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The Influence Of The Problem-Based Learning Model On Increasing Self-ESTEEM And Student Learning Outcomes On Excretory System Material

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ABSTRACT

This study aims to determine the effect of the Problem Based Learning (PBL) learning model on increasing Self-Esteem and student learning outcomes on excretory system material. In this study, there are two types of variables used. First, the independent variable is the level of self-esteem of students, and the dependent variable is the learning outcomes of students. The research was conducted at MTS Al-Misbah located on Jalan Desa Cipadung No.22, Cibiru District, Bandung City, West Java. The population in this study is all students of class VIII MTS Al-Misbah consisting of two classes, namely class VIII A and VIII B with a total of 73 students. The sampling method used is purposive sampling. The learning outcomes of students using the PBL model produce N-gain 0.7 with a high category. In addition, the results of self-esteem after using the PBL model got this high category proving that the learning model can affect the level of self-esteem of learners. The application of PBL in an effort to increase students' self-esteem is one solution where with this model students are more included in the learning process so that they can increase self-esteem in students as well as learning outcomes. So, from the two hypothesis tests, it can be concluded that there is an influence of the PBL learning model on increasing Self-Esteem and student learning outcomes on excretory system material.

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INTRODUCTION

Teaching and learning activities carried out in the classroom involve students and teachers. In the process, it is not uncommon for students to look less ready to receive material, especially in science learning. Science learning seems to be a difficult subject because it is full of concepts and memorization (Sulthon, 2016). Learning is expected to change behavior, so meeting these expectations is difficult. In fact, the most important thing about learning is change, both change is essentially cognitive and knowledge-based. Emotional qualities are related to good attitudes and behaviors, including the formation of good behaviors related to awareness and responsibility in life. Therefore, learning that changes behavior and shapes the personality and character of students as a whole, both in terms of science as a result of education, attitudes and behaviors as an influence of education, and life skills as part of educational activities requires a constant spirit in learning (Sulthon, 2016).

The success of the teaching and learning process in the classroom depends on several aspects, one of which is the teacher as an educator. Educators need to pay attention to the condition of students when teaching. Learning needs to be communicated, focused, and aroused the interest and motivation of students optimally so that learning objectives can be achieved. Based on the results of an interview on March 29, 2023 with a science subject teacher at MTS Al-Misbah, it is known that the learning process in the classroom still uses a learning model with lecture and note-taking methods.

The results of this learning have obstacles, especially in the excretory system material, namely the lack of understanding of students and the concept of material that is memorized a lot, causing student learning outcomes to be less good in the excretory system material and distrust of students. This can be analyzed through the learning outcomes of students under the average minimum completeness criteria that have been determined by the school to reach a value of 70 (Yusup, 2010).

Material about the excretory system in humans cannot be explained simply through notes, lectures, or reading books alone. (Judasmasa, 2015). The use of the Problem Based Learning learning model is thought to have an important effect on increasing the thinking ability of students to improve learning outcomes. (Widjajanti, 2011). With this learning model, educators can find out the abilities of students including student learning activities because currently learning and teaching activities have been carried out face-to-face. This is where the role of self-esteem can be seen. Science learning is thought to be a fun lesson for students.

Some students who have high self-esteem feel confident and confident when learning. However, not a few students have low self-esteem when meeting science lessons. (Maharani, 2019). The level of self-esteem of students can affect their learning outcomes. Learning outcomes become a crucial element in the educational process. According to Sudjana (2009), quoted by Samsir (2015), learners' learning achievements actually include behavioral changes involving cognitive, affective, and psychomotor aspects as learning outcomes in a broader sense.

METHOD

This research uses a quantitative approach because it is related to numbers and in data management is carried out statistically, measurably and controlled. First, the independent variable is the level of *self-esteem* of students, and the dependent variable is the learning outcomes of students. The research was carried out in the odd semester of the 2022/2023 academic year directly with face-to-face meetings. Taking place in May 2023. The research was conducted at MTS Al-Misbah located on Jalan Desa Cipadung No.22, Cipadung, Cibiru District, Bandung City, West Java. The population in this study is all students of class VIII MTS Al-Misbah consisting of two classes, namely class VIII A and VIII B with a total of 73 students. The sampling method used is *purposive sampling*. *Purposive sampling* is a method of determining samples from populations based on certain criteria based on researchers' considerations (Mukhsin, 2017).

This study used two types of data, namely primary data and secondary data. First, primary data as the main source of information collected directly from the source. Second, secondary data is the data used in this study from all sources that already exist at the research site. The sources of data in this study are teachers of science subjects, and students of MTS Al-Misbah Bandung City. Later, this data source became the basis for the instruments used in this study.

Data collection in this study was carried out through test and non-test methods. The test method includes the application of pre-test and post-test. That is using Observation, Test, and Questionnaire. The procedure carried out in this study consists of three stages. The first stage of preparation begins with identifying problems, preparing learning tools and research instruments, and validating research instruments such as lesson plans, student worksheets, questions, observation sheets, and questionnaires). Second, the research implementation stage and the third stage is the final stage by starting from data analysis to drawing conclusions. The instrument used was first tested with the aim of ensuring the quality of the questions. Calibration and calibration tests use the anates version 4.0 program, namely Validity Test, Reliability Test, Difficulty Test, and Differentiating Power Test.

This research uses descriptive analysis to describe or give an overview of the object under study. The method used in data analysis is using the SPSS (*Statistical Package for Social Science*)

program, along with the analysis; Analysis of the Implementation of the Learning Process, Analysis of the Effect of the *Problem Based Learning* Model on Student Learning Outcomes (Normality Test, Homogeneity Test, Hypothesis Test), and Analysis of the level of *Student Self-esteem*.

RESULTS AND DISCCUSION

Implementation of *Problem Based Learning Model* on Excretory System Material

The implementation of *the Problem Based Learning* model can be known through the implementation of observations made by subject teachers as observers. This observation process involves the use of observation sheets in each meeting. The goal is to observe the implementation of teacher and student activities running well. The results of data analysis from the observation sheet of teachers and students as a whole can be found in Table 4.1 below.

Table 1. Implementation of Teacher Activities

Observation	Activity Implementation			Information
	Meeting 1	Meeting 2	Meeting 3	
Persentase	100%	100%	100%	Very well executed
Average		100%		

Based on table 1, it can be seen that the *Problem Based Learning model learning* has been carried out with the percentage of teacher activity implementation reaching 100% and learning is categorized as very well carried out.

Table 2. Implementation of Student Activities

Observation	Activity Implementation			Information
	Meeting 1	Meeting 2	Meeting 3	
Orientation of learners towards problems	100%	100%	100%	Excellent
Organizing learners to learn	100%	100%	100%	Excellent
Guiding individual and group investigations	100%	100%	100%	Excellent
Develop and present work	100%	100%	100%	Excellent
Analyze and evaluate the problem-solving process	100%	100%	100%	Excellent
Percentage	**100%**	**100%**	**100%**	**Very well executed**
Average		**100%**		

Similar to teacher activities, the percentage of student activity implementation based on table 2 reaches 100% and excretory system learning using the *Problem Based Learning* model is categorized as very well implemented.

Learning Outcomes of Students with and without Using *Problem Based Learning Models* on Excretory System Material

This study aims to examine the cognitive learning outcomes of students with a focus on achieving a predetermined minimum completeness criteria (KKM) value of 70. Here's the explanation;

Table 3. Percentage of Grades in Classes with *Problem Based Learning* Model based on KKM

KKM Value	∑Students < KKM Values	Percentage	∑Students < KKM Values	Percentage
70	3	8,1%	34	91,8%

Based on table 3, it can be seen that the number of students who get scores above KKM is 34 students out of a total of 37 students with a percentage of 91.8%. The students who scored below KKM consisted of 3 students with a percentage of 8.1%. It can be categorized that the learning outcomes of students in classes that use the *Problem Based Learning* model have a positive influence. While the percentage on the value of student learning outcomes without using the *Problem Based Learning* model based on KKM can be seen in table 4 below.

Table 4. Percentage of Grades in Class without Using *Problem Based Learning* Model based on KKM

KM Value	∑Students < KKM Values	Percentage	∑Students < KKM Values	Percentage
70	5	13,8%	31	86,1%

Based on table 4, the percentage of grades in classes without using the *Problem Based Learning* model also has a positive influence. This is because the number of students who have scores above KKM is more than the number of students who have scores below KKM. The criteria for learning outcomes in classes with and without using the *Problem Based Learning* model can be seen in tables 5 and 6 below.

Table 5. Learning Outcome Criteria in Classes with *Problem Based Learning Model*

Final Grades	Criterion	Total
80-100	Excellent	26
70-79	Good	8
60-69	Not Good	3

Table 6. Learning Outcome Criteria in Classes Without *Problem Based Learning Models*

Final Grades	Criterion	Total
80-100	Excellent	18
70-79	Good	13
60-69	Not Good	5

Based on table 5, it can be seen that there are 34 students who have the ability to effectively accept and follow the learning process using the *Problem Based Learning* learning model. As for table 4.6, there are data on learning outcomes criteria in classes without using the *Problem Based Learning* model. Based on table 4.6, it can be seen that classes without using the *Problem Based Learning* model also have the ability to effectively accept and follow every learning process. This can be seen from the number of students who have very good and good criteria totaling 31 students. From the results of learning Pre *test* and *Post test* classes using learning models, it can be observed that the C3 indicator has increased with an N-Gain value of 0.70 high criteria. Meanwhile, indicators C2, C4, and C5 also increased, but in the medium category with N-Gain of 0.64, 0.65, and 0.68, respectively.

Self-esteem Level of Students Using *Problem Based Learning Model* on Excretory System Material

Research that has been conducted involves self-esteem questionnaires of *MTS Al-Misbah students, aiming to observe the level of self-esteem of students*. The results of the test are as follows:

Table 7. Results of Descriptive Analysis of *Student Self-esteem* Before and After Using Learning Models

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Before using the model	37	28	42	36.32	3.110
After using the model	37	50	59	55.11	1.897
Valid N (listwise)	37				

Based on table 7, results of descriptive analysis *Self-esteem* Students using SPSS 26 can be known the minimum, maximum, average, and standard deviation values. Before using the learning model, it can be seen that the minimum value is 28, maximum 42, average value (*mean*) 36.32 with a standard deviation of 3.110. As for after using the learning model, it can be seen that the minimum value is 50, the maximum value is 59, the average value (*mean*) is 55.11 with a standard deviation of 1,897. Here's after deepening it again:

Table 8. Results of *Student Self Esteem* Before Using Learning Models Based on Aspects and Indicators

No	Aspects	Indicator	Self-esteem *statement* Number	Percentage	Total Percentage
1	Strength	Able to control one's own personality that has an impact on others	4	48,65%	47,97%
			11	45,95%	
			14	50,81%	
			15	46,49%	
2	Courage	Show concern for others	1	45,95%	44,19%
			2	40,00%	
			3	41,62%	
3	Policy	Obeying Applicable Rules	9	49,19%	51,35%
			12	55,14%	
			13	49,19%	
			10	49,73%	
4	Ability	Able to face the problem on your own	5	51,35%	50,95%
			6	41,62%	
			7	52,43%	
			8	58,38%	

Based on table 8, the results of *students' self-esteem* before using the learning model in terms of aspects and indicators can be seen in the aspect of strength getting a percentage of 47.97%, the aspect of meaning of 44.19%, the aspect of policy by 51.35%, and the aspect of ability by 50.95%. That way, the aspect that gets the highest percentage is the policy aspect with indicators of being able to comply with applicable regulations. While the aspect with the lowest percentage result is in the aspect of courage with indicators showing concern for others the percentage is 44.19%. The categories of *self-esteem* results of students before using the learning model can be known based on table 4.9. below:

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Table 9. Results of Student *Self Esteem* Category Before Using Learning Model

Parameter	Score	Category
Mean	37,1	Low
Median	37,0	Low
Modus	36,0	Low

Based on table 9, The results of the *student self-esteem questionnaire* before using the learning model, it can be seen that the average questionnaire score is 37.1 with a low category. The median of 37 and the mode of 36 are both also in the low category. The following is a visualization image of the results of *students' self-esteem* before using the learning model:

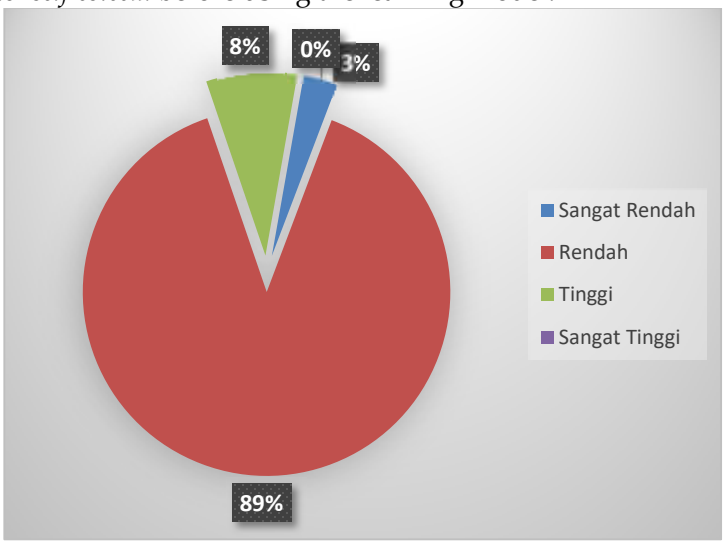

Figure 1. Percentage of Student *Self Esteem* Results before Using the Learning Model

Based on the diagram above, it can be seen that 89% of students belong to the low category, 8% of students belong to the high category, 3% of students belong to the very low category, and 0% of students belong to the very high category. The results of the *self-esteem* questionnaire of students after using the *Problem Based Learning* learning model based on aspects and indicators are as follows:

Table 10. *Self-esteem* Results of Students after Using the *Problem Based Learning* Model based on Aspects and Indicators

No	Aspects	Indicator	Self-esteem Statement Number	Percentage	Total Percentage
1	Strength	Able to control one's own personality that has an impact on others	4	75,13%	71,48%
			11	71,35%	
			14	67,56%	
			15	71,89%	
2	Courage	Show concern for others	1	74,59%	73,64%
			2	67,56%	
			3	78,37%	
3	Policy	Obeying Applicable Rules	9	74,05%	73,33%
			12	70,81%	
			13	76,21%	

4	Ability	Able to face the problem on your own	10 5 6 7 8	72,97% 78,37% 79,45% 70,81% 74,05%	75,67%

Based on table 10, the results of *self-esteem* of students after using the *problem-based learning* model based on aspects and indicators can be seen the highest percentage of 75.67% found in the aspect of ability with indicators of being able to face problems themselves. The following is a picture of the percentage of *students' self-esteem* after using the *Problem Based Learning model*:

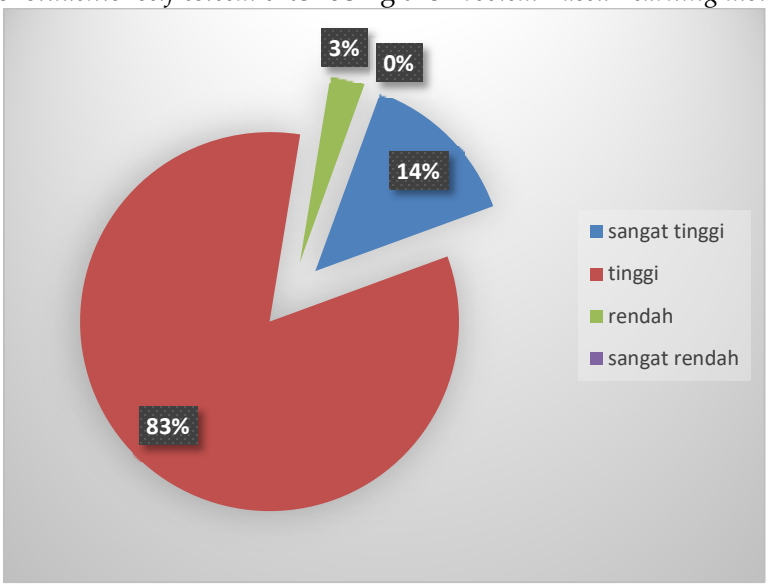

Figure 2. Percentage of *Students' Self Esteem* after Using the *Problem Based Learning Model*

Based on the diagram above, it can be seen that the highest percentage of students is 83% with the high category, 14% with the very high category, 3% with the low category, and 0% students in the very low category.

Discussion of Research Results

Implementation of *Problem Based Learning Model* on Excretory System Material

In this study, the implementation of the Problem Based Learning learning model was observed through the interaction between teachers and students during the learning process, by following the steps contained in the Problem Based Learning model:

a. Implementation of Teacher Activities

The results of the analysis of the observation sheet related to the implementation of teacher activities at the three meetings showed a percentage of 100% with very good criteria. This value indicates that the entire learning process that has been carried out is carried out well. The learning process *with a problem-based* learning model which emphasizes learning with solving activities includes initial activities such as opening learning, providing motivation, perception, and delivery of learning objectives. (Yulianti, 2019). At the first meeting during the initial activity, the teacher gave pre-test questions and *self-esteem* to students to be done according to their respective abilities

and conditions. At this stage, not a few students complain about not doing pre-test questions because they do not understand the excretory system material. *Pre-test* is given before learning with the aim of knowing the extent of students' understanding of the material to be delivered (Magdalena, 2021).

The learning process at the core activity stage starts from the orientation of students to problems, where the teacher provides stimulus in the form of videos and questions to students about the excretory system material. Students are given a stimulus so that awareness arises about the problems that need to be solved (Syamsidah, 2018). There are obstacles at this stage where students dare to deliver answers to questions simultaneously. Students seem less sure of the answer if they have to answer questions individually. (Ramli, 2021). Furthermore, obstacles that occur at the stage of organizing students to learn where students are confused about choosing friends to be the chairman, minutes, and spokesperson of each heterogeneous group so that teachers help students can discuss and express their opinions to each other. The main factor that makes this opinion skills difficult is the anxiety and trembling as well as the fear of being wrong in the learning process (Cahyono, 2022). In the learning process, there is an interaction between teachers and students. Teachers not only act as teachers, but also as educators who have the aim of activating students in the learning process. To achieve success in learning, teachers need to implement strategies that allow the learning objectives that have been designed to be achieved (Zural, 2018). Although it has reached a 100% percentage in the implementation of teacher activities, it is necessary to optimize the learning process by improving it through evaluation in order to provide an ideal environment for students to carry out the learning process. (Idrus, 2019).

b. Implementation of Student Activities

The results of the implementation of student activities on excretory system material using the *Problem Based Learning* model are greatly influenced by the role of the teacher. In order for students to be encouraged and active in the learning process, teachers must assume the role of effective facilitators and motivators. So, the teacher conveys in advance the objectives of the implementation of learning by applying the *problem-based learning model* and the activities that will be carried out by students until the achievement of the objectives in learning (Syamsidah, 2018).

The results of the analysis of the implementation of student activities at the first meeting to the end obtained a percentage of 100% with very good criteria. This proves that students carry out the stages of the learning process using the *Problem Based Learning* model very well, the process starts with the problem orientation stage, organizing into groups, conducting individual and group investigations, developing and presenting works, and analyzing and evaluating the problem-solving process in groups (Ardianti, 2021). There are obstacles in the implementation of the first meeting learning where there is one student who does not want to participate in group learning because he feels insecure and unable to communicate in groups with his friends. This is a challenge for teachers to be able to provide motivation and trust so that students have good *self-esteem*.

Learning Outcomes of Students with and without Using *Problem Based Learning Models* on Excretory System Material

a. Learning Outcomes in Classes Using Problem *Based Learning Models*

Learning outcomes in classes that use the problem-based learning model *can be seen in table 4.3 the percentage of scores in classes* with a problem-based learning model with a KKM value limit of 70, there are 3 students who do not reach KKM with a percentage of 8.1%. This happens because the three students do not follow learning with focus because activities with *a problem-based* learning model require group learning activities and these students are not familiar with group activities. This is in line with the opinion of Fridaram, et al (2020) explaining that when students are able to

focus fully and ignore distractions from the outside, students will more easily understand the material or lesson being studied. However, if students cannot focus and are distracted by other things, students will have difficulty in understanding the lesson.

Based on table 5 the criteria for learning outcomes in the classroom using the *problem-based learning* model got very good criteria with a total of 26 students, 8 students who included good criteria, and 3 students who included poor criteria. That is, there are 91.8% of students who get scores above KKM with a total of 34 students. This proves that the *problem-based* learning model affects student learning outcomes because the learning process requires students to participate actively in learning activities and is not teacher-centered (Listantiningtyas, 2021).

The average pre-test, *post-test, and* N-Gain scores in the class can be seen in the comparison of the smallest scores on the pretest is 15 and post test 65. From this it can be seen the increase in scores in this class. The largest score on the pre-test is 60 and the post-test can reach a value of 100. That way, the average pretest score is 40 and post test 82, N-Gain 0.7 and can be seen in classes that use problem-based *learning* models get high criteria. This proves that *the problem-based learning model* affects the learning outcomes of students on excretory system material (Listantiningtyas, 2021).

b. Learning Outcomes in the Classroom Without Using *a Problem-Based Learning Model*

Learning outcomes in classes that do not *use a problem-based learning model have differences with classes that use a* problem-based learning model. (Lukitasari, 2019). Learning outcomes in class without using a problem-based learning model based *on table 4 the percentage of scores in classes without using* a problem-based learning model has a positive influence with a percentage of 13.8%, namely as many as 5 students who get scores below KKM. The KKM value is 70. The students with scores above KKM with a percentage of 86.1% are 31 students. The learning outcomes of students with this model are not as good as the use of *problem-based* learning models although the implementation of this model can be easier in learning by focusing on working on tasks, Trianto (2007) noted that this model tends to make students passive because it does not focus on students and is less motivated in learning.

Based on table 6 criteria for learning outcomes in classes without using *a problem-based* learning model, there are 18 people who belong to the very good category, 13 people who belong to the good criteria, meaning that there are 31 students who have good and effective abilities in the process of receiving and following the entire series of learning. While there are 5 students who fall into the criteria that are not good.

Self-esteem Level of Students Using *Problem Based Learning Model* on Excretory System Material

The implementation of teacher and student activities based on observation sheets gets a very good category. However, in the learning process there are several obstacles that affect the *self-esteem* of students. Based on table 9. The results of *students' self-esteem* before using the learning model are in the low category. Given the excretory system material in which there are abstract concepts can make students have difficulty in solving problems. So that the role of teachers is very important in an effort to increase students' *self-esteem* (Alifiani, 2019). Research at the first meeting in its implementation related to self-esteem *there is an aspect* of self-esteem that is the lowest percentage based on table 10, namely the aspect of courage with indicators showing concern for others. The things that are considered in this aspect are feeling warmth from others, feeling support from others, feeling accepted by others, and feeling recognition and respect from others (Arifin, 2014). In its implementation, which occurs when learning with group formation, there are some students with low *self-esteem* who look silent and less passionate in expressing opinions to only follow the flow of

the group. Based on the results of *self-esteem* of students after using the *problem-based learning* model has a high category can also be seen in figure 2. Based on the percentage, it is known that 83% of students with high category, 14% with very high category, 3% low category, and 0% very low category students. The difference in the results of students is due to two factors, namely internal factors and external factors of each student. The results *of self-esteem after using the learning model got this high category proving that the learning model can affect the level of* self-esteem of students. The application of *Problem Based Learning* in an effort *to increase students' self-esteem is one solution where with this model students are more included in the learning process to increase self-esteem in students (Syuhada, 2022).*

CONCLUSION

The implementation of teacher and student activities using the *Problem Based Learning* model gets a very good category with an average score of 100. Analysis of student learning outcomes using *problem-based learning models in the* cognitive realm resulted in an average pretest score *of 40,* posttest 82, and N-gain of 0.7 in the high category. Meanwhile, in classes without using *a problem-based learning* model, the average score of the cognitive domain *pretest* 34 and *posttest* 78 with an N-gain of 0.6 is included in the low category. Self-esteem analysis *of* students in classes using problem-based learning models *before being given action resulted* in low self-esteem results with a mean of 37.1, a median of 37, and a mode of 36. However, after being given action with the use of *problem-based* learning models in learning, *the results of students' self-esteem* increased in the high category with a mean score of 55.67, a median of 55, and mode 55.

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