EFFORTS TO INCREASE STUDENTS' LEARNING OUTCOMES THROUGH PROBLEM BASED LEARNING MODEL ON THE MATERIAL OF THE EFFECTS OF HEAT ON CHANGES IN THE FORM OF OBJECTS IN CLASS V AT SDN 112 PALEMBANG

Anisa Resti Latifah[1], Vinencia Ika Indralin[2], Siti Dewi Maharani[3]

[1,3] Universitas Sriwijaya/Palembang, Palembang, Indonesia
[2] SDN 112 Palembang, Indonesia
[1]anisaresti0912@gmail.com, [2]vinenciaindralin888@gmail.com, [3]siti_dewi_maharani@fkip.unsri.ac.id

ABSTRACT

This research is a class action research (CAR) conducted in class V SDN 112 Palembang. This research was conducted in class V A with a total of 25 students consisting of 12 boys and 13 girls. This study aims to improve the learning outcomes of students on the science content of the material of the effect of heat on changes in the forn of objects by using the problem based learning model in class V A SDN 112 Palembang. Data collection techniques in this research used test and nontest. I the form of observation and documentation. Pre-cycle results with KKM 70, the acquisition of scores obtained by students is still a lot below KKM, <70 there are 21 students and there are 4 completed students. Based on the results of this research, the action on cycle 1 using the model problem based learning has reached the KKM score of 64% of all student with an average of 70.8. Aplication of cycle 2 increased to 96% with an average of 90.8. This suggest that the application of the problem based learning model in the science content of the material of the effect of calor on changes in the form of objects in the class V A at SDN 112 Palembang can improve the learning outcomes.

Keywords: *learning outcomes, problem based learning, science*

UPAYA MENINGKATKAN HASIL BELAJAR SISWA MELALUI MODEL *PROBLEM BASED LEARNING* PADA MATERI PENGARUH KALOR TERHADAP PERUBAHAN WUJUD BENDA KELAS V DI SDN 112 PALEMBANG

ABSTRAK

Penelitian ini merupakan penelitian tindakan kelas (PTK) yang dilakukan di kelas 5 A SDN 112 Palembang. Penelitian ini dilakukan di kelas 5 dengan jumlah 25 siswa yang terdiri atas 12 orang laki-laki dan 13 orang perempuan. Penelitian ini bertujuan untuk meningkatkan hasil belajar siswa pada muatan IPA materi pengaruh kalor terhadap perubahan wujud benda dengan menggunakan model problem based learning di kelas V A SDN 112 Palembang. Teknik pengumpulan data pada penelitian ini yakni tes dan nontes berupa observasi dan dokumentasi. Hasil pra siklus dengan KKM 70, perolehan nilai yang didapatkan siswa masih banyak berada di bawah KKM yaitu <70 ada 21 siswa dan siswa yang tuntas ada 4 orang. Berdasarkan hasil penelitian ini, tindakan pada siklus I dengan menggunakan model *problem based learning* telah mencapai nilai KKM sebesar 64% dari keseluruhan siswa dengan rata-rata 70,8. Penerapan pada siklus II mengalami peningkatan menjadi 96% dengan rata-rata 90,8. Hal ini menunjukkan bahwa penerapan model pembelajaran problem based learning pada muatan IPA materi pengaruh kalor terhadap perubahan wujud benda di kelas V A SDN 112 Palembang dapat meningkatan hasil belajar siswa.

Kata Kunci: *hasil belajar, problem based learning, IPA*

INTRODUCTION

Education is learning given to students from various levels of education. It is through this education that humans will be able to maintain and improve their standard of living. A learning will certainly be able to influence students both in terms of their thoughts and

actions taken. Education is the main spear in the progress of the nation, where through the learning provided has hopes for the future for every student such as being able to provide good changes in themselves and being able to be implemented in community life. Educational objectives can be achieved well if there are appropriate supporting factors such as supported by an effective and efficient learning process. Effective learning plays a role in achieving the learning objectives to be achieved. But in a learning process, of course, do not avoid a problem that can hinder learning.

In the context of national education, it is contained in law no. 20 of 2003 in chapter 1 article 1 stated that "Education is a conscious and planned effort in creating a learning atmosphere and learning process so that students actively develop their potential to have strength in religion, self-control, personality, intelligence, good morals and self-skills, society and state . Teachers certainly play an important role in this where as a teacher of course they must be able to create learning that can improve skills and understanding related to learning material through various ways such as the use of appropriate models, interesting learning media and others. (Fakhrur Saifudin et al., n.d.: 2020) Children of primary school age are in the concrete operational stage with the age of (7-11) years (Hanafi &; Adi Sumirto, 2019). At this stage children learn more logically and concretely, and children have entered the stage of being able to think creatively and creatively and learnfrom problems. One of the lesson content in thematic learning that can meet the needs and development in stimulating children's thinking skills is the content of Natural Sciences.

A learning process certainly has learning objectives that must be achieved by students. At every learning meeting, of course, teachers must be able to realize and create a fun and effective learning atmosphere in order to influence student learning outcomes. In fact, there are still many learning processes that are not optimal that can affect students such as boredom in learning, inactivity in learning which can affect low student learning outcomes. In addressing these problems, teachers have various efforts that can

be made to be able to create fun learning and provide meaningful understanding for students. One of the efforts that teachers can make is to use learning models and learning media. Teachers must have high creativity in designing a lesson in order to deliver meaningful learning material and provide experience and understanding for students. One application that can be applied is the use of *problem-based* learning models in the implementation of material learning the influence of heat on changes in the form of objects. According to Soekamto et al in (Andi Prastowo: 2019: 53) The learning model is a variation in learning that contains syntax or systematic steps so as to facilitate its implementation in achieving a certain learning goal and this learning model serves as a reference for teachers who plan learning and teaching and learning activities. So it can be said that the learning model is a variation in learning applied by teachers in order to create teaching and learning activities that are not monotonous and boring, through variations of learning models applied in learning can make students more understanding and happy in following the learning.

The learning model used in creating a fun learning and can improve student learning outcomes is a *problem-based learning* model. The *problem-based* learning model applied is compatible with science learning materials because there are activities that are based on problems through scientific steps and produce scientific products from a learning activity or an investigation carried out by students. (Novianti et al., 2020), so that the application of this learning model is expected to be able to overcome problems that exist in students related to their learning outcomes (Husnidar & Hayati, 2021). The syntax of the problem based learning model according to Richards I. Arends in ratuamanan, 2015:256), which is adjusted to the syntax in the school learning guide, namely: 1) Orientation of students to problems. 2) invite and guide learners to learn. 3). Provide assistance to learners in an individual or group investigation. 4) Develop and provide work. 5) analyze and evaluate the problem solving process. According to Hilda Karli (2020: 25), at the age of elementary school grades 5-6, the phase in which children can think

logically and systematically, and can learn about simple decision making through group activities, by discussing a lot, proving a problem. In this case, it is very fitting with the aplication of the problems based learning model in this study.

Along with the development and progress of the field of Education, of course, there are many models and methods and media that can support a learning process that is carried out. In the 2013 curriculum which is still applied in the world of education even though a new curriculum has gradually begun to be implemented, namely the independent curriculum. The 2013 curriculum has a good goal such as being used to prepare or create the next generation who have good skills in any way, especially in terms of problem-solving and critical thinking skills. In thematic learning there are several contents or subjects. One of the lesson contents at the elementary school level in thematic learning is science content. Natural Science is a content of lessons that focus on reasoning and also the level of *crtical thinking*. Natural science studies natural phenomena that occur which are discussed through observations and experiments conducted by humans to find out their truth. Through the application of appropriate learning models and media, of course, it can improve student learning outcomes, because in every learning carried out learning outcomes are one of the criteria for assessing success in learning which can be seen through KKM. Learning outcomes for students have an understanding, namely it is an assessment of the extent to which they can know the learning material taught by their teachers (Ridwan Abdullah et al, 2020: 4). Whether or not children's learning outcomes increase can be monitored through learning outcomes and then adjusted to the applicable KKM values related to the subjects concerned.

According to Muhibbin Shah (2003: 68) in Sinar (2018: 21) learning is a process of changing all individual behavior that can remain as a result of experience and interaction which involves the cognitive level of learners seen from their learning outcomes. Learning is an activity or process that is carried out continuously and gradually in human life. Learning is not only emphasized in a class but learning can be done

anywhere, according to our needs. Because learning has no limits that we know as the principle of *life long education*. In the learning process, of course, it has a goal for students where through activeness and creativity in learning can support their learning outcomes. According to Oemar Hamalik in Dedy Kustawan (2013: 15) The learning outcome is that if someone has learned, there will be changes in behavior in that person, such as from not knowing to knowing and from not understanding to understanding. So that these learning outcomes can be used as a reference by teachers to assess the development of students in the cognitive field. The learning outcomes are analyzed in order to get feedback related to the learning outcomes that have been implemented.

According to Sinar (2018: 22), learning outcomes are the results of someone who has done or completed a learning from certain subjects as evidenced by test results in the form of learning outcome values. So it can be said that learning outcomes are the results of the learning process of students including mastery of knowledge, understanding of concepts, and the ability to implement in real life related to learning material which will later be accumulated in the form of learning outcome values.

Judging from various opinions and also the reality in field conditions, there are still many students who have learning outcomes on theme 7 events in life, especially in content or science subjects below the minimum completeness value (KKM). This statement is supported by the results of observations carried out at SDN 112 Palembang. The results showed that the scores obtained by students in the science content were still below KKM. The KKM that must be achieved by students in this science content is 70. The results of observation and information activities from class V A SDN 112 Palembang teachers in student learning activities are still less active and learning outcomes are still low because the learning system is still monotonous and teachers are not optimal in using learning variations both in terms of models and media used in learning, so that students It is difficult to understand the learning concepts given so that it affects learning outcomes. Based on the

observations made, information was obtained that there were problems related to learning on theme 7 Events in life in the content of science material the influence of heat on changes in the form of objects, so that the learning outcomes of grade V A SDN 112 Palembang students were still low, which showed that out of 25 students there were only 4 students which is complete, while the other 21 are still under KKM. According to (Utomo, 2020) stated that student learning outcomes that are not optimal are a problem for educationat this time. These problems are like the inability of students to find problems and ideas to solve a problem faced (Adekantari, Su'ud &; Sukardi, 2020). Therefore, researchers apply *the problem-based learning* model in classroom action research. In classroom action research, there are several things that must be considered, namely knowing what will be improved, by what to improve and who will be improved. So that in this class action research is clearly structured what the purpose is (Nur'aini Muhassanah et al., 2022).

One of the efforts that can be done is to overcome problems in science learning in elementary schools by applying learning models that are in accordance with the learning material. In my opinion, the appropriate learning model to be applied to science learning is a problem-based learning model because this learning model is a problem-based learning model by presenting various problems in the real world that can be observed or tested. This study aims to be able to improve student learning outcomes through a problem-based learning model on the material of the influence of heat on changes in the form of a Class V SDN 112 Palembang.

METHOD

The type of research used in this study is classroom action research (PTK). In English it is called CAR or *Classroom Action Research*. Classroom action research is research conducted by teachers as researchers in order to improve and improve the learning outcomes of students in a class. This class action research is carried out in several cycles. PTK has several stages in its application with kemmis and mc models. Taggart is a spiral from one cycle to another. The class

action research (PTK) stage consists of 4 stages, namely planning, action, observation, and reflection based on opinions (Mufidah et al., 2021).

This class action research was carried out at SDN 112 Palembang, Sako sub-district, Palembang city, South Sumatra. The subjects of this study were students of grade V A SDN 112 Palembang, a population of 25 people consisting of 12 men and 13 women. This research timewill be carried out in mid-February-May 2023. This study was carried out for 2 cycles.

This study is designed to improve the learning outcomes of students on the material of the influence of heat on changes in the form of objects in class V at SDN 112 Palembang. Broadly speaking, this class action research is carried out with 4 stages, namely Planning, Implementation, Observation or observation and reflection.

Here are the stages related to classroom action research:

a. Planning

At the planning stage (Planning) is the first activity carried out in the implementation of PTK. At this stage, researchers carry out several activities related to planning what things will be done and needed when carrying out research.

a) Preparing teaching materials, namely the influence of heat on changes in the form of objects.

b) Make a complete lesson plan related to the implementation of actions

c) Compile and prepare assessment sheets related to student learning processes andoutcomes.

d) Prepare teaching materials, learning media, LKPD, and learning evaluation.

After everything has been prepared, the researcher will make preparations related to the implementation of cycle 1.

b. Action

At this stage, namely carrying out planned learning activities. This action is certainly carried out in accordance with the planning that has been made. During the learning process, the teacher will provide teaching related to the material to students in accordance with the RPP that has been made.

c. Observation)

The activities carried out are observing the implementation that has been carried out during the learning process.

d. Tahap Reflection

The reflection stage of the activities carried out is to analyze the data obtained through observations related to the process of implementing actions that have been carried out for two cycles.

Data collection techniques used in this study are through tests and non-tests in the form of observation and documentation. The test is a data collection instrument to measure students' cognitive abilities towards mastery or understanding of learning material. This test instrument is used to be able to measure the learning outcomes of grade V A students at SDN 112 Palembang. While observation is adata collection technique carried out by observing attitudes and events that occur during the learning process. Observations made by researchers related to the learning process that occurs in the classroom. While documentation is looking for data about things or variants in the form of notes, books and others. In this study, the documentation carried out was by taking photos of students during learning and collecting test results that had been given to students.

The data analysis techniquesused in this class action research use descriptive analysis. This descriptive analysis is used to illustrate that the actions implemented can lead to improvements and improvements and changes in a better direction than before. The data collected in this study are test scores of student learning outcomes after carrying out learning by applying *a problem-based learning* model.After the data is collected, the data will be analyzed and processed to become a valid one. Test data is processed using formulas :

a. Formula for processing learning outcomes (Arifin & Romelah, 2022)

$$Ketuntasan \ belaja = \frac{Jumlah \ siswa \ yang \ tuntas}{Jumlah \ seluruh \ siswa} \times 100\%$$

b. Formula for Determining Student Grades (Thalita Samanta, 2022)

$$Nilai \ = \frac{Skor \ yang \ diperoleh}{skor \ maksimal} \times 100\%$$

c. Average formula of learning outcomes (Thalita Samanta, 2022)

$$\bar{x} = \frac{\Sigma x}{n}$$

Remarks : $\bar{x}$ = Mean or average of the score data sought

Σx = Total score
n = Number of Students

After the data is processed, conclusions can be drawn from the results of research on the application of learning using *a problem-based learning* model on the influence of heat on changes in the form of objects in class V A SDN 112 Palembang.

The success indicator in this study is the results of student learning in science subjects or science content class V A SD Negeri 112 Palembang by applying a *problem-based learning* model. It is expected that through the application of this *problem-based learning* model can increase from the previous value, the minimum value that must be achieved is 70. Student learning outcomes are said to improve individually when they reach ≥ 70. Meanwhile, if overall, 75% of students get a ≥ score of 70.

RESULTS AND DISCUSSION

This research is a classroom action research, this research is carried out to improve the learning process and improve related to student learning outcomes. Improvement activities on the influence of heat on changes in the form of objects are carried out in two cycleswith several stages of activity, namely planning, implementation, observation and reflection activities. In the learning process, problems were found, namely low understanding and student learning outcomes related to the material taught. We can see this through the table of pre-cycle learning outcomes of classroom action research conducted.

a. Pre Cycle

The subjects studied in the study amounted to 25 students consisting of 12 men and 13 women in the VA class at SDN 112 Palembang. Based on the observations of 25 students, it was found that the problem of low

value of learning natural sciences. This problem can be seen from the results of the pre-cycle of students. The problem that occurs in class V A is the low learning outcomes of the material, the influence of heat on changes in the form of objects and during the learning process which is dominated by lectures without using appropriate learning models and media so that theyfeel bored.

some of these problemsare used as material to improve the science learning process through Classroom Action (PTK) research. The use of *this problem-based* learning model with the help of learning media is expected to improve student learning outcomes. By learning through problems and being able to solve problems well.

Tabel 1. Pre Cycle test results

Success Criteria	Number of students	Persentage
Rated ≥ 70	4	16%
Rated < 70	21	84%
Sum	25	100

Table 1 shows the initial condition that there are 4 completed students while 21 incomplete students. Based on the recapitulation of grades in the pre-cycle, it can be seen that 4 students or 16% get a score of ≥ 70 or reach KKM, while 21 students or 84% get a score of less than 70 (have not reached KKM). Of the

several students who have met the KKM, several other students still need to be improved regarding learning outcomes in science lesson content because based on the results that have been obtained many have not been maximized. The following value provisions, for the value of A are in the range (88-100), B (74-87), C (60-73).
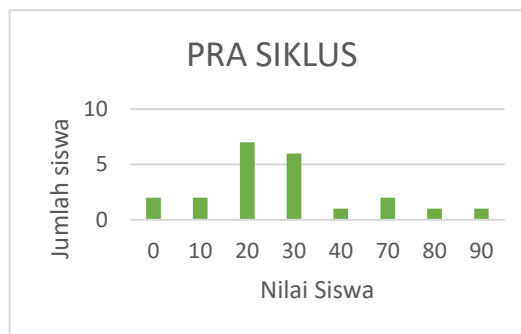

Figure 1. Pre-cycle value bar chart

Based on the diagram above, it can be seen that the scores obtained by students are still mostly below KKM, which is < 70 there are 21 students. While those who complete or reach KKM there are 4 students of whom with a range of Good grades there are 3 people and very good there is 1 person. Therefore, an action cycle is needed to be able to improve the level of completeness of students' values in the material of the influence of heat on changes in the form of objects. From the results of the pre-cycle

assessment, researchers carry out actions on learning through the application of *problem-based learning* models.

a. Cycle I

The provision of actions in the first cycle includes the planning stage, where researchers carry out planning, namely compiling lesson plans in accordance with learning materials, then preparing learning plans in accordance with the stages of the *problem-based* learning model, compiling teaching materials, preparing learning

media that support the material to be taught. Furthermore, at the implementation stage, the research implements the first cycle in accordance with the planning that has been planned at the beginning of the activity. Then at the obervasi stage during learning, the teacher also makes observations on the learning process carried out.

At the final stage, it is a reflection of the results of the implementation of learning that we have done in accordance with the actions we give to students. From the application of the first cycle that has been carried out learning using the *problem-based* learning model, the value of student learning outcomes is obtained.

Table 2. Test Results Cycle I

Succes Criteria	Number of students	Percentage
Rated ≥ 70	16	64%
Rated < 70	9	36%
Sum	25	100

Based on the table above, it can be seen that the data obtained in cycle 1 in learning science material the influence of heat on changes in the form of objects grade 5 A SDN 112 Palembang as many as 16 people have scores

greater than 70 or have reached KKM, while there are still 9 students who are still under KKM. When compared with pre-cycle scores, the results of the implementation of cycle 1 have increased student learning outcomes.
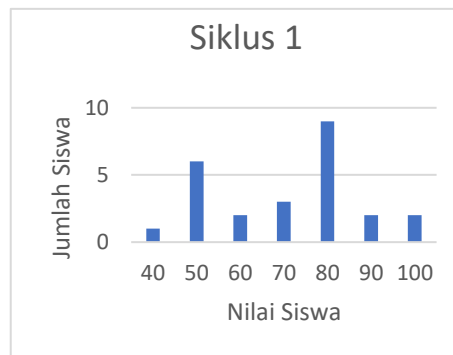

Figure 2. Cycle 1 value bar chart

Based on the bar chart display, it can be seen that there is a significant increase in results. Of the 25 students who scored below KKM, only 9 people while the others totaling 16 people have reached KKM. Based on the learning outcomes using the *problem-based learning* model, it can be seen from the results of cycle 1 learning showing a grade average score of 70.8, the value has increased from the pre-cycle average score which got a value of 30. So that the learning model

applied affects the improvement of student learning outcomes.

b. Cycle II

The application of actions in cycle II includes planning carried out the same as the previous cycle where researchers carry out actions aimed at improving student learning outcomes related to the content of science material the influence of heat on changes in the form of objects. Researchers do planning, namely compiling lesson plans in accordance with

learning materials, then preparing learning plans according to the stages of the learning model *Problem Based Learning*, compiling teaching materials, preparing learning media which can certainly create a fun learning atmosphere for students, especially done with learning while playing so that there is innovation or creativity of researchers in applying this problem-based learning model to students of grade V A SDN 112 Palembang.

At the implementation stage, researchers carry out learning based on learning plans that have been made in accordance with the *problem-based learning* model. At the observation stage, researchers also make observations or observations on the learning carried out so that later it can be evaluated. In the reflection section, researchers reflect on activities that have been carried out with the help of students such as the reflection sheet given. From the implementation of the actions given in cycle II we can see, through the table and bar chart below:

Tabel 2. Cycle II test results

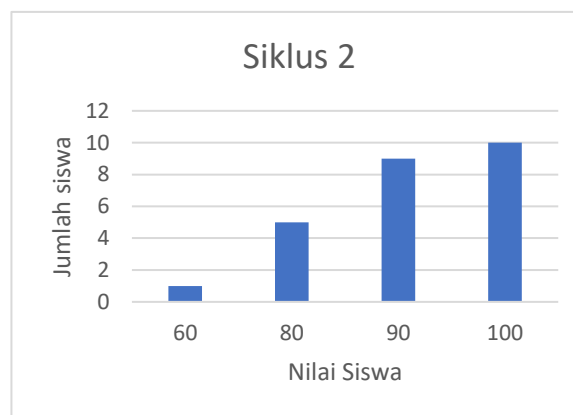| Succes Criteria	Number of students	Percentage
Rated ≥ 70	24	96%
Rated < 70	1	4%
Sum	25	100

Figure 3. Cycle II value bar chart

Based on the table and diagram above, in cycle II learning outcomes, there is an increase in student learning outcomes. Where there are 24 students who have reached KKM while those who have not achieved KKM are only 1 student. So if you seet on the graph of the results of cycle II research with learning outcomes through the application of the *problem-based learning model (Problem-Based Learning)* carried out on grade V A SDN 112 Palembang students, it can be said that science learning on the material of the influence of heat on changes in the form of objects has reached the specified learning success indicators. The test results in cycle 1 showed a class average score of 70.8. And this value experienced an increase in results in cycle II, namely 90.8. In the application of the results of this second cycle, the percentage of success rate reaches 96% which has reached the KKM value of 70. While 4% still have not reached KKM with a value of 60. If we look again at the comparison of values in the pre-cycle, cycle I and cycle II have experienced an increase in student learning outcomes by applying *problem-based learning or problem-based learning* to the content of science material the influence of heat on changes in the form of objects.

In this class action research focuses on improving student learning outcomes on the material of the influence of heat on changes in the form of objects, the material is material in natural science subjects in grade 5. Learning outcomes in this case become an important factor in learning. Learning outcomes are changes that occur during the learning process in students. The learning process can be said to be a communication activity between students and educators in a learning (Abdul Malik I, 2021: 11). Learning outcomes obtained by students through the application of *the problem-based learning* model to grade V students of SDN 112 Palembang. The result of the application of the problem-based learning model in this learning is that the research carried out has increased learning outcomes in

accordance with the research conducted by researchers from each cycle which can be seen through the recapitulation table. Of course, during the learning cycle, there are obstacles as well as students are still lacking in terms of understanding the concept of the material, the influence of heat on changes in the form of objects that cause low student learning outcomes. which made researchers conduct research to improve student learning outcomes at SDN 112 Palembang. Which is in line with Gilang's opinion (2023) that the application of this problem-based learning model can optimize students' ability to think in understanding the material and certainly has an effect on improving student learning outcomes.

We can see the comparison before being given action as shown in the table below:

Table 3. Recapitulation of valuesper cycle

Succes Criteria	Pre cycle		Cycle 1		Cycle 2	
	Number of students	Persentage	Number of Students	Persentage	Number of students	Persentage
Nilai ≥ 70	4	16%	16	64%	24	96%
Nilai < 70	21	84%	9	36%	1	4%
Jumlah	25	100	25	100	25	100
Mean		30		71		91

Based on the comparison table of pre-cycle, cycle I and cycle II values above, we can know that the use of *problem-based* learning models or problem-based learning applied to

students of grade V A SDN 112 Palembang can improve student learning outcomes. Related to the difference in values obtained, we can see clearly in the diagram below:
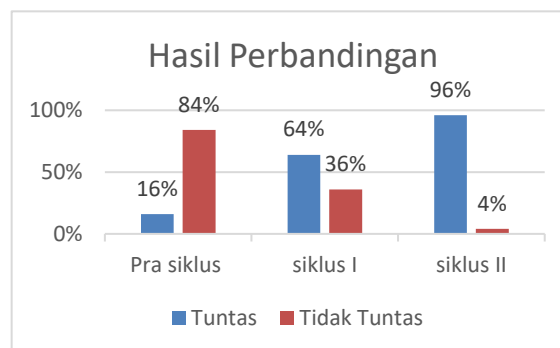

Figure 4. Bar chart comparing pre-cycle, cycle I and cycle II values

Based on figure 4 of the comparison bar chart between pre-cycle, cycle 1 and cycle II, there is an increase in student learning outcomes from pre-cycle students who reach KKM only around 16%, then in cycle I it increases to 64% and in cycle II it increases to 96%. So that the overall *problem-based learning* model used in delivering the material of the influence of heat on the change of the form of objects can improve the learning outcomes of science material the influence of heat on the change of form of objects in class V A SDN 112 Palembang. The results of this study are in line with Muhsam's opinion (2023) revealing that research using a problem-based learning model is proven to improve science learning outcomes as evidenced by the acquisition of student scores that reach KKM. And also through the application of this problem-based learning model students can increase creativity, innovation and motivation. Where teachers move to become facilitators and many activities rely on students so that through the problem-based learning model students will have skills in solving problems which of course can be expected to be applied in their daily lives.

CONCLUSIONS AND RECOMMENDATION

Based on the results of data analysis that has been carried out, it can be concluded that the use of problem-based learning models or *problem-based learning* on the content of science material the influence of heat on changes in the form of objects can improve learning outcomes. This can be seen in the initial or pre-cycle conditions of students there are only 4 people who reach KKM, which is 70, while the others are far from KKM. Therefore, it can be said that the results of learning the content of science on the material, the influence of heat on changes in the form of objects is relatively low and it is necessary tomake improvements. So that researchers are interested in raising this in the PTK problem. In the implementation of the research, researchers applied learning through *a problem-based* learning model in science subjects, the influence of heat on changes in the form of objects, there was an increase after the application of this learning model where the test results in the first cycle showed 16 or 64%

complete students were able to achieve KKM and only 9 or 36% of students were still not able to reach KKM. Meanwhile, in the provision of actions in cycle II, student learning outcomes also increased to 96% that were completed and 4% that were still incomplete. From this, we can conclude that the efforts applied by researchers related to improving science learning outcomes of the material the effect of heat on changes in the form of objects is successful and able to improve the learning outcomes of grade V A SDN 112 Palembang students.

Related to the results of classroom action research that has been carried out, teachers are expected to make this problem-based learning model an alternative learning model used in learning, because this problem-based learning model can improve student learning outcomes in science subjects and of course also other subjects. The application of *the problem-based* learning model in learning can not only help improve student learning outcomes but also can train children's critical thinking level towards solving a problem in learning which is certainly expected to be able to be implemented in everyday life. Because during the implementation of the actions carried out by researchers, students are very enthusiastic in learning and interact and discuss well with their group mates so that they can really express their opinions regarding learning material.

REFERENCES

Adekantari, P., Su'ud, S., & Sukardi, S. (2020). The influence of instagram-assisted project based learning model on critical thinking skills. *Journal of Educational and Social Research*, *10*(6), 315-315.

Arifin, M. T., & Romelah, R. (2022). Improving The Learning Outcomes Of Elementary School Students In Pai Subjects With Problem-Solving-Based Learning. *Primary: Jurnal Keilmuan dan Kependidikan Dasar*, *14*(2), 117-130.

Eko, H., & Sumitro, A. (t.t.). And Its Implications In Learning. In *ALPEN: Jurnal Pendidikan Dasar, 3*(2).

Fakhrur Saifudin, M., Syapriyuda, S., Negeri, S., Antara, N., Universitas Ahmad Dahlan,

D., & Muhammadyah Kleco, S. (t.t.). Improving Student Learning Outcomes On Material Changes In The Form Of Objects Through The Stad Type Learning Model In Grade Iii Sd Negeri 4 Nisam Antara.

Fauzan, M., Gani, A., & Syukri, M. (2017). Application of problem-based learning models in learning solar system materials to improve student learning outcomes. *Jurnal Pendidikan Sains Indonesia*, *5*(1), 27-35.

Febrita, I., & Harni, H. (2020). Model of Problem Based Learning in Integrated Thematic Learning towards Critical Thinking of Students in Grade IV Elementary School. Jurnal Pendidikan Tambusai, *4*(2), 1619-1633.

Hanafi, I., & Sumitro, E. A. (2019). Cognitive development according to Jean Piaget and its implications in learning. Alpen: Jurnal Pendidikan Dasar, *3*(2).

Harahap, T. S. (2022). *Application of Process Oriented Guided Inquiry Learning Model Assisted by Crossword Media in Science Learning to Improve Learning Outcomes of Class V MIN 5 Students in Banda Aceh City* (Doctoral dissertation, UIN Ar-Raniry).

Husnidar, H., & Hayati, R. (2021). Application of problem-based learning models to improve students' mathematics learning outcomes. Asimetris: Jurnal Pendidikan Matematika Dan Sains, *2*(2), 67-72.

Iskandar, Abdul Malik. (2021). The Relationship between Learning Media Utilization and Learning Outcomes. Yogyakarta: Bintang Semesta Kencana.

Karli, Hilda. (2020). Thematic Learning Models in Elementary Schools. Bandung. Penerbit Duta.

Kustawan, Desy. (2013). Analysis of Learning Outcomes. Jakarta. Luxima.

Mufidah, N. L., & Surjanti, J. (2021). The effectiveness of the blended learning model in increasing student independence and learning outcomes during the COVID-19 pandemic. Ekuitas: Jurnal Pendidikan Ekonomi, *9*(1), 187-198.

Muhassanah, aini, Sulistiyawati, I., Aniuranti, A., & Arimbi, D. (t.t.). Teacher Empowerment Through Classroom Action Research (Ptk) At Sd Negeri 2 Bobotsari.

Muhsam, J., & Muh, A. S. (2022). Application of the problem-based learning (PBL) learning model in improving science learning outcomes of grade IV elementary school students. *Jurnal Inovasi Pendidikan dan Teknologi Informasi (JIPTI)*, *3*(1), 11-17.

Novianti, A., Bentri, A., & Zikri, A. (2020). The Effect Of The Application Of The Problem Based Learning (Pbl) Model On Student Learning Activities And Outcomes In Integrated Thematic Learning In Grade V Elementary Schools, *4*(1).

Prastowo, A.(2019). *Integrated Thematic Learning Analysis*. Jakarta: Kencana

Pratama, G. H., Sugandi, A. I., & Yuliani, A. (2023). Efforts to improve mathematics learning outcomes in set material using LKS with a Problem Based Learning (PBL) model in class VII Smp Negeri 1 Margaasih. *Jpmi (Jurnal Pembelajaran Matematika Inovatif)*, *6*(1), 301-310.

Ratumanan. (2015). Learning Innovation. Yogyakarta: Penerbit Ombak. Hal 248-252

Sani, Ridwan Abdullah dkk. (2020). Process Evaluation and Learning Outcomes Assessment. Bandung: PT Remaja Rosdakarya.

Sinar. (2018). Metode Active Learning. Yogyakarta. DEEPUBLISH

Utomo, H. (2020). Application of Quizizz Media to Improve Student Learning Outcomes Thematic Lessons for Grade IV Students of SD Bukit Aksara Semarang. Jurnal Kualita Pendidikan, *1*(3), 37–43.