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INCREASING LEARNING INTEREST AND LEARNING OUTCOMES OF AUTOMOTIVE BASIC WORK BY APPLYING PROJECT-BASED LEARNING MODEL

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ABSTRACT

The research aims to increase the learning interest and learning outcomes of automotive basic work. This type of research is classroom action research with three cycles, each cycle consisting of four stages, namely planning; action, observation, reflection. The research subjects were students of class X TSM SMK Tunas Bangsa Wanareja with a total of 19 students. The object of research is the learning interest and learning outcomes of Automotive Basic Work. Data analysis techniques using quantitative analysis. The results showed that the application of the PjBL model could increase the learning interest and learning outcomes of Automotive Basic Work. Increased learning interest can be seen from the results of the first cycle of 55.53%, increased in the second cycle to 66.38% and increased again in the third cycle to 80.59%. Increased learning outcomes can be seen from the results of the first cycle of 52.63% increased in the second cycle to 68.42% and increased again in the third cycle to 89.47%.

Keywords: project-based learning, learning interest, learning outcomes

INTRODUCTION

Motorcycle Engineering/ Teknik Sepeda Motor (TSM) is one of the study programs in SMK Tunas Bangsa Wanareja. The curriculum used by TSM is the 2013 curriculum. In the 2013 curriculum, there are subjects of basic automotive works that must be taken by students of class X in the even semester. Competencies in the subject of automotive basic work are identifying, using and maintaining workshop equipment (hand tools, power tools, and workshop tolls), and identifying, using and maintaining measurement tools according to the Standard Operation Procedure. To support learning, learning facilities such as hand tools, calipers, micrometers, and multimeters are needed. Besides, to increase the active role of students and maximum learning outcomes in learning activities Automotive Basic Work required active learning.

Inactive learning, the teacher positions himself more as a facilitator whose job is to provide students with the ease of learning. Active learning is a learning approach that involves many students in accessing various information and knowledge to be discussed and studied in the learning process in class, so they get a variety of experiences that can enhance their understanding and competence [1]. Students are actively involved and play a role in the learning process, while teachers provide more direction and guidance to students, as well as regulate the circulation and course of the learning process. If learning can arouse or encourage the emergence of student activities in the learning process there will be an increase in the ability of students to understand learning material, thus student learning outcomes will increase [2].

In the teaching and learning process, there are various activities including the delivery of lessons. Most of the teaching and learning process still uses learning methods that are only focused on the teacher such as the lecture method. Based on observations in class X TSM SMK Tunas Bangsa Wanareja raised the problem that learning activities in class X TSM are still using lecture learning so that students only focus on listening to the material, recording material and memorizing the material. The weakness of lecture learning is that students tend to be passive, classical speed regulation is determined by the instructor, less suitable for the formation of skills and attitudes, and tends to place the teacher as the last authority [3]. As a result, students are also seen as students who are sleepy, bored and move seats.

In addition, it was also stated that students get learning outcomes that are still below the completeness criteria. The learning outcomes can be seen from the final semester exam scores achieved in the odd semester of the academic year 2017/2018 that students of class X TSM get an average value of 69 with the number of students who reach the completeness criteria of 4 students from 22 students overall. One way to increase interest

and learning outcomes is to apply the right learning model. Learning model is one of the methods used by teachers in establishing relationships with students at the time of learning to achieve the goals set [4]. In choosing the learning model, several considerations are needed, including the objectives and learning material, student characteristics, teacher ability, availability of supporting tools and application [5].

The PjBL is considered to be very suitable for use in Automotive Basic Work subjects to increase learning interest and learning outcomes. PjBL is a learning model that uses projects/activities as the core of learning where students conduct exploration, assessment, interpretation, synthesis, and information to produce various forms of learning outcomes [6]. In this study, the learning process uses the PjBL model in Automotive Basic Work subjects. Students are given a project that has been determined by the teacher and then students are required to be able to design and make a product so that it can make students more active in learning.

Seeing the learning objectives of Automotive Basic Work, the PjBL model is a solution to overcome the interest in learning and learning outcomes in class X TSM SMK Tunas Bangsa Wanareja. Seeing the learning objectives of Automotive Basic Work, the PjBL model is a solution to overcome the learning interest and learning outcomes in class X TSM SMK Tunas Bangsa Wanareja. This is reinforced in research which suggests that the implementation of learning using PjBL model in welding courses can increase learning motivation and student learning outcomes of mechanical engineering education Universitas Sarjanawiyata Tamansiswa Yogyakarta Academic Year 2017/2018 [2]. Besides, PjBL has advantages, namely: (1) Improving students' learning motivation to learn; (2) Making students more active and successfully solving complex problems; (3) Encouraging students and developing themselves and practicing communication skills [7]. So to be able to solve this problem the PjBL model was chosen as a consideration to increase student interest learning and learning outcomes.

Model Project Based Learning (PjBL)

PjBL is a constructive approach to learning to deepen learning with a research-based approach to problems and questions that are weighted, real and relevant to their lives [8]. In the PJBL model using projects/activities as the core of learning, so students do exploration, assessment, interpretation, synthesis, and information to produce various forms of learning outcomes.

PjBL enables students to hone and develop skills through the reconstruction of knowledge as they collaborate to develop their projects and overcome problems at hand, thus forcing them to work out their thoughts and theories thoroughly [9]. The PjBL model is a learning method that uses problems as a first step in gathering and

integrating new knowledge based on experience in real activities.

For learning to be directed and structured syntax is needed as a reference in implementing learning. The syntax that needs to be done in PjBL, namely: 1) asking questions; 2) make a plan; 3) arrange to schedule; 4) monitoring project creation; 5) conduct an assessment; and 6) evaluation [10], [11].

Learning Interest

Interest is a sense of preferability and a sense of interest in a thing or activity without coercion [12], [13]. Interest and curiosity appear as positive influences in learning [9]. Thus, this understanding carries the meaning that asking for learning can contribute to learning.

Indicators of learning interest are student scores obtained from tests of interest in learning that measure aspect: excitement, interest, attention, and involvement [14]. Interest can be expressed by students through: statements prefer something than others, active participation in an activity of interest, and give greater attention to something that interests them with focus [15]. So, students can be said to have an interest in a learning activity if in the learning activities it appears that students feel happy, interested in the material, teacher's explanation, and are interested in doing the tasks given by the teacher, focusing and paying attention to learning activities, and actively involved in learning activities.

Student learning interest is a variable that can be influenced by various factors. Student interest in the outline can be influenced by internal factors or external factors [16]. External factors include; the condition of the school environment, learning methods, learning media, and the school environment.

The learning model is one of the factors that can influence student learning interest. Each competency has general and specific characteristics so that learning a competency requires certain methods that may not be the same as other competencies (Ginting, 2008). The results revealed that students' interest in learning could be increased by applying the PjBl model [17]. It is believed that by applying the PjBL model can increase students' learning interest in Automotive Basic Work subjects.

Automotive Basic Work Learning Outcomes

Learning outcomes are abilities possessed by students as a result of acts of learning and can be observed through student performance [18]. Learning outcomes are statements about what is expected, known, and can be demonstrated by students after the completion of the learning process [19].

Learning outcomes are divided into 3 domains, namely cognitive, affective, and psychomotor [20]. The cognitive domain is the domain of intellectual learning outcomes consisting of 6 aspects, namely knowledge or

memory, understanding, application, analysis, and evaluation. The affective domain is a domain that deals with attitudes consisting of 5 aspects, namely the recipient, the answer or reaction, judgment, organization, and internalization. The psychomotor domain is a domain that deals with the results of learning skills and the ability to act. These three domains are not separate parts but are interrelated entities.

To achieve student learning outcomes as expected, it is necessary to consider several factors that influence learning outcomes, both from within oneself or outside factors. The learning model is an external factor that can affect student learning outcomes [21]. Each learning model directs in designing learning to help students achieve learning goals [22]. Previous research found that applying the PjBL model can improve learning outcomes [2]. It is believed that by applying the PjBL model can improve student learning outcomes in Automotive Basic Work subjects.

RESEARCH METHODS

This type of research is Classroom Action Research. The action research design uses the Kemmis and McTaggart models. This model consists of four stages in each cycle, namely: (1) planning, (2) action, (3) observing, and (4) reflecting [23].

The research was conducted at SMK Tunas Bangsa Wanareja Cilacap in the even semester of the 2017/2018 school year from January to May 2018. The subjects of the research were TSM grade X students with 19 students. The object of research is the interests and learning outcomes of automotive Basic Work.

Quantitative research data were analyzed descriptively, measured using a questionnaire instrument to measure learning interest and tests to measure learning outcomes in Automotive Basic Work. Indicators of success from research actions are determined by several indicators namely the first indicator is learning interest, the data obtained will be processed referring to table 1 for its categorization. Research is successful if the percentage of students' learning interest is very high. Measurement of learning interest classically is based on the average score obtained by students, then conclusions are drawn after the criteria using the following formula:

$$P = \frac{\sum m}{NxB} \; x\, 100\ \%$$

Information:

P = Percentage

m = Interest score

N = Total students

B = Maximum score

The results of the acquisition of students' learning interest are analyzed with the guidelines in table 1 as follows:

Table 1. Criteria for the value of learning interest

Percentage	Criteria
75 % - 100 %	Very high
50 % - 74,99 %	High
25 % - 49,99 %	Medium
0 % - 24,99 %	Low

The second indicator is the learning achievement test, the analysis of the test is done by giving a test score based on the number of correct answers at the time of evaluation. Scores used on a scale from 0 to 100. After that, the percentage of students who meet the completeness criteria is calculated to determine the indicator of the success of the action using the following formula:

$$P = \frac{F}{A} x\ 100\ \%$$

Information:

P = Percentage of students who reached the completeness criteria

F = Number of students who score ≥ 75

A = Number of students taking the test.

RESULTS AND DISCUSSION

Learning Outcomes

Based on the results of the research found the average score of students' interest in the first cycle of 844 (55.53%) categorized high, the second cycle of 1009 (66.38%) categorized high, and the third cycle of 1225 (80.59%) categorized very high. Comparison of interest in learning between cycles can be seen in Figure 1:

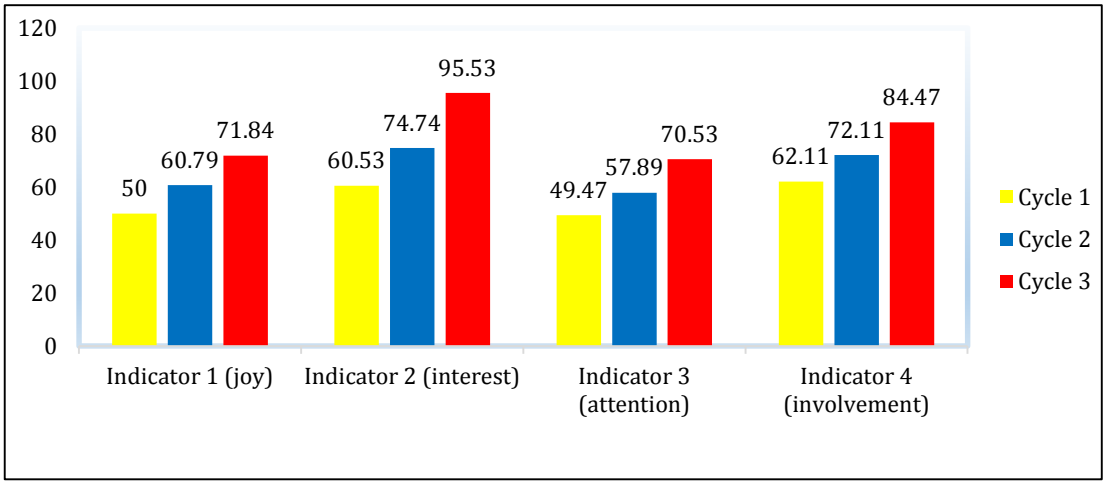

Figure 1. Comparison of Student Interest in Cycles I, II, and III

One cause of low interest in learning is the use of learning models. In the learning process, the teacher plays a role in the course of learning by using several models. Learning used by teachers is learning in the classroom that is centered on the teacher that is by conventional methods. The weakness of conventional learning is that students tend to be passive, classical speed regulation is determined by the instructor, less suitable for the formation of skills and attitudes, and tends to place the teacher as the last authority [3]. Students only focus on listening to the material, taking notes and memorizing

the material. Besides, students also look sleepy, bored and move seats.

The observations were supported by the results of the learning interest questionnaire. The results of filling out the student interest in learning questionnaires are used to find out how much interest in student learning after participating in learning by using the PjBL model. The results of interest in learning in the first cycle obtained a score with a score of 844 or 55.53%. An increase in cycle II with a score of 1009 or 66.38% in the high category. An increase in cycle III with a score of 1225 or 80.59% in the very high category. These results indicate that students of class X TSM SMK Tunas Bangsa Wanareja have sufficient potential to achieve maximum learning outcomes. This statement is reinforced by previous research which states that the application of the PjBL model can increase student interest and learning outcomes [24]. The results of the study were conducted on the same object, namely the interest in learning as was done in this study. With these results, it can be concluded that the PjBL model can increase the interest and learning outcomes of class X students of SMK Tunas Bangsa Wanareja.

Automotive Basic Work Learning Outcomes

The results of the first cycle test showed that the average student score was 72.37 where these results had not yet reached the completeness criteria set at 75%, so the researchers proceeded to cycle II. The results of tests in the second cycle that an increase can be seen from the number of students who completed from 10 in the first cycle increased to 13 students in the second cycle, and the average value of students from 72.37 in the first cycle to 75.53 in the second cycle. An increase can be seen from the number of students who finished from 13 in the second cycle increased to 17 students in the third cycle, and the average value of students from 75.53 in the second cycle to 81.32 in the third cycle. Improved learning outcomes of students' basic automotive work can be seen in Figure 2.

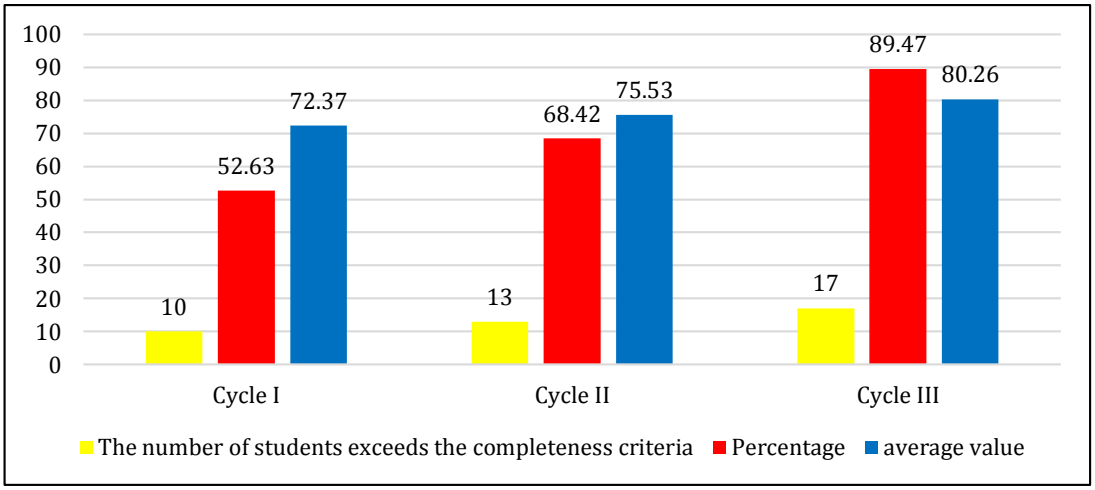

Figure 2. Comparison of Student Learning Outcomes in Cycles I, II, and III

The results of the first cycle test, the highest value obtained by students was 85 and the lowest score was 60 with an average grade of 72.37. The results of the first cycle test showed that there was an increase in the average when compared with the student's initial value, from an average grade of 69.32, increasing to 72.37, but this average had not yet reached the specified completeness criteria of 75%. The reason for the low value of students' initial ability is because there is no active student in the learning process, even if only asking. More students play alone and tell stories with friends so that the learning process is still passive. This causes student learning outcomes not as expected. Active learning is a learning approach that involves many students in accessing various information and knowledge to be discussed and studied in the learning process in class so that they get a variety of experiences that can enhance their understanding and competence [1].

To overcome this, the teacher gives direction and input about the material to students when implementing projects. This is so that students can know the basics of using tools and get knowledge about workshop equipment. Based on the results of the study, the objectives to be achieved from learning in the cycle I have not been achieved, so it is necessary to take further action, namely learning activities in cycle II. Test results in cycle II that an increase can be seen from the number of students who completed from 10 in the cycle I increased to 13 students in cycle II but have not yet reached the indicator of the success of their actions. Therefore, the need to continue the learning process in cycle III.

At the end of the third cycle, data collection was taken on the level of students' understanding of the material being taught, namely how to use and read a multimeter. It can be seen that the results of tests in cycle III that an increase can be seen from the number of students who completed from 13 in cycle II increased to 17 students in cycle III, and the average value of students from 75.53 in Cycle II to 81.32 in cycles III, so that the cycle III has reached an indicator of success. This is because students are familiar with the PjBL model so that students' learning interests are well-formed and can show active participation in the whole cycle III action. This is reinforced by previous research which states that the implementation of learning using the PjBL model in welding courses can increase learning motivation and student learning outcomes in Mechanical Engineering Education at Universitas Sarjanawiyata Tamansiswa Yogyakarta Academic Year 2017/2018 [2]. The results of the study were carried out on the same subject that is learning outcomes as was done in this study. With these results, it can be concluded that the PjBL model can improve student learning outcomes.

CONCLUSION

The application of the PjBL model could increase learning interest learning and learning outcomes of Automotive Basic Work. Increased learning interest can be seen from the results of the first cycle of 55.53%, increased in the second cycle to 66.38% and increased again in the third cycle to 80.59%. Increased learning outcomes can be seen from the results of the first cycle of 52.63% increased in the second cycle to 68.42% and increased again in the third cycle to 89.47%.

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