Student Collaboration | 78,7 | 86,3 |
| Increase in Percentage of Success | 7,6 | |

Based on Table 1 above, it is known that there was an increase in collaboration skills for each aspect of Cycle I and Cycle II. In the aspect of active contribution in the first cycle, the percentage was 80.55 and in the second cycle, it was 88.89. The aspect of working productively increased from 76.85 in cycle I to 87.96 in cycle II. The responsible aspect increased from 74.07 to 83.34. The flexibility aspect increased from 79.63 to 87.04. While the aspect of respecting others rose from 82.41 to 84.25. So that the average collaborative skills between cycles also increased, namely 78.7 in cycle I and 86.3 in cycle II. The increase in the percentage of collaboration skills is 7.6.

The improvement of collaboration skills is also strengthened by the data from the questionnaire completed by students as shown in Table 2 below.

Table 2. Collaboration Skills Questionnaire Results

| | Collaboration Skills Average Score | Category |
|---|---|---|
| Precycle | 38 | Less |
| Cycle I | 49 | Moderate |
| Cycle II | 52 | High |

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Based on the results of the questionnaire, it was found that collaboration skills increased from pre-cycle, cycle I, to cycle II. In the pre-cycle, it is known that the average score of students' collaboration skills is 38 in the less category. In cycle I the average score of collaboration skills increased to 49 so it was in the medium category. Whereas in cycle II the average score of students' collaboration skills was already high, namely 52. The criteria for these criteria are based on Table 3 below.

Table 3. Categorization of Collaboration Skills Scores

| | Range | Criteria |
|---|---|---|
| Precycle | $X \leq 40$ | Less |
| Cycle I | $40 < X \leq 50$ | Moderate |
| Cycle II | $X > 50$ | High |

Based on Table 3 it is known that the range of scores less than or equal to 40 is included in the less criteria. Scores of more than 40 to 50 are considered moderate. Meanwhile, a score of more than 50 is considered high.

**Discussion**

Based on the research data it can be concluded that the Problem Based Learning model based on Culturally Responsive Teaching can improve collaboration skills in class IV Science learning. Besides being able to improve collaboration skills, the use of the Problem-Based Learning model based on Culturally Responsive Teaching can also improve the implementation of teacher learning and student activities.

The increase in students' collaboration skills can be seen from the percentage of scores obtained for each aspect of collaboration skills from Cycle I and Cycle II. It is known that the increase in collaboration skills from cycle I to cycle II was 7.6%. Based on the results of the pre-

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cycle questionnaire, students' collaboration skills were classified as low with an average score of 38. Furthermore, they progressed in cycle I to 49 in the moderate category. While in cycle II it increased to 52 so that it was in the high category.

The increase in students' collaboration skills from pre-cycle, cycle I to cycle II was due to the treatment given, namely using the Problem-Based Learning (PBL) model based on the Culturally Responsive Teaching approach where in the syntax of the PBL model there are group activities that will improve students' collaboration skills. In cycle I, meeting 1, the group activity of the students was to make a mind map according to the material in the teaching materials. This activity trains students to collaborate actively to produce interesting mind maps and follow the provisions or expected material points. Furthermore, in cycle I meeting 2 group activity of students is role-playing. In this activity, students are required to collaborate and work well with each individual in the group. So that each group can practice role-playing buying and selling activities maximally and interestingly. All individuals in the group have their respective roles and are interdependent. So the five aspects of collaboration skills, namely active contribution, productive work, responsibility, flexibility, and respect for others are needed in this role-playing activity.

Group activities of students in cycle II meeting 1 were conducting interviews with resource persons. This activity also trains student collaboration skills where each member has a role such as conducting interviews, writing interview results, listening, working on worksheets, and making presentations. Interview activities also train students to communicate well with resource persons. This is because in interview activities one must pay attention to interview rules such as saying politely, not offending, respecting sources, and so on.

The group activities of students in Cycle II meeting 2 were the same as Cycle I meeting 2 namely playing a role, it's just that the material being taught was different. If in cycle 1 the material for role-playing was buying and selling activities, then in cycle 2 the role-playing activities carried

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out were carrying out activities according to the rules on the situation card. There are 6 situation cards, namely:

1. the situation when seeing the goods is not ours
2. The situation when doing tests in class
3. the situation of going to school from home
4. the situation of riding a motorized vehicle
5. The situation of paying for snacks in a full canteen
6. The situation on the playground

Each group plays a different situation. In playing his role, he must bring up situational activities that should be carried out according to applicable regulations and sanctions if these regulations are violated. In this group activity, the students in each group were very enthusiastic and wanted to put on an interesting show. So that role-playing activities are very good for improving students' collaboration skills. With role-playing activities, the solidarity and cohesiveness of each member is the main key. So do not be surprised if the results of students' collaboration skills in cycle II are high.

The division of groups in cycle I was chosen by the teacher by looking at the background and heterogeneity of the students. However, it seems that the division of groups like this is not able to improve students' collaboration skills. Many students are not compatible with their friends which affects the less-than-optimal LKPD results. Even though initially the teacher thought of combining students who rarely got along with their friends into one group so that there would be interaction in it to improve collaboration skills. It turned out that this was not done effectively in class 4B at SD Negeri Gedongkuning because it had an impact on less-than-optimal LKPD results. For example, role-playing activities in Cycle 1 are not as interesting as in Cycle II. In cycle I, there was still awkwardness or lack of cohesiveness in several groups. One of the contributing factors is due to the group distribution system made by the teacher without the student's consent. Furthermore, in cycle

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II the division of groups was made by the students themselves with a note that the number of members must be balanced. The teacher only chooses the group leader, then each group leader determines its members. It turns out that the division of groups like this is very influential in increasing student collaboration skills where students feel comfortable with their groups. So that there is good cooperation between members and as a result they can display role-playing performances to the fullest.

In learning activities, the teacher applies the Culturally Responsive Teaching approach or culture-based learning. The goal is for students to know their own culture and it is hoped that they can love and preserve culture. Group activities carried out are also based on culture. As in the first cycle, role-playing activities regarding buying and selling activities were also carried out in traditional market settings. Several groups use the local language, namely the krama language, so that the atmosphere of buying and selling in traditional markets is thicker. The role-playing activities in cycle II are also the same, which are adapted to culture. Group 3 with the situation of going to school from home practiced activities of greeting and kissing parents when they said goodbye going to school. Sungkem activities to ask for blessings from parents is a very good Javanese custom and needs to be preserved.

## 4. CONCLUSION

Based on the results of classroom action research that has been carried out for two cycles, it can be concluded that the application of the Problem-Based Learning model based on the Culturally Responsive Teaching approach can improve collaboration skills in class IV science learning.

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