



**SOLVING PROBLEM METHOD AS IMPROVEMENT OF MOTIVATION AND SKILLS IN VOCATIONAL EDUCATION**

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**ABSTRACT**

This study aims to distinguish the increasing of motivation and practical mastery of maintaining 4-speed deer manual transmission system using a problem-solving method. This study is Classroom Action Research (CAR). The subjects of this study were 34 students of class XI program of light vehicle technic (TKR) 7. The study was conducted in two cycles; each consisted of five meetings, the 1<sup>st</sup> meeting in cycle I; and cycle II was practical learning; and the 2<sup>nd</sup> to the 5<sup>th</sup> meeting in the end of the cycle was a practical test. Data collection methods in this study are used questionnaires, observations, tests, and documentation. Some aspects include student motivation and student skills outcomes. The action given by the teacher is practical learning using *problem-solving* practice methods. The steps are compiled practical learning material in the form of job sheet practice. The job sheet was distributed to the learning teams to work on, then after completing the next step the practice evaluation is carried out. Data is analyzed using descriptive statistics. The results showed an increase in student motivation and skills in vocational subjects to improve the 4-speed deer manual transmission system. This is indicated by (1) the percentage of students' learning motivation when learning practices in the first cycle reached 85.60%, with moderate criteria, in the second cycle increased to 76.19%, with high criteria. (2) the average value of student learning outcomes in the first cycle was 79.48 with good criteria, in the second cycle increased to 83.06, with very good criteria. (3) the classical learning completeness of students in cycle 1 was 82.36%, with high criteria, in cycle II it increased to 94.12% with very high criteria.

**Keywords:** *motivation, skills, methods, and problem solving*

## INTRODUCTION

Vocational High School (VHS) is one of the secondary education schools which prioritizes graduates mastering the various competencies needed by Business World or Industry [1], [2], [3], [4], and [5]. SMK graduates are not only intended for entrepreneurship / Industrialization, but they are also allowed to continue their studies to tertiary level. Vocational secondary education aims to increase intelligence, knowledge, and skills to live independently and to follow further education following their vocational training [6], [7], [8]. Therefore, the Vocational School must be able to utilize all its resources for the achievement of these objectives.

Vocational Schools with Light Vehicle Engineering (TKR) programs are one of the schools currently in high demand by the public [5]. That is because DU / DI Light Vehicle Engineering (DU / DI automotive) can develop dynamically over time, so there is a high employment opportunity. The dynamics of DU / DI automotive is highly influenced by the quality of its workforce, in this case, most of them are graduates of vocational automotive expertise programs. For this reason, TKR Vocational Schools are always demanded to produce competent

graduates following the demands of the entrepreneurship /Industrialization automotive so that their dynamics continue. The demand has been stated in the TKR Vocational School curriculum, in the form of charging students to study and master various subjects in the normative, adaptive, and productive program groups.

There is a Vocational School in Kebumen Regency is the Cipta Karya Prembun Vocational School. The success of Vocational High Schools in TKR expertise programs can be measured by the extent to which students' learning outcomes are achieved in the production program group subjects provided [9], [10]. These subjects include repairing a manual transmission system, repairing minor damage to a safety circuit or electrical system, maintaining/servicing the *engine* and its components, and repairing the filling system.

Preliminary observations on practical learning at SMK Cipta Karya Prembun on January 5, 2019, found findings that the achievement of student skills during the even semester of the 2018/2019 academic year in one of the XI TKR classes, on productive program group subjects was smaller than the achievement on subjects normative and adaptive program groups, because the

average value only reaches 80, whereas in subjects normative and adaptive program groups reach 83. The lowest achievement of productive program group subjects is in subjects improving the manual transmission system where the average value is only 78.

Besides observing the achievement of the student's skill results above, the researcher also observed the achievement of the student's skill results in the production program group subjects in the same semester of the 2018/2019 school year in class XI TKR 7. In these observations the data obtained results show that in subjects improving the manual transmission system the achievement of student grades is low again. The proof is that in class XI TKR-7 in these subjects, only 21 out of 34 students have received grades in the KKM of the school. Yet for subjects in productive program groups, students are required to completely master them in theory and practice. The mastery is said to be complete if  $\geq 85\%$  of students in the class get the school  $\geq$  KKM value [11].

From the results of the initial observations above, the researchers then deepened their observations on January 26, 2019. In these continued observations, subjects improving the manual transmission system were

carrying out practical learning, so that the researchers directly observed the ongoing learning process. The result obtained findings, that natural learning teacher practices using group teaching methods and learning materials are made in the form of *job sheet* practices that worked/ practiced by study groups.

Other findings, that in the implementation of practical learning students are less motivated, because: (1) the practical learning is only dominated by a small number of group members, many members just playing around, sitting and talking; (2) the teacher's expectation to each group member to be independent, that many members simply see the work of their group friends without doing it themselves. Whereas learning is the most meaningful and deep when learning is actively carried out by students themselves [12],[13].

The above conditions require a teacher to make changes or improvements to the practice learning method used so that practice learning takes place more effectively and students are also more motivated. The method must make students more active in learning, motivated in learning, and can do all practical assignments given (on the practice *job sheet*) directly and completely, and achieve high results. One method that can be used to

solve these problems is the *problem-solving* practice method.

Methods of *problem-solving* is a method of thinking to solve the problem. To it, troubleshooting or *problem-solving* is the use of the method in learning activities with road train students deal with problems both personal problems or individual and group problems to be solved alone or jointly. Problem-solving is "a learning process in the form of removal of discrepancies or non-compliance that occurred between the results obtained with the desired".

Based on some of the opinions above, the conclusion is drawn that the problem-solving method (*problem-solving*) is a presentation of subject matter that exposes students to problems that must be solved or resolved to achieve learning objectives. This method needs to be watched out because it will lead to frustration among students because each of them has not been able to find a solution from the process we are doing. However, teachers can either describe that they should have a mind fruit with rational reasons. In this study, students are required to conduct authentic investigations to find solutions to problems that are given. They analyze and identify problems, develop

hypotheses, collect, and analyze information and conclusion.

The practice of students actively and directly make mastery of learning submitted can be embedded in more depth, so that the learning outcomes to be high. Practicing is best to learn through direct experience. The more concrete students learn the teaching material, the more experienced students will get, so the learning outcomes are high. Referring to the problems that have been stated above, it is necessary to research on "Improving Motivation and Practice Mastery Skills Using the *Problem Solving Method*".

## RESEARCH METHOD

This research is a kind of *classroom action* conducted *research* collaboratively and participative, meaning that researchers do not conduct their own research, but collaborate or cooperate with vocational teachers of 4 *speed* deer manual transmission systems at SMK Cipta Karya Prembun.

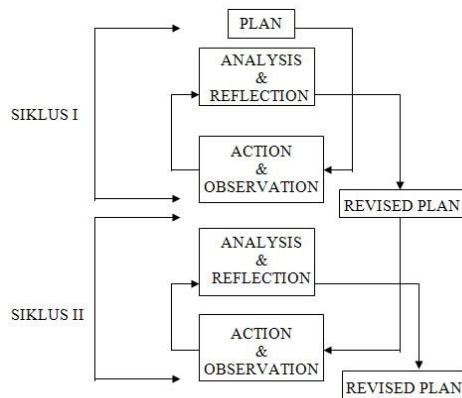


Figure 1. Classroom action research cycle

**RESULTS AND DISCUSSION**

1. Effects of Problem Solving Learning Methods in Improving Student Learning Motivation.

Observations are made of student motivation and student skills. If there are deficiencies or weaknesses found by the

observer, the weaknesses or deficiencies are written in the note section at the end of the observation sheet. These findings become the subject of joint discussion between researchers and observers in the reflection stage. The results of the discussion as a basis for reference in planning the next learning cycle. The result of observation in the first cycle as follows:

1) Cycle 1 Results of Student Learning Motivation

The results of observations on students' learning motivation during the implementation of practical learning using *problem-solving* methods in the first cycle are shown in the following table:

Table 1. Result of Student Learning Motivation Cycle 1

No	Indicator	Percentage
1	Persevering in the task	58.28%
2.	Tenacious in facing difficulties	5 8.83 %
3.	Showing interest	5 9.07 %
4.	Happy to work independently	5 6.99 %
5.	Can defend his opinion	5 8.09 %
6.	It's not easy to let go of things that are believed	59,32 %
7.	Happy to find and solve problem problems	59.56 %
<b>Average</b>		<b>58,60%</b>

Based on the table above shows that the percentage of the average motivation to learn

students of aspects in measuring 1) Diligent in facing the task of answering by 58.28%, with the

criteria of "being", 2) Resilient in the face of adversity answered by 58.83%, with "medium" criteria, 3) Shows interest in answering for 59.07%, with "medium" criteria, 4) Happy working independently answering for 56.99%, with "medium" criteria, 5) Can retain that has answered by 58.09%, with the criteria of "being", 6) It is not easy to remove things that are believed to reply by 59.32%, with the criteria of "being", 7) Glad to find and solve the problem questions answered by 59.56%, with "medium" criteria. It can be seen that the average cycle 1 students' motivation is 58.60% and are within the criteria of "being".

## 2) Cycle 1 Results of Student Skill

At the second meeting in the first cycle the score is up. Before a practical test is conducted, each student is required to submit a practice report assignment in advance. Collection of practice report assignments as a condition for taking a practical test. Practice tests are carried out individually. During a practical test, students are given a practical test *job sheet* and a practical worksheet following the material they learned

at the first meeting. The complete results of the first cycle practice test can be seen in the following table:

Table 2. Cycle 1 Student Skills Results

Aspect	Results
The highest score	85.98
Lowest value	74.42
Grade point average	79.48
Total students	34
KKM	75
Many students have finished studying	28
Classical learning completeness	82.36 %

The table shows that:

- The highest score achieved by students who are 85,98, with the criteria very well.
- The lowest score achieved by students is 74.42, with good criteria.
- The average value of student skills in one class reaches 79.48, with good criteria.
- The number of students who obtain skills above the KKM is 28 students.
- The number of students who score below the KKM is 6 students.

f. Completion of classical learning reaches 82.36%, with very high criteria.

### 3) Reflection

At this stage, the researcher analyzes the results of the observation stage, then consults with the local subject teacher. This is to find out the obstacles or problems that occur during the learning process. The results of the analysis and discussion between researchers and teachers showed that the results achieved in the first cycle were not yet fully maximized because there were still some weaknesses and weaknesses found, namely:

- a) The utilization of time allocation or hours of practice learning is not yet good/optimal.
- b) Students are not optimal in carrying out tasks related to work attitudes, work processes, and individual student work outcomes.
- c) There are still some students who practice the work / practical assignments given are not in accordance with the SOP.

d) Achievement of practice travel time still exceeds the specified time limit.

e) The teacher is not optimal in giving an assessment of work attitudes, work processes, and individual student work outcomes.

### 4) Cycle II

#### a. Observation Results of Cycle II

The observation phase (observation) is done when the learning process/action is ongoing. The researcher is still assisted by an observer, a local subject teacher. Observations (observations) are made of students' motivation and skills. The results of the observation cycle II are presented below:

#### b. Cycle II Results of Student Learning Motivation.

The results of observations of student learning motivation during the implementation of practical learning using *problem-solving* methods in the first cycle I shown by the following table:

Table 3. Cycle II Student Learning Motivation Results

No	Indicator	Percentage	Category
1	Persevering in the task	80.15%	High
2	Tenacious in facing difficulties	80.70%	High
3	Showing interest	73.04%	High
4	Happy to work independently	73.17%	High
5	Can maintain his opinion	73.78%	High
6	It's not easy to let go of things that are believed	78.45%	High
7	Happy to find and solve problem problems	74.02%	High
<b>Average</b>		<b>76.19 %</b>	<b>High</b>

Based table above shows that the results of the average percentage of motivation to learn the students of the aspects measured 1. Persevering in the face of duty answered by 80.15%, with the criteria of "high", 2. Resilient in the face of adversity answered by 80.70%, with "high" criteria, 3. Shows interest in answering by 73.04%, with "high" criteria, 4. Happy working independently answering by 73.17%, with "high" criteria, 5. Can maintain his opinion answering by 73.78%, with the criteria of "high", 6. It is not easy to let go of the things believed to be answered by 78.45 %, with the criteria of "high", 7. Happy to find and solve problems answering questions by 74.02%, with "high"

criteria. It can be seen that the average cycle II student motivation is 76,19%, and is in the "high" criteria.

#### c. Results of Cycle II Student Skills

In the first cycle of the first meeting of the two up to five tests the student's practice. Before a practical test is conducted, each student is required to submit a practice report assignment in advance. Collection of practice report assignments as a condition for taking a practical test. Practice tests are carried out individually. During a practical test, students are given a practical test *job sheet* and a practical test student worksheet in accordance with the material they learned at the first meeting. The summary data test



scores of students practice the first cycle I can be seen in the following table:

Table 4. Results of Cycle II Student Skills

Aspect	Results
Rated highest	88.6
Lowest value	74.90
Grade point average	83.06
Number of students	34
KKM	75
Many students have finished studying	32
The completeness learn classical	94.12%

The table shows that:

- 1) The highest score achieved by students is 88,6, with very good criteria.
- 2) The lowest score achieved by students is 74,9, with good criteria.
- 3) The average value of the skills of students in one class to reach 83,06, with the criteria very well.
- 4) The number of students who score above KKM skills is 32 students, while those who score below KKM are 2 students.
- 5) Classical learning completeness reaches

94.12 %, with very high criteria.

#### d. Reflection

Based on the observations in the previous stage, it shows that the motivation of students in cycle II has been going better than cycle I. This can be seen from the increasing enthusiasm of students when participating in practical activities. Whereas from the results of the practice tests that have been carried out in the second cycle, it turns out that it has reached the specified indicators namely students who passed more than 85%.

The effect of *problem-solving* learning methods in increasing student motivation is quite good. It can be seen that students' learning motivation has increased in cycle I to cycle II. The motivation of student learning in cycle I to cycle II increased by 15.89. While the percentage increase from cycle I to cycle II was 17.59%. This illustrates that a learning method has an effect on the quality of learning.

2. Effect of *Problem Solving* Learning Method in Improving Student Skills

The effect of *problem-solving* learning methods in improving student skills is quite good. It can be seen that students' skills have increased in cycle I to cycle II. From the first cycle to the second cycle is equal to 3.55, while the increase in the percentage of graduating from the first cycle to the second cycle is equal to 11.76%.

### CONCLUSIONS

The conclusions obtained from the results of research and discussion about the use of *problem-solving* practice methods are as follows:

1. In the implementation of practical learning on subjects improving the manual transmission system using *problem-solving* practice methods, learning material is presented in the form of practical *job sheets*. In the initial stage, each student carries out the practice and does the manual transmission practice assignments according to the instructions in the *job sheet* practice *problem solving* that has been given, the *job sheets* present several problems that need to be solved by students, then students find solutions to solve the problem, i.e. read a book or discuss. In the next stage, students set interim answers based on data obtained from books or discussions, and also test the truth of the interim answers. In the next stage, students must draw conclusions about the answers to the problems earlier after all students carry out practical activities, the next step is to do a practical test conducted by students individually with material that has been determined by the researcher. It is carried out until all students carry out a manual transmission practice test.
2. The results of student learning motivation are increased by using the *problem-solving* practice method. Increasing the achievement of student motivation is 58.60% of the criteria in the first cycle to 76.19% to reach the high criteria in the second cycle so that it has reached the indicators set by the researchers that is  $\geq 75\%$ .
3. Improving student skills using *problem-solving* practice methods shows the average value of student learning outcomes reached 79.48 in the first cycle

and 83.03 in the second cycle, and classical learning completeness reached 82.36% in the first cycle to 94.12% in the cycle II. These results conclude that the average value of student skills has increased in each cycle and classical learning completeness reaches the indicator set by the researcher that is  $\geq 85\%$ .

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