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Implementation of Problem Based Learning Learning Models in Improving Learning Outcomes

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Abstract: The low learning outcomes at Madrasah Ibtidaiyah Waiselang are one of the results of unattractive learning methods. This is caused by the lack of student involvement in the learning process in class, due to the dominant role of educators in the learning process. Apart from these factors, educators still use conventional learning models, so that the achievement of student learning outcomes is low. To overcome this problem, it is necessary to apply a problem-based learning that is oriented towards solving concrete problems so that student learning outcomes increase. The study used descriptive analysis to determine students' cognitive, affective and psychomotor learning outcomes. In the pre-cycle there were no students who passed with an average student score of 65 in the sufficient category. In cycle I, student completeness reached 80.95% and the average student score was at a very good level. Meanwhile, in cycle II, student learning completeness increased significantly to 85.71% with an average student score at a very good level. With a classical completeness score of 85.71%, 85% of classical learning completeness is fulfilled so that the research is not continued in the next cycle. The application of Problem based learning can improve student learning outcomes.

Keyword: Learning Model, Learning Outcomes, Problem Based Learning.

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INTRODUCTION

Education is everyone's learning experience to survive. Education in the school environment occurs due to interactions between commissions in schools consisting of students, teachers, school officials, and parents or guardians (Astuti, 2017). Interaction in the classroom occurs between teachers and students. Interaction activities between teachers and students that occur reciprocally for educational purposes can also be called the learning process. The learning process that students go through involves cognitive, affective, and psychomotor abilities (Putri & Hamid, 2016).

Therefore, the stages of the Problem-Based Learning model accommodate student development. scientific explanation skills. The problem meeting stage allows students to understand the existing problems so that various questions can arise at this stage. These problems stimulate students to make initial explanations as an initial stage in developing scientific reasoning. Problems The stages of analysis and learning problems are stages for students to do problem analysis. This stage provokes students to come up with claims in

the form of solutions to answer questions at the meeting of the problem stages (Kumala et al, 2017). The third stage is discovery and reporting, and students are tasked with gathering data to prepare solutions. This stage allows students to find evidence in scientific explanation skills (Faizah et al, 2018). The next stage of solution presentation and reflection is presenting the prepared and reflected solutions. The problem solutions provided need to address the data that has been collected. This stage allows students to reflect on the solutions that have been made to link claims and evidence with the best reasoning (Drăghicescu et al, 2014).

Learning model Problem based learning is a model that plans a problem given by educators to be solved by students. This problem-based learning learning model has learning conditions that are oriented to concrete problems. In line with that, to learn a basic concept of a subject matter, a learning model is needed that orients students towards real-world problems to train students' thinking skills" (Trianto, 2015). "A problem given to students will be solved with the ability they have to build concepts in the material they are studying. Thus, the existence of a Problem based learning learning model can train students to solve problems so that student learning outcomes increase. Learning outcomes are the result of an act of teaching and learning interaction and are usually indicated by the test scores given by the teacher" (Abidin, 2014). According to Mulyono (2016) "learning outcomes show learning achievement, while learning achievement is an indicator of the degree of change in student behavior".

The findings at MI Waiselang show that learning outcomes are still low. Low student learning outcomes because educators dominate the learning process. In addition to these factors, educators still use conventional learning models where learning is still centered on educators so that the achievement of student learning outcomes is low. To overcome this problem, it is necessary to apply the problem-based learning model in concrete problem-oriented conditions so that student learning outcomes increase. Furthermore, it is measured how much the increase in student learning outcomes.

These problems require solutions by applying innovative and interesting learning models in learning natural sciences. An innovative learning model that can involve students in direct learning so that students don't feel bored. Teachers need to choose a learning model that can improve students' natural science learning outcomes. The learning model chosen by the researcher is a problem-based learning model.

Wena (2016) suggests "the application of the Problem based learning model is 1) The teacher gives problems to students. 2) Learners form small groups. 3) Then each group discusses the problem with the basic knowledge and skills they have. 4) Students also make the formulation of the problem and the hypothesis. 5) Students actively seek information and data related to the problems that have been formulated, students diligently discuss with their groups to solve the problems given by reporting the data that has been obtained. 6) Closing discussion activities are carried out when the process has obtained the right solution. Critical thinking skills can be identified into five indicators, namely: 1) Providing simple explanations, 2) Building basic skills, 3) Concluding, 4) Providing further explanations, 5) Setting strategies and techniques (Sudijono, 2017). The influence of problem-based learning learning models and critical thinking skills on learning outcomes above is supported by the opinion of Rusman (2015) factors that influence learning outcomes are classified into two, namely internal factors of students themselves can be in the form of interests, talents, intelligence, perceptions and so on related with students as individuals".

METHODS

The type used in this research is class action research (Classroom Action Research. The subjects in this study are Class VI students, totaling 21 students, namely 3 boys and 18 girls. This research will be carried out for 1 (one) month from the date October 4 to November 4, 2021. The location of this research is at the Waiselang Elementary School.

To find out the learning outcomes of students, it is necessary to use instruments in the form of tests that are carried out before and after the action is carried out by the initial test and the final test. In addition, the instruments used in this study were observations made by researchers during the teaching and learning process; Interviews were conducted to determine the level of students' understanding in absorbing the subject matter taught by the teacher and documentation which was carried out by means of researchers collecting data by directly recording documents contained in the research location.

The data collection techniques obtained in this research were (1) Primary data, namely data obtained directly from the school where the researcher conducted the research which included; observations, tests, interviews and documentation and (2) Secondary data, namely data obtained from the literature in the form of textbooks, research results and others according to the problems studied. The data obtained was then analyzed using the Discritical Cognitive Test Results Assessment technique using the formula,

$$\text{Achievement Score} = \frac{\textit{Jumlah skor perolehan}}{\textit{jumlah skor minimal}} \textbf{ X 100}$$

(Sumber: Sugiyono, 2017)

To find out the learning outcomes achieved by students by applying the problem based learning model, use the following table,

Table 1. Benchmark Reference

Interval Value		Category
Range	**Value**	
91-100	A	Very Good
66-80	B	Good
56-65	C	Enaugh
40-55	D	Bad
0-39	E	Very Bad

Indicators of research success are references to research success. The indicator of the success of this research is that students are said to have achieved individual mastery if they get 66 and 85% completeness classically.

RESULTS

Data from students' initial test results were obtained on material on the reproduction of living things carried out by researchers before the activities and learning processes used the problem-based learning model in class VI MI Waiselang. For a clearer distribution of frequency and percentage of student learning outcomes can be seen in table 2.

Table 2. Preliminary Test Interval Presentation Qualifications

No	Interval Value	Frequency	Relative Frequency (%)	Category
1	81-100	0	0	Very Good
2	71-80	3	14,29	Good
3	61-70	8	38,10	Bad
4	<60	10	47,61	Very Bad
	Jumlah	21	100	

Source: Primary Data 2021

The table above can explain that the ability level of students' initial test results before participating in the learning process using the problem-based learning model

shows that students' initial tests are classified as low where no students are able to achieve qualifications (good and very good) with a percentage of 0%. 3 students with a percentage of 14.29% showed qualifications (good), 8 students with a percentage of 38.10% showed qualifications (enough), 10 students with a percentage of 47.61% showed qualifications (poor). The pre-cycle learning outcomes can also be seen through the following diagram:

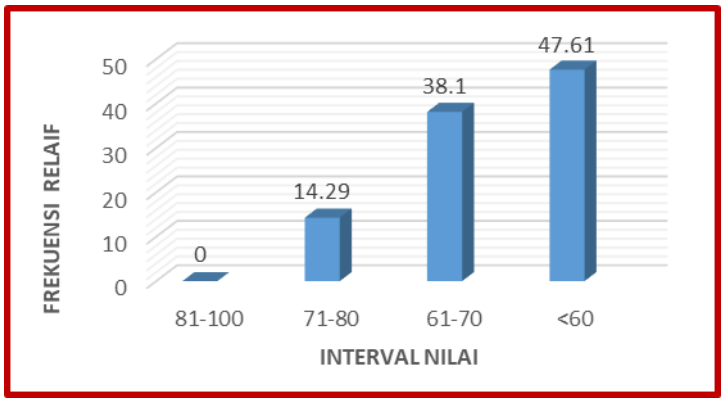


Figure 1. Precycle Value

Based on the histogram image above, it can explain the initial test results achieved by the majority of students who do not meet the minimum completeness criteria (KKM), which is 66 for individuals and 85% for classical completeness. It is known that there are 3 students or 14.29% who meet the minimum completeness criteria. This is because students' knowledge of the material has not been taught so that the level of mastery of teaching material is dominated by sufficient and insufficient qualifications.

Description of Cycle I

a. Final Test Results (Cognitive)

Data on student learning outcomes were obtained from test scores after learning activities by applying the Problem based learning learning model in class VI MI Waiselang it is known that the highest score obtained by students is 81 and the lowest score obtained by students is 63. learning of class VI students can be seen in table 3 below:

Table 3. Qualifications of Presentation of Test Result Values

No	Interval Value	Frequency	Relative Frequency (%)	Category
1	81-100	5	23,81	Very Good
2	71-80	12	57,14	Good
3	61-70	4	19,05	Bad
4	<60	0	0	Very Bad
Jumlah		21	100	

Source: Primary Data 2021

From Table 3 above, the results of the written test consisted of 40 questions which were used to assess the understanding of class VI students on the material/concept of the reproduction of living things at MI Waiselang, there were 5 students with a percentage of 23.81% showing very good, 12 students with a percentage of 57.14% showing (Good), and 4 students with a percentage of 19.05% showing enough. From 21 students the average value of 79 indicates good. The achievement of cognitive learning outcomes can also be seen in the following diagram:

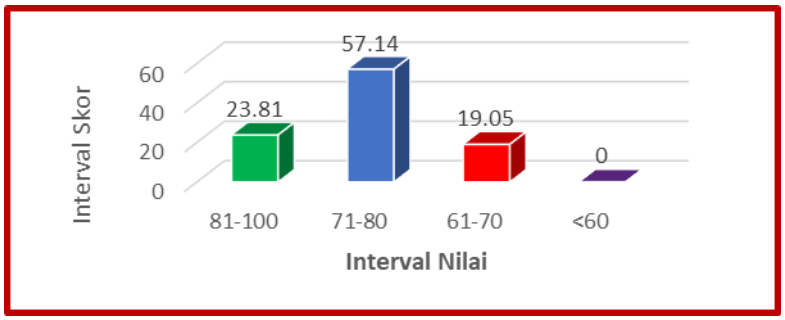


Figure 2. Cognitive learning outcomes of Cycle I

The histogram above also gives an overview of the minimum mastery achievement (KKM) of students' cognitive learning outcomes. The acquisition of cognitive learning outcomes that refer to the minimum completeness criteria can be seen in the following table:

Table 4. Acquisition of Mastery Cognitive Learning Outcomes

No	Interval Value	Frequency	Relative Frequency (%)	Category
1	≥ 67	17	80,95	Complete
2	< 67	4	19.05	Not Complete
Jumlah		21	100	

Source: Primary Data 2021

Based on the table above, it can be seen that 21 students with a percentage of 80.95% individually completed cognitive learning outcomes, while 4 students with a percentage of 19.05% had not completed cognitive learning outcomes.

b. Affective Learning Outcomes

Data on learning outcomes on the affective aspects of class VI MI Waiselang students on the concept of reproduction of living things can be seen in the following table:

Table 5. Classification of Percentage Results of Effective Aspect Value

No	Interval Value	Frequency	Relative Frequency (%)	Category
1	81-100	16	76,19	Very Good
2	71-80	5	23,81	Good
3	61-70	0	0	Bad
4	<60	0	0	Very Bad
Jumlah		21	100	

Source: Primary Data 2021

Table 5 can reveal the assessment of the effective aspects obtained using observation sheets to assess student attitudes which include activity, thoroughness, curiosity, cooperation, confidence, answering/responding to questions and presenting results. The table above shows that 16 students with a percentage of 76.19% show very good qualifications and 5 students with a percentage of 23.81% show good qualifications.

c. Psychomotor Learning Outcomes

Data on learning outcomes on the psychomotor aspects of students can be seen in the following table:

Table 6. Classification of Percentage of Psychomotor Aspect Value Results

No	Interval Value	Frequency	Relative Frequency (%)	Category
1	81-100	15	71,43	Very Good
2	71-80	6	28,57	Good
3	61-70	0	0	Bad

4	<60	0	0	Very Bad
	Jumlah	21	100	

Source: Primary Data 2021

Table 6 above reads the results of the psychomotor aspect assessment using the teaching and learning process assessment which is assessed based on 3 indicators namely preparation, implementation and completion. Psychomotor aspects 21 students with a percentage of 71.43% showed very good qualifications, 6 students with a percentage of 28.57% showed qualifications (good), and no students with a percentage of 0% showed qualifications (sufficient and lacking). The highest score of 82 and the lowest score of 67 exceeded the individual minimum standard of 66 and the classical standard of 85%.

d. Learning Outcomes (Cognitive, Affective, and Psychomotor)

Learning outcome data which is a combination of cognitive, affective, and psychomotor aspects can be seen in the following table:

Table 7. Classification of Presentation of Final Test Scores

No	Interval Value	Frequency	Relative Frequency (%)	Category
1	81-100	17	80,95	Very Good
2	71-80	4	19,05	Good
3	61-70	0	0	Bad
4	<60	0	0	Very Bad
	Jumlah	**21**	**100**	

Source: Primary Data 2021

The table above reveals that as many as 17 students with a percentage of 80.95% showed very good qualifications in mastering indicators with a score of (81-100), 4 students with a percentage of 19.05% showed good qualifications in mastering indicators with a score of 71-80, not students or 0% show sufficient qualifications and lack in mastering indicators with scores of 61-70 and <60) when compared with the minimum completeness criteria that have been determined with the average score of student achievement on formative, effective and psychomorphic tests it is revealed that the achievement of scores students have not completed classically. The score achieved in the first cycle was 80.95% while the classical completeness was 85%, thus the research was continued in the next cycle.

Description of Cycle II

1) Cognitive Final Test Results

Data on student learning outcomes were obtained from test scores on the concept of reproduction of living things by researchers after the activities and learning processes were completed using the problem-based learning model in class VI MI Waiselang. The highest score obtained by students is 96 and the lowest score obtained by students is 78. Descriptive data on student learning outcomes based on test scores on the concept of breeding can be seen in Appendix 6. For clearer distribution of frequencies and percentages of student learning outcomes, see Appendix 6. Table 4.7 follows:

Table 8. Qualifications of Presentation of Test Result Values

No	Interval Value	Frequency	Relative Frequency (%)	Category
1	81-100	19	90,48	Sangat Baik
2	71-80	2	9,52	Baik
3	61-70	0	0	Cukup
4	<60	0	0	Kurang
	Jumlah	21	100	

Source: Primary Data 2021

From Table 8 above, the results of the written test consisting of 40 questions were used to assess the understanding of class VI students on the concept of breeding living things at MI Waiselang, there were 19 students with a percentage of 90.48% showing very good, 2 students with a percentage 9.52% showed good, and no students or 0% got enough and less scores. Of the 21 students the average score was 86 indicating very good qualifications.

As for the acquisition of minimum completeness (KKM) cognitive learning outcomes of students can be seen in the following table:

Table 9. Acquired Mastery of Cognitive Learning Outcomes

No	Interval Value	Frequency	Relative Frequency (%)	Category
1	≥ 67	21	100	Complete
2	< 67	0	0	Not Complete
Jumlah		21	100	

Source: Primary Data 2021

Based on table 4.8 above, it can be seen that 21 students with a percentage of 100% were declared individually complete in cognitive learning outcomes, there were no students or 0% incomplete. With the acquisition of classical completeness results, namely 100%, the research process was not continued in the next cycle.

2) Affective Learning Outcomes

Data on learning outcomes on the affective aspects of students of class VI MI Waiselang on the breeding of creatures can be seen in the following table:

Table 10. Classification of Percentage Results for Effective Aspect Values

No	Interval Value	Frequency	Relative Frequency (%)	Category
1	81-100	20	95,24	Very Good
2	71-80	1	4,76	Good
3	61-70	0	0	Bad
4	<60	0	0	Very Bad
Jumlah		21	100	

Source: Primary Data 2021

From Table 10. The assessment of the effective aspect was obtained through observation sheets which were used to assess students' attitudes which included activity, thoroughness, curiosity, cooperation, confidence, answering/responding to questions and presenting results. The table above shows that 20 students with a percentage of 95.24% show qualifications (very good) and 1 student with a percentage of 4.76% shows good qualifications. According to (Warista, 2008) One of the characteristics of effective learning is that students learn to study actively what is observed through observation, compare and find similarities found.

Based on the results of research using the problem-based learning model in class VI, the effective aspects are classified as very good qualifications. This is shown by the interest in the seriousness of students in participating in the learning process.

3) Psychomotor Learning Outcomes

Data on learning outcomes on the psychomotor aspects of students can be seen in the following table:

Table 11. Classification of Percentage of Psychomotor Aspect Value Results

No	Interval Value	Frequency	Relative Frequency (%)	Category
1	81-100	19	90,48	Very Good
2	71-80	2	9,52	Good
3	61-70	0	0	Bad
4	<60	0	0	Very Bad
	Jumlah	21	100	

Source: Primary Data 2021

Based on table.11 the results of the assessment of psychomotor aspects using the assessment of the teaching and learning process are assessed based on 3 indicators namely preparation, implementation and completion. Psychomotor aspects 19 students with a percentage of 90.48% showed very good qualifications, 2 students with a percentage of 9.52% showed good qualifications, and no students or a percentage of 0% showed sufficient and insufficient qualifications. The highest score of 97 and the lowest score of 80 passed the individual KKM standard of 67 and the classical KKM standard of 85%. So that the psokomor assessment aspect is said to be complete. This is evidenced by the increased mastery of subject matter starting from the preparation, implementation, and final practicum activities.

4) Learning Outcomes (Cognitive, Affective, and Psychomotor)

Learning outcomes data which is a combination of cognitive, affective, and psychomotor aspects can be seen in the following table:

Table 12. Classification of Presentation of Final Test Scores

No	Interval Value	Frequency	Relative Frequency (%)	Category
1	81-100	18	85,71	Very Good
2	71-80	3	14,29	Good
3	61-70	0	0	Bad
4	<60	0	0	Very Bad
	Jumlah	**21**	**100**	

Source: Primary Data 2021

From Table 12. The results of the formative tests are carried out after the students have finished the process of teaching and learning activities taking place with the material or concept of the reproduction of living things. From the table above it can be concluded that as many as 18 students with a percentage of 85.71% showed qualifications (very good) in mastering indicators with a value of 81-100, there were 3 students with a percentage of 14.29% showing qualifications (good) in mastering indicators with a value of 71 -80, no students with a percentage of 0% show sufficient qualifications and do not master indicators with scores (61-70 and <60). When compared with the (KKM) that has been determined with the average score of students' achievement on the formative test, it can be said that the achievement of students' knowledge is in the completeness category determined both individually and classically. This proves that after the learning process by using the problem based learning (PBL) learning model the learning outcomes of students on the concept of reproduction of living things achieve very good qualifications. Student learning outcomes (cognitive, affective, and psychomotor) illustrate that 21 students (100%) succeeded in achieving the KKM score (minimum completeness criteria).

DISCUSSION

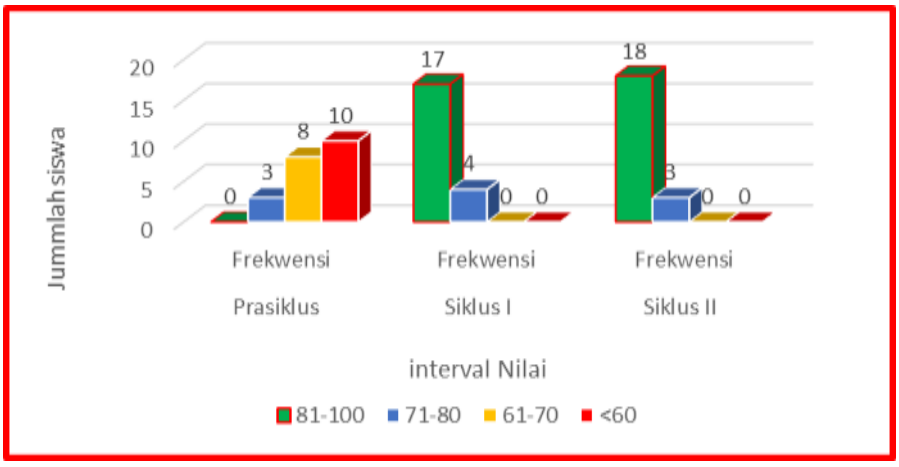
The results showed that the ability of students to understand the material or the concept of the development of living things by applying the problem-based learning model in

learning turned out to be successful. For more details, it can be seen in the distribution of student scores in the following initial test:

Table 13. Distribution of Pre-cycle Student Values, Cycle I and Cycle II

Value	Pracyclus		Cycle I		Cycle I	
	Frequency (number of students)	Percentage (%)	Frequency (number of students)	Percentage (%)	Frequency (number of students)	Percentage (%)
81-100	0	0	17	80,95	18	85,71
71-80	3	14,29	4	19,05	3	14,29
61-70	8	38,10	0	0	0	0
<60	10	47,61	0	0	0	0
Jumlah	**21**	**100%**	**21**	**100%**	**21**	**100%**

From table 13 above, it shows that there are differences in the scores of student learning outcomes in the initial test with the cycle I and cycle II tests, where the acquisition of scores of 81-100 and scores of 71-80 increases while the acquisition of scores of 61-70 and values <60 the decreasing percentage of students who get it. The number of students who scored 81-100 in the pre-cycle did not exist or 0%, in cycle I who scored 81-100 were 17 students or 80.95%, while in cycle II it increased to 18 students or 85.71%. Scores of 71-80 on the initial test were also 3 students who obtained it or 14.29%, in cycle I scores of 71-80 obtained 4 students or 19.05%, while in cycle II it became 3 students or 14.29%. Scores of 61-70 on the initial test were obtained by 8 students or 38.10%, in cycle I obtained no students or 0%, and in cycle II no students obtained scores of 61-70 or 0%. Obtaining a score of <60 on the initial test was 10 students or 47.61%, in cycle I there were no students or 0%, while in cycle II there were no students or 0%. The graphs of values in the Pre-Cycle, Cycle I, and Cycle II can be seen as follows:



Gambar 4. Perbadingan hasil belajar siswa persiklus

The graphs and tables above also reveal the mastery of student learning in the pre-cycle, cycle I and cycle II. In the pre-cycle, student completeness was 0% with an average student score at a low level (<60), in cycle I, student mastery increased to 80.95% and the average student score was at a very good level (81-100). Meanwhile, in cycle II, student learning completeness increased significantly to 85.71% with an average student score at a very good level. With a classical completeness score of 85.71%, the classical learning mastery in chapter II is 85% so that the research is not continued in the next cycle.

Istiatutik (2017) "the application of the problem-based learning model exposes students to a problem so that they are motivated to seek answers by repeatedly solving the problems they face which in the end can solve these problems so as to increase students' confidence in their abilities. Increasing students' confidence in their abilities can

make students more active and participatory in the learning process because students feel challenged to complete each assignment given by the teacher and make students more confident that they can achieve higher learning achievements than previous achievements.

The results of this study are in line with the results of research conducted by Dimyati and Mudjiono (2016) entitled Application of Problem Based Learning Models to Improve Elementary Mathematics Learning Outcomes. Based on the results of the analysis of the 10 research results, it can be concluded that learning with the Problem Based Learning (PBL) model can improve students' mathematics learning outcomes. Increased learning outcomes from the lowest 5% to the highest 40%, with an average of 22.9%.

Furthermore, research conducted by Rerung (2017) entitled Application of Problem Based Learning (PBL) Learning Models to Improve Learning Outcomes. In his research it was stated that cognitive learning outcomes were 64% in cycle I and 84% in cycle II. Meanwhile, psychomotor learning outcomes in the aspect of preparing tools and materials increased by 4%, aspects of assembling tools and materials increased by 6%, aspects of conducting experiments increased by 12%, aspects of observing experiments increased by 7%, and aspects of presenting experiments increased by 8%. This shows that the application of problem-based learning models can improve student learning outcomes.

Problem based learning learning model is a condition that affects the learning process. Because the problem-based learning model that supports students can learn well, but the problem-based learning model itself will work even better if it is supported by critical thinking skills that will provide abilities that students can know based on both physical and psychological characteristics. both general and specific, but both problem-based learning models are very necessary in supporting students in learning activities so that they will help students succeed in learning activities. Because learning outcomes are a process of changing behavior that has been done, and done that can be measured based on numbers or values.

Nurhadi in Trianto (2015) suggests that "The Problem Based Learning learning model is a learning model that involves students with real problems that match their interests and concerns which empower students' thinking, creativity, and participation in learning so that motivation and curiosity increase". Therefore, students are expected to develop a higher mindset and skills.

CONCLUSION

The application of the Problem based learning learning model can increase the learning outcomes of class VI students. In the concept of reproduction of living things at MI Waiselang, it is seen from the practical test, cycle I test and cycle II.

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