Application of the Problem-based Learning Model to Improve the Class V Elementary Student Learning Outcomes

Regina Sitorus[1*,] Patri Janson Silaban[1], Bogor Lumban Raja [1] ,Nova Florentina Ambarwati[1], Anton Sitepu [1]

[1]Universitas Katolik Santo Thomas, Medan, Indonesia
reginasitorus429@gmail.com, patri.jason.silaban@gmail.com, bogorlumbanraja@gmail.com, novaflorentina20@gmail.com , anton_sitepu@gmail.com
corresponding author: reginasitorus429@gmail.com

ABSTRACT

This study aims to improve student learning outcomes on the theme of heat and its transfer to the sub-theme of temperature and heat by applying the Problem-based Learning model for class V of SD Negeri 091585 AFDELING 7 DOSIN. The research type is Classroom Action Research. The research subjects involved 24 class V students. Based on the research results, it shows that there is an increase in student learning outcomes by implementing the Problem-based Learning model. This can be seen from the increase in student learning outcomes. Of the initial test (pretest), the student learning results were obtained before implementing the Problem-based Learning model. There were three people who completed it with a percentage of 12.5% while 21 people did not complete it with a percentage of 87.5% and an average of 37.95. In the first cycle, the observations of teacher activities were obtained at 52% while observations of student activities were obtained at 50%, there were 11 students who completed their learning outcomes with a percentage of 45.83% and 13 students who did not complete it with a percentage of 54.17%, and with an average value of 59.95. In cycle II, teacher activity observations were obtained at 88% while student activity observations were obtained at 90%. There were 19 students who completed their learning outcomes with a percentage of 79.17% and five students who did not complete it with a percentage of 20.82% with an average value of 73.45. This shows that there is a significant positive influence from the use of the Problem-based Learning model on student learning outcomes in theme heat and its transfer in class V at SD Negeri 091585 AFDELING 7 DOSIN in the academic year 2022/2023.

Keywords: *student learning outcomes, problem-based learning model, heat and its transfer*

INTRODUCTION

Education is an effort carried out systematically to create a teaching and learning atmosphere so that students can develop their potential. Education also plays an important role in shaping the quality of a nation. In principle, a situation like this demands new ideas in the world of education, including the mindset of teaching staff. Teaching staff should not just distribute their knowledge without anticipating where that knowledge will be implemented by students. So that the management of education by teachers must be mature and planned to be applied to students.

Even though it has been regulated in such a way, basically the main problem with education in Indonesia today is related to the low absorption capacity of students towards lessons, so that educational goals are difficult to achieve. Therefore, the teacher's job is to help and provide a pleasant learning experience, to be able to improve student learning outcomes according to student interests and abilities. Learning outcomes are the culmination of student learning success towards predetermined learning goals. (Nawawi in Susanto, 2013:5) states that learning outcomes are the level of success of students in studying subject matter at school which is expressed in the scores obtained from the results of tests regarding a number of certain subject matter. Every learning process certainly wants students to achieve good learning outcomes. However, in reality, the learning outcomes achieved by students are not always as good as expected.

The 2013 curriculum is a new curriculum based on thematic learning which emphasizes student-centred learning activities. This thematic learning is oriented to children's developmental needs. This learning uses themes that are close to students' lives so that learning becomes more meaningful, allowing students to search for themselves and discover what they will learn. When compared to conventional learning, thematic learning emphasizes active student involvement both cognitively and skills in the learning process. (Donna et al., 2021:38) state that thematic learning is learning that combines various subjects with students' daily environment as a source of learning. Thematic learning places greater emphasis on active involvement of students in the learning process, so that students gain direct experience and are trained to discover for themselves the various knowledge they are learning.

Thus, teachers must be able to choose and apply learning models that can motivate students to be more active in participating in learning so that students' abilities and learning outcomes can be better. The learning model that can be used to increase student activity and learning outcomes is the Problem Based Learning (PBL) model. Problem Based Learning (PBL) is learning that focuses on solving problems by students themselves, interpreting and explaining real phenomena and building their understanding of that phenomenon (Anzelina & Imelda 2019:16). In problem-based learning (PBL), problems are designed to require students to gain knowledge, make them proficient in solving problems, and have their own learning strategies and skills for participating in teams. The Problem Based Learning model requires students to be actively involved in the process of learning activities. This model can only occur if teachers can create an open classroom environment and guide the exchange of students' ideas. (Dewina et al., 2017:47) stated that "in the PBL process, the activities carried out by the teacher are to present real world problems in the classroom which are of course related to the material or indicators to be achieved, so that students will be directly involved in solving existing problems.

Based on the results of observations and interviews conducted by researchers in class V of SD NEGERI 091585 AFDELING 7 DOSIN with Mrs. Latifa Hanum, it was found that there were still few books for learning, and only teachers had books, causing a lack of interest in learning for students, the only media used was surrounding context, and the teacher connects learning material with the student's environment. In classroom learning, teachers tend to use the lecture method and assignments for the learning process are still teacher-centered so that the atmosphere created during learning activities becomes boring. Students are still less active in the learning process, like playing in class such as disturbing friends, hitting the table with a ruler, and other things that affect the learning atmosphere. During learning, students still lack focus in capturing learning due to the lack of interest in learning from students.

Based on the scores for Theme 6 "Heat and its Transfer" Subtheme 1 class V STATE SD 091585 AFDELING 7 DOSIN for the 2022/2023 Academic Year, it was found that students' knowledge was very low in the table below.

Table 1. Final Semester Exam Scores

Subjects	Amount student	KKM	Student scores	Frequency	Percent	Information
Science	26	70	<70	8	30%	Complete
			>70	18	69%	Incomplete
Indonesian	26	70	<70	9	34%	Complete
			>70	17	64%	Incomplete
Arts, Culture and Crafts	26	70	<70	11	42%	Complete
			>70	15	57%	Incomplete

Data Source: From the homeroom teacher for class V of SD NEGERI 091585 AFDELING 7 DOSIN

Based on the data above, student learning outcomes on theme 6 Heat and its Transfer are 26 students in class V of SD Negeri 091585 AFDELING 7 DOSIN, in the science subject which meets the KKM there are 8 students (30%) and 18 students who do not complete it Educate (69%). In Indonesian language lessons, there were 9 students (34%) who met the KKM and 17 students (64%) did not complete them. In SBDP lessons, 11 students (42%) met the KKM and 15 students (57%) did not complete them. So it can be concluded that the science, Indonesian and SBDP subjects cannot be said to be successful because there are more students who do not achieve the KKM score than students who achieve the KKM score. This study aims to improve student learning outcomes on the theme of heat and its transfer to the sub-theme of temperature and heat by applying the Problem Based Learning model for class V of SD Negeri 091585 AFDELING 7 DOSIN.

LITERATURE REVIEW
Learning model

A learning model is a plan or pattern that is used as a guide in planning learning to help students learn effectively both in terms of knowledge, attitudes and special skills. Learning models can be used as a way to improve the quality of student learning and have many variations. A learning model is a plan for learning activities so that implementation can run well, be interesting, easy to understand and in accordance with a clear sequence (Shilphy 2020:13). Meanwhile, according to Joyce and Weil in (Darmadi, 2017:42), the learning model refers to the learning approach that will be used, including teaching objectives, stages in learning activities, learning environment, and classroom management.

Learning models are used to simplify the learning process in achieving learning goals. Teachers are required to be able to determine or adapt the learning model that will be used in learning and that can be understood by students. With using a learning model will help in achieving goals learning. The choice of this model is greatly influenced by the nature of the teaching materials, the goals to be achieved, and the level of students' abilities. This learning model is very effective in improving the quality of teaching and learning activities because students are required to play an active role in learning activities. Learning is no longer centered on teachers but on students, where teachers no longer explain learning material or lecture but students are required to be more active.

Learning models can help teachers carry out tasks during classroom teaching. By adapting or choosing a learning model that suits the learning environment and learning materials, teachers can create a pleasant learning atmosphere so that students become more enthusiastic about participating in learning, Problem Based Learning Model. The application of Problem Based Learning is an approach that examines real world problems as the context that students use to gain knowledge. Teachers use real-world questions and role-playing to train them to learn to probe, question, and challenge students' thinking.

Dewina et al., (2017:47) states that "in the PBL process, the activities carried out by the teacher are to present real world problems in the classroom which are of course related to the material or indicators to be achieved, so that students will be directly involved in solving existing problems. Different from (Fauziah et al., 2018:92) states that the Problem Based Learning (PBL) model is a learning model that presents problems for students to solve through group discussions so that students are the center of the learning process, not teachers anymore. (Ardianti et al., 2021: 28) explained that Problem Based Learning (PBL) is a learning model in which students are faced with real problems that have been experienced by students. (Zai et al., 2020:345) explained that the Problem Based Learning model is a learning model that uses real (authentic) problems, so that students can construct their own knowledge, make students independent and increase student confidence.

According to the opinion of the experts above, it can be concluded that problem based learning is a problem-based model where the teacher presents a problem that is related to the students' real world and the students are assigned to solve the problem. The application of the Problem Based Learning (PBL) model is intended to determine problem solving skills, train independence, learning motivation and student learning

outcomes. This learning model can provide active learning conditions for students and involve students in solving problems. In this way, students will be able to learn knowledge related to the problem and at the same time have problem-solving skills. With this model students are trained to be able to solve a problem and find a solution. This learning model can provide active learning conditions for students and involve students in solving problems. In this way, students will be able to learn knowledge related to the problem and at the same time have skills in solving problems. The role of the teacher in the Problem Based Learning model is as a facilitator and guiding and helping students so that the students play an active role in the classroom during learning. In this model the teacher's task is no longer to explain but to direct students to solve the problems that have been given and find solutions to these problems. This is done so that students can be trained to regularly solve problems on their own and find solutions and improve student learning outcomes.

Problem-based learning can also begin by working in small groups among students. Students investigate on their own and find problems under the guidance of the teacher. Problem-based learning gives students the challenge of independent learning. In this case, students are more invited to form knowledge under the guidance or direction of the teacher, whereas in traditional learning students are more considered as recipients of knowledge provided by the teacher in a structured manner. These problems are usually taken from textbooks or from other sources, for example from events that occur in the surrounding environment, from events in the family or from social events. This is adjusted to the applicable curriculum. In the curriculum, problems are designed that require students to gain important knowledge, make them proficient in solving problems, have their own learning strategies and have the skills to participate in teams. Problem Based Learning does not expect students to just listen, take notes, then memorize lesson material, but through Problem Based Learning students actively think, communicate, search and manage data, and finally draw conclusions.

In the Problem Based Learning model, students are expected to be more active in finding answers to existing problems. Students must be able to interact to produce solutions and have a high sense of curiosity. This will motivate students to continue looking for answers to the problems to be solved. In the Problem Based Learning model, students are required to build self-confidence so that they will be highly curious, honest, thorough, and try hard so that the problems they face can be resolved. Students are also accustomed to being able to convey their ideas or thoughts openly. They are also trained to be able to make decisions, dare to speculate and be able to reflect on the effectiveness of the problem solving process.

With the Problem Based Learning model, meaningful learning occurs. Students who learn solve problems, apply what they know or try to figure out what is needed. Learning can be more meaningful and measurable when students are exposed to situations where concepts are applied. Problem Based Learning can improve student learning outcomes, develop student work initiative, enthusiasm for learning, and can develop interpersonal relationships in group work.

Learning Outcomes

Saputra & Ismet, (2018:26) stated that learning outcomes are a reference for knowing students' strengths and weaknesses in various fields of study or subjects they are taking, then it can be seen how effective the learning process is in changing students' behavior towards the expected educational goals. different from (Nurrita, 2018:175) explains that learning outcomes are the abilities that students have after following the learning process which includes cognitive, affective and psychomotor abilities. explains that learning outcomes are the abilities that students have after following the learning process which includes cognitive, affective and psychomotor abilities. Firmansyah in (Syachtiyani & Trisnawati, 2021:93) said that learning outcomes are the final results obtained by students after completing the learning process which can be used as a measure of whether the student has succeeded in understanding the material presented or not. Nuwawi in (Susanto, 2013:5) stated that learning outcomes are the level of success of students in studying subject matter at school which is expressed in the scores obtained from test results regarding a number of certain subject matter.

According to the opinion of the experts above, it can be concluded that learning outcomes are the level of success obtained by students during learning in accordance with the objectives set and as a reference for knowing whether they are successful or not in understanding learning. Good learning results can be a reference that the learning process experienced by individuals and groups can be said to be successful. Apart from that, learning outcomes are useful for evaluating what strengths and weaknesses each individual has, the appropriate learning model used by educators, the effectiveness of teaching methods, to find out how far an individual's knowledge is and to provide the individual with experience that is useful for future life.

METHOD
Place and time of research
The research location chosen was SD Negeri 091585 AFDELING 7 DOSIN, Tanah Jawa District, Simalungun Regency, for class V students in semester 2, Academic Year 2022/2023.

Research methods
This research was conducted using mixed methods through classroom action research (PTK). Mixed methods are a combination of qualitative and quantitative methods. which leads to efforts to improve student learning outcomes by using the Problem Based Learning model, where researchers will carry out stages in the form of a research program cycle consisting of two cycles. Each cycle takes place according to the changes achieved.

Suhardjono in Ritonga et al., (2021:50) Explain Classroom Action Research as action research carried out in classrooms with the aim of improving or improving the quality of learning processes or practices. Different from Arikunto in Diana et al., (2021:138) Classroom Action Research (CAR) is an effort made by teachers to improve the quality of the teaching and learning process which will have an impact on lesson outcomes. whereas, according (Wijaya & Syahrum, 2013:43) PTK is a form of research that is attached to teachers, namely raising actual problems experienced by teachers in the field.

Based on the opinions of the experts above, it can be concluded that the meaning of Classroom Action Research is research carried out by teachers to improve the teaching and learning process and student learning outcomes in the classroom, as well as finding solutions to these problems.

Data collection technique
Data collection techniques used in this study were tests and observation. One evaluation to determine students' learning abilities is a test. Arikunto in Pahleviannur et al., (2022:84) states that a test is a tool or procedure used to find out or measure something, using predetermined methods and rules. This test can be used to determine students' ability to understand the material they have studied. The form of test used by researchers is a multiple choice test. In multiple choice tests, students are asked to provide correct answers to the questions arranged in the evaluation sheet.

The second technique used is observation. Observation is a technique or way of collecting data by observing ongoing activities. (Sugiyono, 2017:145) explained that observation as a form of data collection technique has specific characteristics when compared to other techniques, namely interviews and questionnaires. If interviews and questionnaires always communicate with people, then observation is not limited to people, but also other objects. The observation process is carried out during learning activities. The purpose of this observation is to determine whether there is conformity between planning and implementing actions.

Validity test
Sugiyono, (2017:267) explains that validity is the degree of accuracy between the data that occurs on the research object and the power that can be reported by the researcher. Thus, valid data is data that is "not different" between the data reported by the researcher and the data that actually occurs at the research object. To prove whether the data is appropriate or not, the questions are tested using the formula:
Valid = rhitung > rtabel

$$r_{xy} = \frac{N\sum XY - (\sum X)(\sum Y)}{\sqrt{\{(N\sum x^2 - (\sum X)^2\}\{NY^2 - (\sum Y)^2\}}} \dots\dots\dots\dots\dots\dots\dots\dots\dots\text{(Widoyok, 2014:241)}$$

Information:

r_{xy} = correlation coefficient between variable X
   and Variable Y
N = Number of test participants
X = Test result value
Y = Daily average value

Reliability Test
   Reliability shows that an instrument is trustworthy enough to be used as a data collection tool. To test the reliability of the test in research, the following formula is used:

$$r_{11} = \left(\frac{k}{k-1}\right)\left(\frac{s^2 - \sum pq}{s^2}\right)\dots\dots\dots\text{Sugiyono, (2017:132)}$$

Information:

r_{11} = Instrument reliability
k   = Number of question details
P   = proportion of subjects who answered the
     item correctly
q   = proportion of subjects who answered the
     item incorrectly (q=1-p)
$\sum pq$ = the number of products between p and q
S   = total variance

RESULTS AND DISCUSSION
Completeness of Individual Student Learning Results in the Pretest
   It can be seen that of the 24 students, only 3 students got a pass mark and reached the Minimum Completeness Criteria (KKM), while 21 students did not complete and did not reach the predetermined Minimum Completeness Criteria (KKM), namely 70. This shows that the students' abilities are still high. relatively low. To find out the presentation of learning results in the test, you can see the graphic image below.
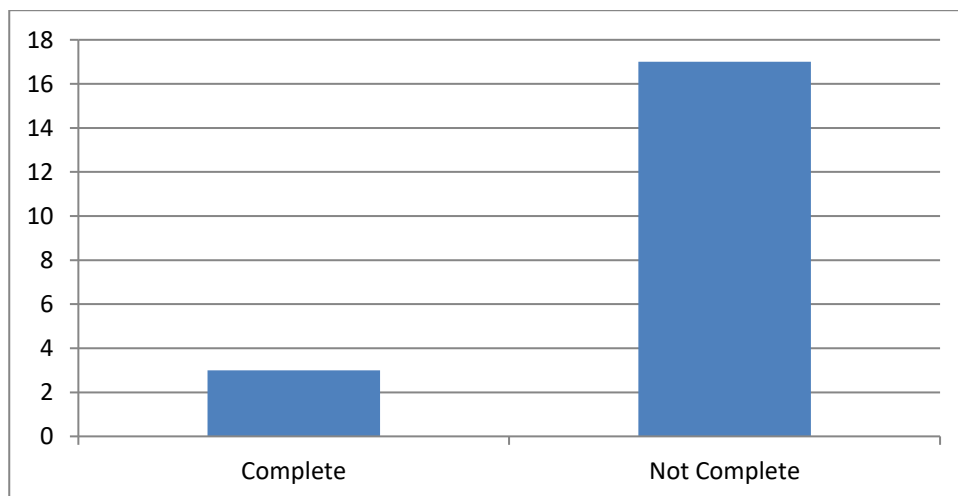

Figure 1. Results in the Pretest

Completeness of Classical Student Learning Results in the Pretest

To calculate completeness classically, it can be calculated using the following formula:

$$P = \frac{\Sigma \text{students who have completed their studies}}{\Sigma \text{students}} \times 100\%$$

Students who have completed their studies are:
P = 3/24 x 100% = 12,5%

Students who have not completed their studies are:
P = 17/24 x 100% = 87,5

Once the individual completeness is known, then classically what can be seen from the learning outcomes of students in one class can be seen in the graph below.
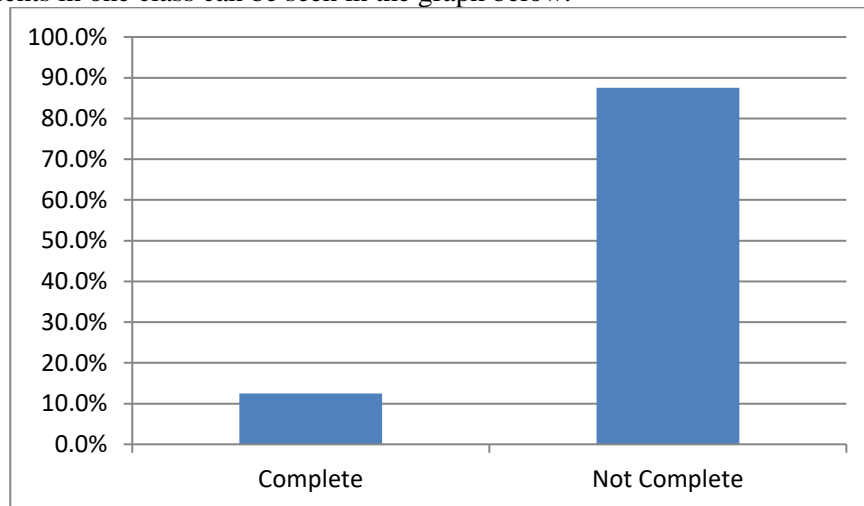

Figure 2. Completeness of Classical Student Learning Results in the Pretest

Based on the graph above, it can be seen that the student learning outcomes in the pretest on theme 6 Heat and Transfer are still relatively low, with an average score of 45.55. Of the 24 students, 3 students (12.5%) had high learning outcomes and 21 students (87.5%) had incomplete learning outcomes or were classified as low grades.

Average Student Learning Results in the Pretest

From the results of individual learning completeness and classical completeness, learning results can be obtained using the following formula:

$$X = \frac{\Sigma x}{\Sigma N}$$
$$X = \frac{911}{24}$$
$$X = 37,95$$

So, based on the results that have been calculated using this formula, it can be concluded that the average value of student learning outcomes in the pretest is 37.95. The completeness of student learning outcomes is still relatively low. There are several difficulties experienced by students in working on pretest questions. The scores obtained have not reached the achievement indicator criteria, so there must be improvements in implementing better learning.

Completeness of Individual Student Learning Results in Cycle I

It can be seen that of the 24 students, only 11 students got a complete score and reached the Minimum Completeness Criteria (KKM) while 13 students did not get an incomplete score and did not reach the Minimum Completeness Criteria (KKM) in taking the final test in cycle I. Students Those who are said to have completed their studies are students who achieve a score in accordance with the predetermined Minimum Completeness Criteria, namely 70, while students who do not complete their studies are students who receive a score below the predetermined Minimum Completeness Criteria, namely 70. The completeness of individual learning outcomes in the table below can be seen in comparison in the graph below.
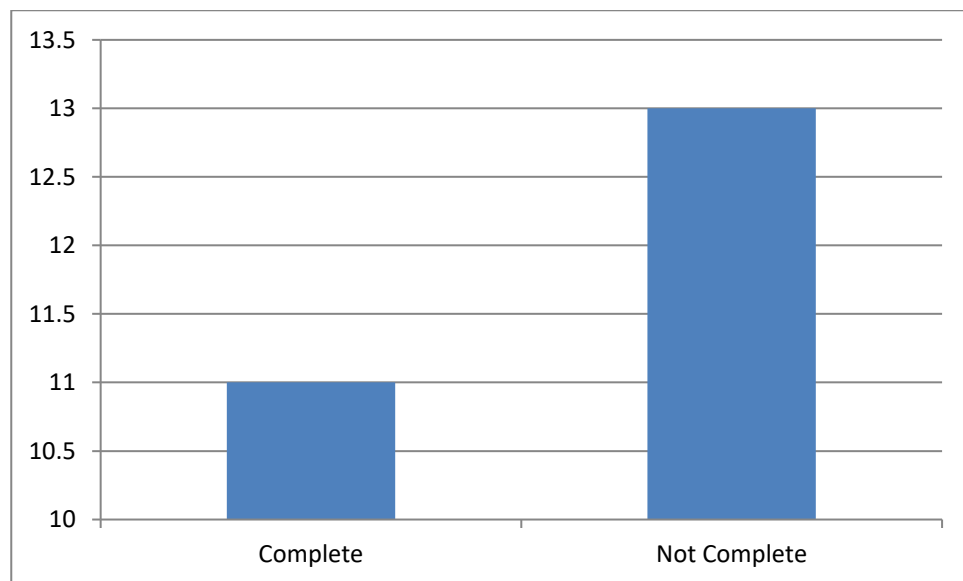

Figure 3. Average Student Learning Results in the Pretest

Completeness of Classical Student Learning Outcomes in Cycle I

After knowing individual completeness, the next step is to complete the classical learning outcomes which can be seen from the learning outcomes of students in one class. Students who are said to have completed their classical learning outcomes if in the class there are 75% of students who received a complete score and achieved a score below the Minimum Completeness Criteria (KKM) which has been determined, namely 70. Completeness of classical student learning outcomes can be seen as follows:
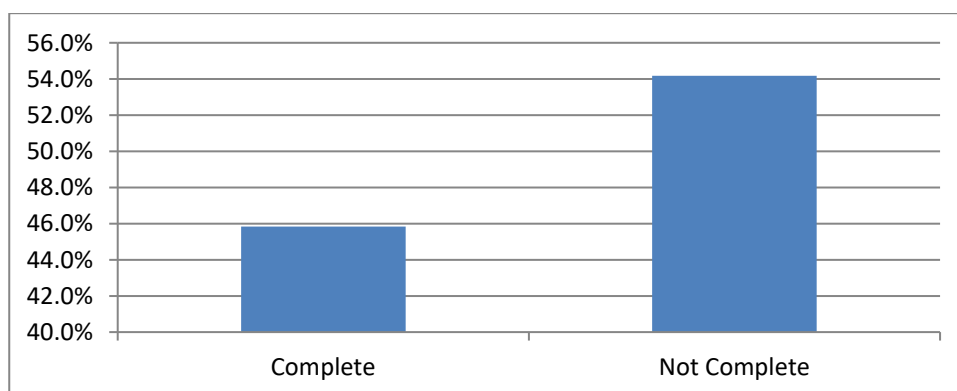

Figure 4. Completeness of Classical Student Learning Outcomes in Cycle I

To calculate completeness classically, it can be calculated using the following formula:

$$P = \frac{\Sigma students\ who\ have\ completed\ their\ studies}{\Sigma students} \times 100\%$$

Students who have completed their studies are:
P = 11/24 x 100% = 45.83%

Students who have not completed their studies are:
P = 13/24 x 100% = 54.17%

Average Student Learning Outcomes in Cycle I

From the results of individual learning completeness and classical completeness, learning results can be obtained using the following formula:

$$X = \frac{\Sigma x}{\Sigma N}$$
$$X = \frac{1439}{24}$$
$$X = 59.95$$

Based on the data obtained in cycle I, it can be seen that out of 24 students, action was given, namely the Problem Based Learning Model, showing that in cycle I there were 11 students who completed their studies with a percentage of 45.83% and the average class score was 59.95.

OBSERVATION

Observations for Teacher Activities

The observation stage in cycle I was carried out by the researcher on the class teacher, namely from the beginning of implementing learning actions on the theme of Heat and Transfer using the Problem Based Learning model. This observation was carried out during the teaching and learning process to observe the extent to which the teacher was successful in the teaching and learning process by applying the Problem Based Learning Model. The observations made were as follows:

Table 2. Observations for Teacher Activities

No	Observed aspects	Evaluation				
		1	2	3	4	5
1	The teacher opens the lesson and conducts apperception by presenting achievement indicators.		✓			
2	The teacher conveys the learning topics that will be taught and the learning objectives.		✓			
3	Divide students into several groups.			✓		
4	The teacher guides students in group discussions.			✓		
5	Teachers motivate students to actively ask questions about things that students do not understand.			✓		
6	Provide opportunities for students to search for information on their own.			✓		
7	Use of time allocation in accordance with the Learning Implementation Plan (LIP).			✓		
8	The teacher conducts an evaluation after the learning process is complete.		✓			
9	Directing students to make conclusions at the end of learning.		✓			
10	The teacher closes the lesson by greeting.			✓		
	Amount		**26**			

Based on the observations of the class V observer teacher in cycle I, it can be seen in the table above that the research activities during the teaching and learning process took place using the Problem Based Learning model on the theme of Heat and Transfer in class 1 and 2 class V State Elementary School 091585 AFDELING 7 DOSIN Learning Year 2022/2023 in cycle I in conveying learning objectives is still low. The results of teacher observation data reached 52%, which is included in the sufficient criteria.

Student Activity Observation Sheet

Researchers also observed the level of students' abilities. The aim is to assess students' attitudes and skills in participating in the learning process carried out using the Problem Based Learning model. The results of observing student activities in cycle I can be seen in the table below:

Table 4. Student Activity Observation Sheet

No	Observed aspects	Evaluation				
		1	2	3	4	5
1	Provide responses to learning material				✓	
2	Use more than one way to solve problems		✓			
3	Find new strategies in solving problems		✓			
4	Write down the answer ideas on the worksheet			✓		
5	Provide responses to learning material			✓		
6	Explain ideas that arise to friends			✓		
7	Presenting the results of student work		✓			
8	Explain the problem by utilizing the idea		✓			
9	Students' enthusiasm for learning		✓			
10	Explain the problem by utilizing the idea		✓			
	Amount			**25**		

Based on the table of student activity observation results above, the activities carried out by researchers acting as teachers during the learning process using the Problem Based Learning model to improve student learning outcomes, this can be seen from the observation results obtained were 50% with sufficient criteria.

Completeness of Learning Outcomes for Individual Students in Cycle II at the End of Learning

The learning outcomes of students in cycle II on the theme of Heat and its transfer sub-theme Temperature and Heat have increased compared to the learning outcomes of students in cycle I, with an average score of 71. It can be seen that of the 19 students who received a complete score and achieved the Completion Criteria Minimum (KKM) while 5 students had learning outcomes that were still low or did not reach the predetermined KKM value, namely 70. The comparison of individual completeness in the table below can be seen in the following diagram:
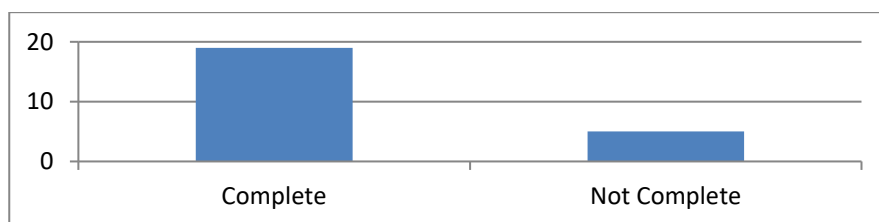

Figure 5. Completeness of Learning Outcomes for Individual Students in Cycle II at the End of Learning

Completeness of Classical Student Learning Outcomes in Cycle II

Based on the learning results obtained by researchers in the second cycle, classical completion reached 79.17%, while 20.82% were incomplete, so in the implementation of cycle II there was an increase in students' classical learning outcomes, for more details, see the diagram below:
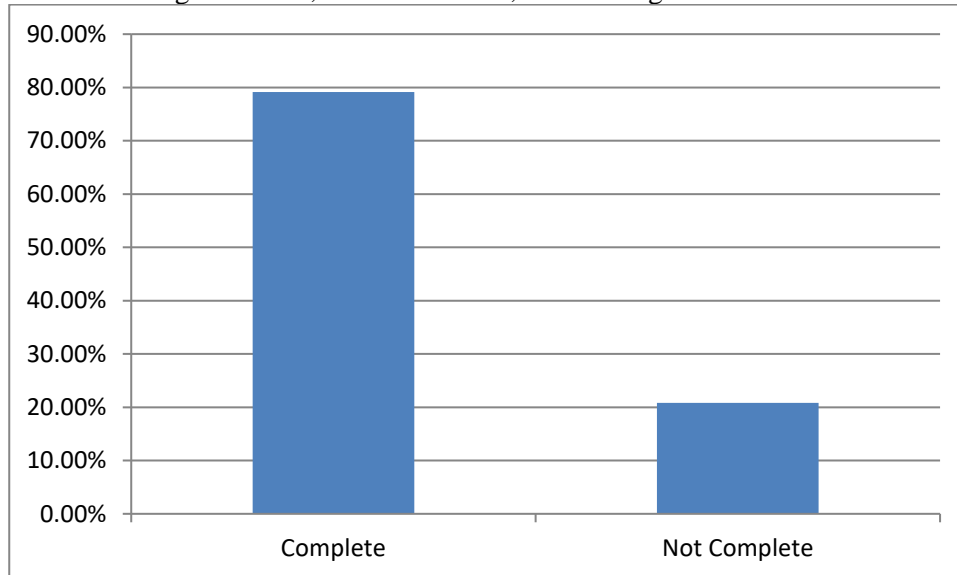

Figure 6. Completeness of Classical Student Learning Outcomes in Cycle II

OBSERVATION
Observations for Teacher Activities in Cycle II

During the teaching and learning process, using the Problem Based Learning model, the observer makes observations at teaching and learning activity meetings in the class. The observer has the role of observing all teacher activities in ongoing teaching and learning activities. The following results of observations of activities in cycle II can be seen in the following table:

Table 6. Observations for Teacher Activities in Cycle II

No	Observed aspects	Evaluation				
		1	2	3	4	5
1	The teacher opens the lesson and conducts apperception by presenting achievement indicators.			✓		
2	The teacher conveys the learning topics that will be taught and the learning objectives.				✓	
3	Divide students into several groups.					✓
4	The teacher guides students in group discussions.					✓
5	Teachers motivate students to actively ask questions about things that students do not understand.				✓	
6	Provide opportunities for students to search for information on their own.					✓
7	Use of time allocation in accordance with the Learning Implementation Plan (LIP).					✓
8	The teacher conducts an evaluation after the learning process is complete.			✓		
9	Directing students to make conclusions at the end of learning.					

			✓
10	The teacher closes the lesson by greeting.		✓
	Amount		**44**

Based on the table above, the results of observations of teachers in cycle II have increased compared to the results of observations of teachers in cycle I using the Problem Based Learning model. In cycle II the results obtained were 88% (Very Good).

Observations for Student Activities in Cycle II

Researchers also observed students' ability levels with the aim of assessing how students' attitudes and skills in participating in the learning process were carried out by applying the Problem Based Learning model on the theme of Heat and its Transfer. The results of observing student activities in cycle II can be seen in the following table:

Table 8. Observations for Student Activities in Cycle II

No	Observed aspects	Evaluation				
		1	2	3	4	5
1	Provide responses to learning material					✓
2	Use more than one way to solve problems				✓	
3	Find new strategies in solving problems				✓	
4	Write down the answer ideas on the worksheet					✓
5	Provide responses to learning material					✓
6	Explain ideas that arise to friends					✓
7	Presenting the results of student work					✓
8	Explain the problem by utilizing the idea				✓	
9	Students' enthusiasm for learning					✓
10	Explain the problem by utilizing the idea			✓		
	Amount			**45**		

Based on the table of observation results of student activities above, the activities carried out by researchers who act as teachers during the learning process with student learning, this can be seen from the observation results obtained are 90% with very good criteria. Where the results of observations of students in cycle II have increased compared to the results of observations of students in cycle I.

CONCLUSIONS AND RECOMMENDATION

Based on the results of research conducted by researchers at SD Negeri 091585 AFDELING 7 DOSIN for the 2022/2023 academic year regarding the application of the Problem Based Learning model to improve student learning outcomes in class V, the following conclusions can be drawn:

1. Problem Based Learning on theme 6 hot and its transfer to subtheme 1 learning 1 and 2 class V SD Negeri 091585 AFDELING 7 DOSIN Academic Year 2022/2023 has an effect on student learning outcomes. This can be seen in the learning outcomes obtained by individual students, namely in pre cycle with an average value of 37.95, in cycle I it was 59.95, then in cycle II it increased with an average value of 73.45. This shows that in cycle I to cycle II there was an increase.
2. Problem Based Learning on theme 6 hot and its transfer to subtheme 1 learning 1 and 2 class V SD Negeri 091585 AFDELING 7 DOSIN Academic Year 2022/2023 has an influence on student learning outcomes.

This can be seen in the learning outcomes obtained by students in percentage, namely in Pre cycle with a value of 12.5%, in cycle I with a value of 45.83% then in cycle II it increased with an average value of 79.17%. This shows that in cycles I to cycle II there was an increase.

3. Implementation of learning using the Problem Based Learning Model on theme 6 hot and its transfer to subtheme 1 learning 1 and 2 class V SD Negeri 091585 AFDELING 7 DOSIN Academic Year 2022/2023 on the results of observations of teacher activities in cycle I obtained 52% in the sufficient category and in cycle II it increased to 88% in the very good category.

4. Implementation of learning using the Problem Based Learning Model on theme 6 hot and its transfer to subtheme 1 learning 1 and 2 class V SD Negeri 091585 AFDELING 7 DOSIN Academic Year 2022/2023 on the results of observations of student activities in cycle I obtained 50% in the sufficient category and in cycle II increased to 90% very good category.

For recommendations in this research, the application of problem-based learning models has various benefits that can have a positive impact on student learning outcomes, namely; Improved Conceptual Understanding: problem-based learning models help students understand concepts more deeply. Students not only memorize information but also understand how the concept is applied in real contexts, Improved Academic Achievement: Several studies have shown that students who learn through problem-based learning models tend to get better grades on exams that measure deep understanding and critical thinking skills, Improved Information Retention: Because students are more actively involved in the learning process, they are more likely to remember information long-term compared to traditional learning methods, Development of Critical Thinking and Problem-Solving Skills: problem-based learning models require students to analyze, synthesize, and evaluate information, which contributes to the development of higher critical thinking skills, Increased Student Engagement and Motivation: problem-based learning models are often considered more interesting and relevant to students, so they are more motivated to learn. This motivation contributes to better learning outcomes, Improved Collaborative Skills: Since problem-based learning models are often conducted in groups, students learn to work collaboratively with others, which can improve learning outcomes through discussion and exchange of ideas, Improved Learning Independence: problem-based learning models encourage students to take initiative and take responsibility for their own learning, which leads to better learning outcomes because they are more engaged in the learning process, Improved Application of Knowledge: Students who learn through problem-based learning models are more likely to be able to apply their knowledge in new situations or in the real world, which is an important indicator of effective learning.

REFERENCES

Anzelina, D., & Imelda. (2019). *Respon Siswa Terhadap Pembelajaran Problem Based Learning Dalam Meningkatkan Higher Order Thinking Skills*. 5(1), 11–19.

Ardianti, R., Sujarwanto, E., & Surahman, E. (2021). *Problem-based Learning : Apa dan Bagaimana*. 3(1), 27–35.

Darmadi. (2017). *Pengembangan Model dan Metode Pembelajaran dalam Dinamika Belajar Siswa*. Deepublish.

Dewina, S., Suganda, O., Widiantie, R., Kuningan, U., Kuningan, U., & Menganalisis, K. (2017). *Pengaruh Model Pembelajaran Problem Based Learning (Pbl) Terhadap Kemampuan Menganalisis Dan Keterampilan*. 9. https://doi.org/10.25134/quagga.v9i02.748.Abstrak

Diana, R. F., Sufia, R., & Ixfina, F. D. (2021). *Urgensi Penelitian Tindakan Kelas (PTK) Untuk Meningkatkan Kualitas Pembelajaran Pada Masa New Normal The Urgency of Classroom Action Research (CAR) to Improve Learning Quality During New Normal Period*. 4(2), 135–146.

Donna, R., Egok, A. S., & Febriandi, R. (2021). *Jurnal basicedu*. 5(5), 3799–3813.

Fauziah, I., Maarif, S., & Pradipta, T. R. (2018). *Self Regulated Learning Siswa Melalui Model Problem Based Learning (PBL)*. 4(2), 90–98.

Nurrita, T. (2018). *Pengembangan Media Pembelajaran Untuk Meningkatkan Hasil Belajar Siswa*. *03*, 171–187.

Pahleviannur, M. R., Mudrikah, S., Mulyono, H., Bano, V. O., Rizqi, M., Syahrul, M., Latif, N., Prihastari, E. B., & Aini, K. (2022). *Penelitian tindakan kelas*. Tim Pradina Pustaka.

Ritonga, R., Iskandar, R., Ridwan, Y., & Aji, R. (2021). *Penelitian Tindakan Kelas*. Rajawali Buana Pustaka.

Saputra, H. D., & Ismet, F. (2018). *Pengaruh Motivasi Terhadap Hasil Belajar Siswa SMK*. *18*(1), 25–30.

Shilphy, O. (2020). *Model-Model Pembelajaran*. Deepublish.

Silaban, P. J. (2015). *Meningkatkan Motivasi dan Kemampuan Pemahaman Matematis Siswa Melalui Pembelajaran Kooperatif Tipe Tgt Berbantuan Alat Peraga Pada Mata Pelajaran Matematika di Kelas VI SD Methodist-12 Medan Tahun Ajaran 2014* (Doctoral dissertation, UNIMED).

Silaban, P. J. (2017). Meningkatkan Motivasi Dan Kemampuan Pemahaman Matematis Siswa melalui Alat Peraga Montessori Pada Mata Pelajaran Matematika Kelas IV SD ASSisi Medan. *Elementary School Journal Pgsd Fip Unimed*, *7*(4), 502-511.

Silaban, P. J. (2019). Penerapan Model Pembelajaran Inkuiri untuk Meningkatkan Hasil Belajar Siswa pada Mata Pelajaran Matematika di Kelas VI SD Negeri 066050 Medan Tahun Pembelajaran 2018/2019. *Jurnal Ilmiah Aquinas*, *2*(1), 107-126.

Silaban, P. J. (2019). Penerapan Model Pembelajaran Inkuiri untuk Meningkatkan Hasil Belajar Siswa pada Mata Pelajaran Matematika di Kelas VI SD Negeri 066050 Medan Tahun Pembelajaran 2018/2019. *Jurnal Ilmiah Aquinas*, *2*(1), 107-126.

Silaban, P. J. (2019). Efektivitas Pembelajaran Melalui Pembelajaran Kooperatif Tipe Tgt Berbantuan Alat Peraga Di Kelas Vi Sd Methodist-12 Medan Pada Kompetensi Dasar Luas Bangun Datar Sederhana. *Jurnal Ilmiah Aquinas*, *2*(2), 175-199.

Silaban, P. J., & Hasibuan, A. (2021). Hubungan Lembar Kerja Peserta Didik Berbasis Cat Terhadap Kemampuan Pemahaman Matematis Siswa. *Jurnal Ilmiah Aquinas*, *4*(1), 48-59.

Silaban, P. J., Sinaga, B., & Syahputra, E. (2024). The Effectiveness Of Developing The Realistic Mathematics Education Based On Toba Batak Culture Learning Model To Improve The HOTS Capabilities Of Prospective Elementary School Teachers. *Educational Administration: Theory and Practice*, *30*(5), 5625-5644.

Sugiyono. (2017). *Metode Penelitian Pendidikan*. Alfabeta.

Susanto, A. (2013). *Teori Belajar dan Pembelajaran di Sekolah Dasar*. Prenamedia Group.

Syachtiyani, W. R., & Trisnawati, N. (2021). *Analisis Motivasi Belajar Dan Hasil Belajar Siswa Di Masa Pandemi COVID-19*. *2*, 90–101.

Widoyok, E. P. (2014). *Penilaian Hasil Pembelajaran Di Sekolah*. Pustaka Pelajar.

Wijaya, C., & Syahrum. (2013). *Penelitian Tindakan Kelas*. Citapustaka Media Perintis.

Zai, E. M., Anzelina, D., Sinaga, R., & Silaban, P. J. (2020). *Penerapan Model Problem Based Learning Untuk Meningkatkan Hasil Belajar Tema Indahnya Kebersamaan Di Kelas IV Efri Mawati Zai , Dewi Anzelina , Reflina Sinaga , Patri Janson Silaban Universitas Katilik Santo Thomas Medan , Indonesia Pendahuluan*. *6*(2), 344–349.