

## The Implementation of Problem-Based Learning Model to Improve Student Learning Outcomes

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### ABSTRACT

Objective study This for know Application Model Learning Problem Based For Increase Results Study Computer And Network Base class X TKJ State Vocational School 1 Bitung. The research method used is classroom action research (PTK). The research took place in 2 cycles consisting of 8 meetings. Every cycle consists of planning action, implementation action, observation, and reflection. The subjects in the research were students of class X TKJ SMK Negeri 1 Bitung consisting of 32 person students. The data intake in a study covers data on student learning outcomes from the knowledge (cognitive) domain and the psychomotor (skills) domain. The research results show that the application of the problem-based learning model can improve computer and basic network learning outcomes for classroom students X TKJ vocational school Country 1 Bitung. This can prove that there is an enhancement in student learning outcomes in each cycle. In cycle I the percentage of completeness of students' knowledge of learning outcomes was 72%, while in cycle II the percentage of completeness of learning outcomes knowledge students increased become 94%. Then For cycle I the percentage of completeness of students' skills learning outcomes was 75%, while in cycle II the percentage of completeness of students' skills learning outcomes increased to 100%. Based on the results obtained, it can be concluded that the application of the problem-based learning model can improve computer and basic network learning outcomes for class X TKJ SMK Negeri 1 Bitung students.

**Keywords:** Learning Outcomes, Problem-Based Learning, Student

## INTRODUCTION

Education is an investment in the development of human resources (HR), where increasing skills and abilities is believed to be a supporting factor in navigating a life full of uncertainty Mulyasa (2014). To develop and nurture human potential, namely through various learning activities taught at all levels of education from level primary, secondary, and tertiary institutions. School is one of the educational institutions established by the government or public role Which big in effort from generation quality. Schools as formal institutions are given the task of carrying out learning activities that can play their role optimally. For each objective learning, must be created learning active, effective, efficient, and pleasant so that the child does not always feel bored in following the learning delivered and can develop the child's cognitive, affective, and psychomotor skills. According to Sari and Oktamarsetyani (2016), education in schools has the aim of developing participants' potential education, Wrong is the only one to become participant educated Which creative in solving a problem. 2 Problem-solving abilities are an important part that must be developed. Technological developments and the increasingly rapid movement of the times require humans to decide on solutions to use in dealing with various problems from simple to complex. Educational institutions are one of the learning institutions that train students to develop problem-solving abilities. According to Wulansari (2017), the ability to solve problems is trained through educational institutions through an integrated learning process with objective education To create man superior And competent who can compete and solve various problems in society.

Learning outcomes are often used as a measure to find out how far someone has mastered the material that has been taught. To actualize learning outcomes the required series measurement uses tool evaluation Which good and meets the requirements. Such measurements are possible because measurement is a scientific activity that can be applied in various fields including education. This level of mental development is manifested in the cognitive, affective, and psychomotor domains. Meanwhile, from the teacher's perspective, learning outcomes are when they are completed material lessons. Measurement results Study students can do with learning outcomes tests. What is meant by learning outcomes tests are tests that are used to assess the results of lessons that have been given by teachers to their students period time certain. In this matter, this giving test results Study must adjust to which type of learning outcome will be assessed.

The learning model at SMK Negeri 1 Bitung is found in special classes on eye lessons Computer And network base Still mengg uses it learning model with method lecture so that result learning process taught in class only centered on the Teacher. Matter This makes students unable to participate in process learning. So it affects learning outcomes in the classroom. Therefore, teachers must be able to create learning situations that are more creative and innovative and able to attract interest Study students Also make students more participate in the process of learning through the use of appropriate and appropriate learning models (Paat et al, 2022).

## LITERATUR REVIEW

Rahman and Amri in Mutia (2017), stated learning outcomes as changes in behavior obtained by students after doing activity Study. Change occurs in behavior that can observed And be measured in the form of change knowledge students as a result of Study And process interaction with the environment which is realized through the achievement of learning outcomes. In the behaviorist view, learning is a behavior of making connections between stimulus and response, and then strengthening them. Stimuli and responses can be strengthened by connecting them over and over again For possible learning processes and produce the change Which desired. Para behaviorist believes that results Study will more It is good to master it if you memorize it repeatedly (Purwanto, 2009).

Generally, objective education can entered in Wrong One from three domains, namely cognitive, affective, and psychomotor. Learning is intended to cause changes in behavior, namely changes in cognitive, affective, and psychomotor aspects. Changes in this aspect are the result of the learning process. Learning outcomes can be explained by understanding the two words that form them, namely "results" and "learning". The definition of result refers to an acquisition resulting from carrying out an activity or process that results in functional changes in input. Results production is acquisition obtained Because exists the activity of changing materials ( raw materials ) into finished goods ( finished goods ) Prime (2014). According to Winkel in Perdana (2014), learning outcomes are changes that result in a man's change in attitude And Act he did. Aspect change refers to a taxonomy of teaching objectives that includes cognitive, affective, and psychomotor aspects. Mudjiono in Malino (2012), states that learning outcomes are important things that can be seen from two sides that is side student and the Teacher. From the side student, learning outcomes are a level of development mentally Which is better when compared to When before Study. Level development mentally the 15 materialized on domain types cognitive, affective, And psychomotor. Whereas from the side Teacher, the results Study is the time when the learning material is completed.

Learning outcomes are often used as a measure to find out how far someone has mastered the material that has been taught. To actualize learning outcomes the required series measurement uses tool evaluation Which good and meets the requirements. Such measurements are possible because measurement is a scientific activity that can be applied in various fields including education. Measuring student learning outcomes can be done with learning outcomes tests. What is meant by learning outcomes tests are tests that are used to assess the results of lessons that have been given by teachers to their students within a certain period? In this case, the administration of learning outcomes tests must be adjusted to which type of learning outcomes will be assessed. Taking into account several theories and opinions regarding the results Study can be concluded that the results Study is changing human behavior as a result of the learning process. Changes in behavior are caused by him achieving mastery over several materials provided in the teaching and learning process.

Problem-based learning is a communication between improvement and reaction, a relationship between two-way learning and climate. Climate contribution to students as help And problems, whereas the ability system senses the brain To outline the guidelines concretely so that problems experienced can be appropriately explored, evaluated, resolved, and arrangements sought. Problem-based learning is an interaction between stimulus and response, a relationship between two learning directions and the environment. The environment provides input to learners from help and problems, whereas the system nerve The brain functions to interpret the assistance effectively so that the problems faced can be properly investigated, assessed, analyzed, and found solutions.

One learning model as an alternative to make learning Physics easy And pleasant is model learning PBL. As for objective PBL according to Rusman (2010), namely mastery of learning content from heuristic and development disciplines Skills solution problem. PBL Also relates to learning about life Which is wider (life-wide learning ) Skills in interpreting information, collaboration and team learning, and reflective and evaluative thinking skills. According to Glazer (2001), PBL emphasizes progress as a cycle that involves critical thinking and decisive reasoning in real settings. Glazer further revealed that PBL provides a valuable open door for students to learn broader things that pay attention to preparing students to become dynamic and reliable citizens. Through PBL students gain experience in dealing with realistic problems and emphasize the use of communication, collaboration, and existing resources to formulate ideas and develop reasoning skills.

Trianto (2009), states that PBL aims to help students develop thinking skills and problem-solving skills, learn authentic adult roles and become independent learners. Model Objectives Problem Learning-Based Learning Department Education National (2003), Learning-based problems make students become learners independently, This means that when students learn, they can choose appropriate learning strategies, are skilled at using these strategies to learn, and can control the learning process, and are motivated to complete their learning.

## METHODS

Objective study This is for now Application Model Learning Problem Based to Improve Basic Computer and Network Learning Outcomes for class X TKJ SMK Negeri 1 Bitung. The research method used is classroom action research (PTK). The research took place in 2 cycles consisting of 8 meetings. Each cycle consists of action planning, action implementation, observation, and reflection. The subjects in the research were class X TKJ students at SMK Negeri 1 Bitung, consisting of 32 students.

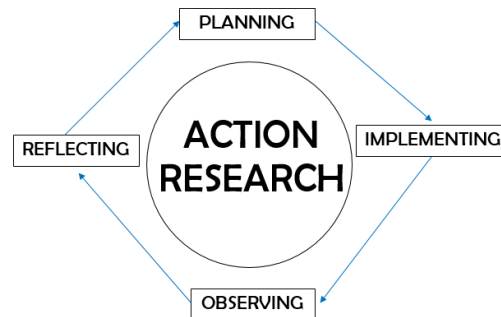
### *Type Study*

The type of research used is PTK, which consists of research, action, And class. Study action class is part of study action, and study level This part from study qualitative. Study action class is practical research carried out by examining the problems faced by teachers in the classroom and taking action to adjust these problems (Farhana and Awiria, 2019). Arikunto et al (2006) explain the phrase classroom action research from its constituent words, namely research, action, and class. Research refers to an activity of looking closely at an object using certain methodological methods or rules to obtain data or information that is useful for improving the quality of something that is of interest and important to researchers. According to Mills, action research is defined as a systematic investigation conducted by teachers, administrators, counselors, or others with an interest in the teaching and learning process or environment to gather information about how their schools operate, how they teach, and how their students learn.

Action research is research about things that happen in the community or target group and the results can be directly noticed by the community concerned. The main characteristics or characteristics of action research are the participation of researchers in an activity and the aim of improving the quality something a program or activity through study action. Based on these characteristics, classroom action

research can be defined as action research carried out by teachers as well as researchers in the classroom or together with other people (collaboration) by designing, implementing, and reflecting on actions collaboratively and participatively to improve or enhance the quality. the learning process in class through certain actions in a cycle.

Classroom action research is carried out in the form of cyclical activities consisting of four stages in one meeting and the total number of meetings is two cycles. The four stages consist of planning, action, observation, and reflection, as in Figure 1.



**Figure 1.** Cycle Study Action Class

The classroom action research cycle consists of four stages which show the steps, namely:

a. Planning

- 1) Study analysis curriculum to show standard basic competencies and competencies that will be conveyed to students by implementing a problem-based learning model.
- 2) Compile plan implementation learning about principal discussion which is following the problem-based learning model as attached in the attachment.
- 3) Create a worksheet for students (LKS)
- 4) Create a research instrument to collect data, namely an observation sheet for teacher and student activities.

b. Action

Implementation of actions, namely carrying out teaching and learning activities following the learning implementation plan (RPP) that has been prepared, namely by applying problem-based learning to the main discussion.

c. Observation

Observations are made to see the effect of the actions taken by implementing the model learning-based problem on principal discussion Which is observed by the observer and then recorded all the learning activities that take place on the observation sheet. The activities observed were all teacher and student activities when teachers and students carried out teaching and learning activities.

d. Reflection

Reflection is looking back at the actions that have been carried out in the classroom which have been recorded in the observation sheet. After completing the teaching and learning activities by applying the problem-based learning model to the subject matter. The researcher and observer reflect

on the implementation action class first cycle. The results of the observations provided by the observer will be used as guidance by the researcher in revising various weaknesses in the first cycle RPP in preparing the second cycle RPP at the next meeting.

### **Technique Data collection**

Technique collection data used in the study is:

- 1) Observation: Observation is used to determine the implementation and development of learning.
- 2) Test: The test in this research consists of a Post-Test (final test) in the form of essay questions which are used to measure student learning outcomes before and after being given action.
- 3) Documentation: Documentation is used to obtain data in the form of a list of initial grades, photographs that provide a concrete picture of student activities during the learning process, as well as other data and documents such as syllabi, lesson plans, and learning outcomes tests.

### **Data analysis**

The data analysis technique used aims to determine the improvement in learning outcomes of class X TKJ students in the computer subject and Basic Network. Analysis was carried out both for observation data and student test results.

#### **1. Analysis Data Observation**

The data analysis used is simple qualitative descriptive, namely describing using sentences to obtain information quickly and in detail.

#### **2. Analysis Data Results Test**

Analysis test results Study student used to measure results Study student while following the action process using a problem-based learning model. Analysis of student learning outcomes is carried out by determining the test percentage value. From the number of students who successfully achieve the KKM score, the percentage of completion can be calculated. To see the percentage increase in student learning outcomes in each cycle to find out whether the actions that have been implemented are successful or not based on the plan action set, so criteria used to follow the research objective, namely to determine the application of the Learning learning model-based problem can increase results Study students on eye Computer lessons and Network base class X TKJ. Results Study student said to succeed if it increases results Study student reach criteria Which determined. Indicator The success of learning outcomes in the cognitive domain (knowledge) and psychomotor domain (skills) of students is said to increase if  $\geq 75\%$  of the number of students achieve the KKM. The KKM for Basic Computer and Network subjects is determined to be 75.

### **Indicator Success**

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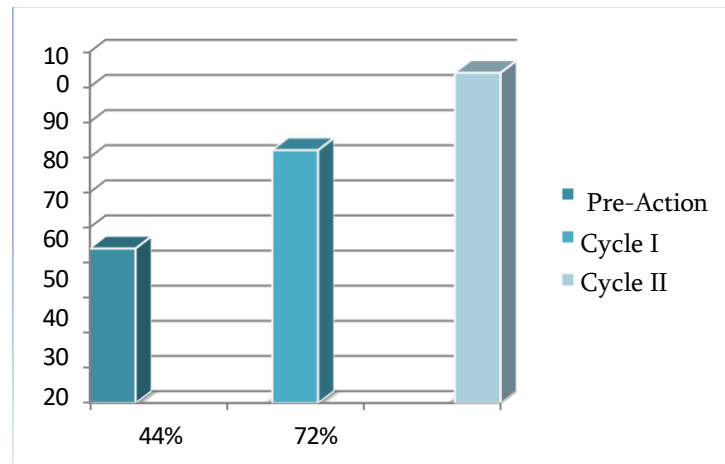
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## RESULTS AND DISCUSSION

This research is Classroom Action Research which consists of several cycles. Based on the implementation of the problem-based learning model that has been implemented there are two cycles, cycle I was held in 4 meetings, and cycle II was held in 4 meetings. The research subjects were class X TKJ students at SMK Negeri 1 Bitung. The results of the research show an increase in basic computer and networking learning outcomes. Data on student learning outcomes in cycle I have not obtained maximum results because there are still many weaknesses during the learning process, students are still less active and are not used to the learning model applied. In cycle II Teacher repairs weaknesses in cycle I, Students are starting to appear active and accustomed to the learning model applied as evidenced by the second cycle of the learning process which is going well and there is an increase in results. Study computer And network base Which Already reached percentage completeness and meet the specified success indicators, namely  $\geq 75$ . The increase in computer and basic networking learning outcomes can be seen in Table 1 and Figure 2.

**Table 1.** Enhancement Results Study Knowledge Student

No	Information	Pre-Action	Cycle I	Sklus II
1	Mark Average	73	78	87
2	The highest score	80	90	100
3	Lowest Value	60	70	70
4	Amount Student Which Completes	14	23	30
5	Amount Student the Incomplete	18	9	2
6	Percentage Completeness (%)	44%	72%	94%



**Figure 2.** Chart Enhancement Results Study Knowledge Student

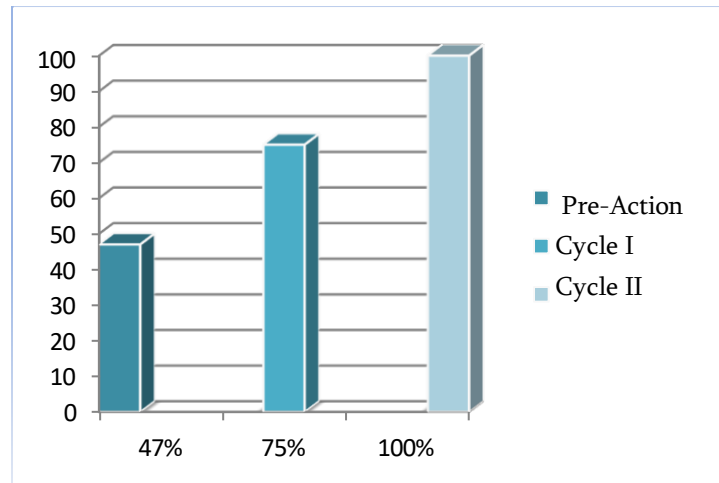
Table 1 and Figure 2 show that the percentage of student learning completeness in pre-action is 44% with an average score of 73 and 14 students have fulfilled the KKM. Percentage completeness Study students on cycle I reached 72%, with an average score is 78, and 23 students have fulfilled the KKM. Meanwhile, in cycle II, the percentage of completeness Study students increased become 94%, with a mark average of 87, as well as the number of students who completed was 30 students.

Application model learning based problem results Study knowledge There was an increase in students, it can be seen in the percentage of completion of cycle I and cycle II. Percentage cycle II is Higher than percentage cyclical completeness I. On cycle I there were 9 students who had not met the KKM with the highest score of 90 and the lowest score of 70. Meanwhile, in cycle II the students' knowledge-learning outcomes were better because there were only 2 students who had not reached the KKM with the highest score of 100 and the lowest score of 70. Based on the data obtained by the researchers, it showed that the application of learning models-based problems can increase results Study knowledge student class X TKJ SMK Negeri 11 Bitung.

**Table 2.** Enhancement Results Study Skills Student

No	Information	Pre-Action	Cycle I	Cycle II
1	Mark Average	71	81	91
2	The highest score	80	93	100
3	Lowest Value	60	67	75
4	Amount Student Which Completes	15	24	32
5	Amount Student the Incomplete	17	8	-
6	Percentage Completeness (%)	47%	75%	100%





**Figure 3.** Chart Enhancement Results Learn Skills Student

Table 2 and Figure 3 shows that the percentage of student learning completion in pre-action is 47% with an average score of 71 and 15 students have fulfilled the KKM. Percentage completeness results Study students on cycle I reached 75%, with an average score is 81, and 24 students have fulfilled the KKM. Meanwhile, in cycle II, the percentage of students' learning completion increased to 100%, with an average score of 81 and the number of students who completed it was 32 students.

In cycle I there were 8 students who had not met the KKM with the highest score of 93 and the lowest score of 73. Meanwhile, in cycle II the results of student learning skills became better. Good Because all students in class X TKJ Already fulfill KKM with a mark The highest value is 100 and the lowest value is 75. Based on the data obtained by the researchers above, shows the percentage of completeness in cycle I and cycle II. The percentage of cycle II is higher than the percentage completeness of cycle I so application model learning-based problems can improve students' learning outcomes, knowledge, and skills.

## CONCLUSION

Based on the research that has been carried out, it can be concluded that the application of the problem-based learning model can improve computer learning outcomes And network base student class X TKJ vocational school Country 1 Bitung. Enhancement can be seen from the number of complete learning outcomes in each cycle. On Pre-action knowledge learning results showed that the percentage of completeness was 44% and in cycle I it increased to 72%. In cycle II there was also an increase from cycle I, where the percentage of completeness of students' knowledge learning outcomes in cycle I namely 72%, and in cycle II there was an increase to 94%. Skills learning outcomes also increased from the percentage of Pre-Action completeness, namely 47%, in cycle I increased become

75%, And in cycle, II increased become 100%. So, The indicator of success in learning outcomes for class X TKJ students at SMK Negeri 1 Bitung, namely  $\geq 75\%$ , has been achieved.

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