

## Increasing the Motivation of Science Learning in Class IV Students using the Problem Based Learning Model

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### 1. Abstract

Improving Science Learning Motivation for Grade IV Students Using Based Learning Learning Models. This study aims to increase the learning motivation of fourth grade elementary school students in science subjects through problem-based learning models. This type of research is Collaborative Classroom Action Research (PKK). The hypothesis in this study is that the application of the problem-based learning model can increase learning motivation and understanding in the science subject of fourth grade elementary school students. The subjects of this study were 28 students of class IV SD . This research was conducted in 2 cycles. Each cycle consists of 2 meetings. The method used in data collection is observation/observation, interviews and documentation. The results of the study show that there is a significant influence on the learning motivation of students who use the PBL model rather than the conventional model. This can be seen from the average student motivation using the PBL model in the initial data collection showed pracycle 53.33 %, increased in cycle I 71.55%, in cycle II 89.95%. That means there is an effect of the use of the PBL model on student learning motivation in the ipas subject of grade 4 elementary school students .

**Keywords:** *problem based learning method, learning motivation ,science subjects*

### 2. Introduction

Education has a very important role in lifeman.Educationcaninfluencedevelopmentmaninall aspects of personality and life. EducationisbusinessawareForpreparestudentthroughguidance,

teaching, and learning activities for their role in the future coming . Education is process social Where a person develops abilities, attitudes, and forms of behavior in the society in which a person is exposed to influence selected and controlled environment (especially coming from the school) so that he can obtain or experience the development of abilities optimal social and individual abilities . (Agus Taufik, Praise Lestari Prianto, and Herasustainable Mikarsa, 2007:1.2-1.3). Learning is a system consisting of various components that are closely related to one another. These various components include: objectives, materials, methods, and evaluation. In determining the model or method to be used in the learning process the teacher must pay attention to these four components. US IP learning provides in-depth understanding and knowledge related to the knowledge , skills , attitudes, and intelligence of students in the reality of socializing in society. So because of that the teacher must be able to create science learning for students to participate fully in order to increase student learning motivation. IP AS learning is carried out in order to achieve the IP AS goals . The goal of IP AS is to develop capabilities and quality of life and human dignity according to Nasrul in the journal (Alfianiawati, 2019). This goal directs students to be more sensitive to social problems that occur and students can be active in solving the problems that have been given. In addition, there were several obstacles during the Science of Science Learning , the first of which was that students still thought that the Science of Science material was difficult and there was too much material that needed to be understood so that students had lost their enthusiasm for learning. The second obstacle, some teachers only convey the material without paying attention to the responses or opinions of students during the learning process. In order to achieve the objectives of IP AS Learning , it is necessary to apply the Problem Based Learning (PBL) learning model. The learning process is an activity that can be carried out by the teacher to students in providing subject matter. A teacher must also guide and educate students in the teaching and learning

process at school, so that these students can really understand what has been explained by the teacher. Students must also be active in learning, students do not just sit quietly and listen, but students must also be active during the learning process.

Student motivation determines the success to be achieved by these students. Students with high learning motivation will be able to achieve high learning outcomes, and vice versa, students with low learning motivation will also tend to get low learning outcomes and will experience higher learning difficulties. IPAs is learning that emphasizes more on students' thinking logically, systematically, critically, creatively and in collaboration so that students will be able to develop skills in solving various everyday problems. Under such conditions efforts need to be made to improve and develop their potential in student learning outcomes. In the learning process the teacher must use an effective learning model so that students are interested in learning and are active in learning and the learning process will be interesting. Through *the problem based learning realistic* learning model students can know buying and selling activities as one of fulfilling needs through the real problems presented, in the *problem based learning realistic learning* model presented through problem based learning needed to confront real world challenges, the ability to face everything that is new and existing complexities (Rusman, 2011: 229-230). The problem formulation of this research is whether there is a significant effect of the PBL model on motivation to learn science in grade 4 elementary school students. While this study aims to determine the significant effect of using the PBL model on motivation to learn science in grade 4 elementary school students.

The Problem Based Learning learning model is a learning model that begins with problems found in a work environment to collect and integrate new knowledge developed by students independently (AlperAslan, 2021; Seibert, 2020; Widiyatmoko, 2014). This model also focuses on student activity in solving problems (Andriyani&Suniasih, 2021; Winoto&Prasetyo, 2020).

Students are not only given learning material in the same direction as in the application of conventional learning methods. With the Problem Based Learning learning model, the learning process is expected to take place naturally in the form of student activities to strengthen problem-solving abilities and increase student independence, so that students are able to formulate, solve and interpret mathematics in various contexts (Anjelina Putri et al., 2018; Safithri et al. , 2021; Saputro&Rayahu, 2020). The learning stage begins with giving problems, followed by identifying problems, students hold discussions to equalize perceptions of problems, then design solutions and targets to be achieved at the end of learning. The next step is for students to collect as many sources of knowledge as possible from books, the internet, and even observation (Kristiana & Radia, 2021; Safithri et al., 2021). This study assumes that students' cognitive learning outcomes can be influenced by the application of problem-based learning models. Then make students more active in participating in the learning process in class and can make students able to solve a problem.

### **3. Method**

This type of research is Collaborative Classroom Action Research (PTKK). In practice, PTKK researchers collaborate with field supervisors, tutors, school principals, and class teachers. Classroom action research is a series of steps (cycles) consisting of planning, action, observation, and reflection which continue to flow to produce a new cycle until the class action research is stopped (Azizah. et al, 2021: 18). This study uses the Kemmis and Mc Taggart PTK model introduced by Kurt Lewin which has four stages in each cycle, namely planning, acting, observing and reflecting.

### **3.1. Participants and context**

The subjects involved in this study were fourth grade elementary school students in the 2022/2023 school year with a total of 28 students. The data collection technique was carried out by describing the results of the tests carried out directly to students to obtain data about students' learning motivation in science subjects . The test method is used to obtain data about the level of mastery of learning material before and after learning. The analysis technique went through two stages, namely 1) using descriptive analysis techniques, namely the test results of the initial conditions, cycle I and cycle II, so that after comparing the results of cycle I and cycle II there were differences and improvements; and 2) using a questionnaire technique, observation with descriptive analysis based on the results of observation and reflection. Furthermore, the results of student learning before implementing the Realistic Problem Based Learning model learning were compared with the results after implementing the Realistic Problem Based Learning learning model to determine the progress of student learning motivation in science subjects . Based on this, this research is focused on increasing learning motivation in the ipas subject of fourth grade elementary school students using the *Problem Based Learning* learning model .

### **3.2. Material**

Data collection techniques in this study were carried out by means of questionnaires, tests, and documentation. Questionnaires are used to measure student learning motivation . Tests are used to measure science learning outcomes and documentation is used to obtain initial data before being subjected to action. The data obtained were then analyzed using descriptive percentage techniques.

### **3.3. Data collection and analysis**

Data collection techniques are the most strategic steps in research, because the main purpose of research is to obtain data. The data collection techniques taken include: observation techniques, used to collect data about activities during learning activities, the next step is to use a questionnaire, which is given to students to fill out the questionnaire, this is used to collect data about students' motivation to learn

### **3.4. Ethical Considerations**

All research or research involves humans as research subjects. Based on this, in this study there are basic principles of research ethics, including: the first is respect for people, in this case we must respect and appreciate students, where these students are research subjects, then the second is benefits, in this research there are benefits for namely providing benefits to learning in schools, especially in science subjects, namely to increase motivation, the third is not endangering research subjects, in this study, not endangering research subjects because during teaching and learning activities carried out in the classroom, not outside class.

### **3.5. Study Limitations**

There are limitations that are owned by researchers related to time, energy, and cost, this research is limited to efforts to improve fourth grade elementary school students' learning motivation using a based learning model

## **4. Results and Discussion**

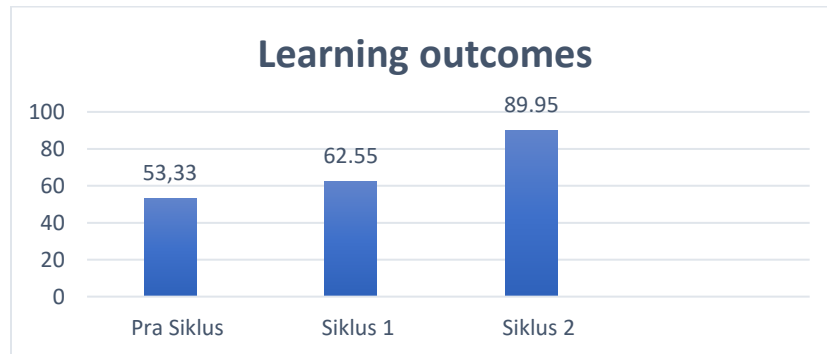
### **Results**

Based on the results of observations, student learning outcomes have increased from pre-cycle, cycle 1, and cycle 2 as shown in Table 1.

**Table 1.** Motivation Data Analysis

Cycle	Learning outcomes
Pre-Cycle	53,33%,
Cycle 1	71,55 %,
Cycle 2	84,21 %.

the table above, it can be seen that student learning outcomes in the pre-cycle show an average of 53.33 % in low qualifications. The percentage score of 53.33 % is in the percentage interval of 25% - 55.33 % in low qualification .In cycle 1, it showed an increase from the pre-cycle, which was 71.15 % in the sufficient category, at intervals of 50% - 74%, then it increased again in cycle II, which was 84.21%, in the high category, at intervals of 75% - 100%.



**Graph 1.** Data analysis of motivation to learn

In chart 1. It can be seen that the percentage comparison and the increase in the percentage of student learning outcomes from the pre-cycle stage to cycle 2. In the pre-cycle stage leading to cycle 1, the percentage increased by 9.22 %, in cycle 1 towards cycle 2, the percentage increased by 27.4 %.

## Discussion

Use of models *problem based learning* in learning natural and social sciences in grades IV is carried out in two cycles. Each cycle consists of two meetings, and each meeting lasts 2 x 35 minutes or two hours of lessons. Learning is carried out in the same class for 4 meetings.

*the Problem Based Learning* model for the subject of Natural Sciences for class IV students is appropriate because in the implementation of learning, students are actively involved, not just being silent , but involving students' mental processes optimally in thinking. In learning, it also creates an atmosphere that makes students active in the learning process.



In cycle I meeting 1, learning has not been carried out optimally. At the problem orientation stage the teacher does not ask questions about learning material, the teacher only does question and answer as a form of problem appearance at the beginning of learning, not related to learning material. The teacher has made a brief explanation of the material to be studied. The teacher in explaining the learning objectives is not in accordance with what was planned. While students still tend to be silent and do not ask questions when explained by the teacher. The stage of organizing learning, the teacher in conveying learning material is not systematic. In the group investigation guidance stage, the teacher has not provided opportunities for students to collect information related to activities. Teachers are not optimal in providing guidance or answering questions from students related to activities. Students in collecting information still stick to one learning resource. The teacher in providing guidance is still unclear. The stage of developing and presenting the work, students in presenting the work is not clear and when it is their turn to present the work, there are groups who are not ready to present it, even though the time allotted has exceeded the provisions. In the analysis and evaluation stage of the problem solving process, the teacher and students carry out an analysis of the presentation of the results of the activities carried out by students , but the delivery is still lacking in detail.

In cycle I meeting 2, there was an increase from meeting one. At the problem orientation stage, the teacher does not only carry out question and answer activities on the emergence of problems but also question and answer activities about learning material. Students began to actively ask and answer even though it was not thorough. The stage of organizing learning, the teacher conveys the activities to be carried out clearly and systematically. When dividing the group there is no noise .When answering questions, not all group members participated in answering questions. In the investigation guidance stage,

the teacher guides students not only to one group, but is comprehensive to other group members. The teacher provides opportunities for students to collect information related to the activities carried out. Most of the students were able to associate various information obtained, analyze and reason information well. In the development and study stage of the work, students develop the presentation of the work in groups. Students together with the group read the work in a timely manner even though it was still unclear. In the analysis and evaluation phase, students begin to express their opinions on the work of other groups.

In cycle II meeting 1, learning activities have started to run well. The problem orientation stage, question and answer activities between the teacher and students went well. Many students began to dare to ask questions about the material presented by the teacher. The teacher also uses concrete media to help students understand the material provided, here students are very enthusiastic about listening to the teacher's explanation, but students have not been involved in using concrete media. The stage of organizing learning, the teacher conveys the procedure for the activities to be carried out clearly. Giving rewards in the form of stars, students look very enthusiastic to answer questions and all group members try to solve the problems given by the teacher. In the group investigation guidance stage, the teacher is maximal in providing guidance or answering questions from students related to activities. Students in collecting information do not stick to one learning resource. They give each other their opinions, process various information and analyze it well. In the development and presentation stage of the work, students and groups read the work in a timely manner and some of the group's work looks good, as can be seen from the results of their work that are relevant to the information available. In the analysis and evaluation phase, students and teachers together provide conclusions.

In cycle II meeting 2, it was seen that the learning activities were going very well. At the problem orientation stage, the teacher gives problems that exist in the environment around students, they are very enthusiastic about answering questions raised by the teacher. Students are involved in the use of concrete media .The stage of organizing learning, students are used to carrying out activities according to activity procedures and conducting questions and answers with the teacher according to the time allocation. All students were very active in answering every question given by the teacher . They look very happy when answering then given a star indicating their answer is correct. In the group investigation guidance stage, students do not ask questions when something is not understood. The teacher is maximal in providing guidance or answering questions from students related to activities. Students in gathering information from various relevant sources. They give each other their opinions, process various information and analyze it well. In the development and presentation stage of the work, all groups present their work well and on time. The results of the work submitted are also relevant to the information available. In the analysis and evaluation phase, all students actively give their opinions on the work of other groups, are able to conclude and convey information clearly and systematically.

Overall the learning carried out in cycle II went well, so the researchers decided to stop the research because learning had reached research performance indicators. In this study, researchers concluded that achieving learning objectives by using the PBL model can increase student motivation

The results of this study are relevant to research conducted by research conducted by (Rusman, 2011: 229-230) Through the student's *problem based learning realistic* learning model can know buying and selling activities as one of fulfilling needs through real problems

presented, in the *problem-based learning realistic* learning model presented through problem-based learning needed to confront real world challenges, the ability to deal with everything that is new and the complexities that arise. There is

Equipping students with critical reasoning skills is the same as getting them used to always applying the knowledge they have in everyday life (Jupriyanto, 2018; Pardimin et al, 2022). Critical reasoning in the Pancasila Student Profile strengthening project is a characteristic of students who are able to solve problems by using steps to solve them in a systematic, logical and careful manner (Pusmendik, 2022). Kamilah et al (2019:71); Nisa (2020) & Ritonga (2022) state that the PBL model is a learning model that is directed at solving various problems, especially those related to subject matter in real life. Therefore the use of the PBL model is appropriate as a step to increase students' critical reasoning dimensions.

## 5. Conclusion

Based on the research results it can be concluded that the use of the *Problem Based Learning model* to increase student learning motivation can increase the dimensions of critical reasoning content of natural and social sciences . This can be shown from the dimensions of students' critical reasoning which have increased starting from the pre-cycle stage to cycle 2, which initially the average student's critical reasoning dimension was in the pre-cycle 53.33 % , then cycle 1 71.55 % and cycle II of 89.95 %. The average of students' critical reasoning dimensions in one class increased by 35 %. The *Problem Based Learning* learning model is able to increase the dimensions of student learning motivation in natural and social science content because it contains activities to analyze the problems presented and then look for solutions to solve these problems. The learning syntax with

the Problem Based Learning model is: 1) student orientation on problems, 2) organizing students in learning, 3) guiding student investigations, 4) developing and presenting the work, and 5) analysis and evaluation of problem-solving processes. Based on the final review, it can be said that the PBL model is appropriate for overcoming the problem of low dimensions of student learning motivation

## 6. Thank-you note

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