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Padang, November 9-11, 2017

4th International Conference on Technical and Vocational Education and Training (TVET)

Theme :
Technical and Vocational Education and
Training for Sustainable Societies

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FOREWORDS

This proceeding aims to disseminate valuable ideas and issues based on research or literature review in the field of vocational, technical and engineering studies, which have been presented in 4th International Conference on Technical and Vocation Education and Training. This conference has taken place in Hospitality Center Universitas Negeri Padang, November 9-11, 2017.

The theme of Conference focused on the perspective of technical and vocational education and training for sustainable society to face the challenges of 21st century, globalization era, and particularly Asian Economic Community. To overcome the challenges, we need the innovation and change in human resources development. Technical vocational educational and training have essential roles to change the world of education and work in order to establish sustainable society.

Undoubtedly, TVET need to enhance the quality of learning by developing various model of active learning, including learning in the workplace and entrepreneurship. Create innovation and applied engineering as well as information technology. Improvement of management and leadership in TVET Institution, and development of vocational and technical teacher education.

Many ideas and research findings have been shared and discussed in the seminar, more than 176 papers have been collected and selected through scholars, scientists, technologist, and engineers'. as well as teachers, professors, and post graduates students who participated in the conference.

Eight keynote speakers have taken a part in the conference, namely Prof. Intan Ahmad, Ph.D. (Director general of learning and student affairs, Kemenristek Dikti) and Prof. Josaphat Tetuko Sri Sumantyo, Ph.D. (CEReS Chiba University) and Prof. Dr. Maizam Alias (UTHM Malaysia) and Prof. Ganefri, Ph.D. (Rector of UNP) and Prof. Dr. Ramlee bin Mustapha (UPSI Malaysia) and Prof. Nizwardi Jalinus, Ed.D. (Chair of TVET doctoral program, FT UNP) and Prof. Michael Koh, Ph.D. Dr. Fahmi Rizal, M.Pd., MT (Dean of FT UNP). They all have a great contribution for the success of the conference.

Finally, thank a million for all participants of the conference who supported the success of 4th International conference on TVET 2017 and most importantly, our gratitude to all scholars who support and tolerated our mistake during the conference.

Padang, 9 November 2017

Prof. Dr. Nizwardi Jalinus, M.Ed
Chair of Scientific Committee

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IMPROVING LEARNING MOTIVATION THROUGH IMPLEMENTATION PROBLEM SOLVING LEARNING STRATEGY

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ABSTRACT: The problem of research is the low motivation to learn the students to lesson the auxiliary driving machine has not run as expected. The purpose of research on the implementation of problem solving learning strategies in SMK N 10 Padang. This type of research is a classroom action research model using strategy. The research subjects of class X TKN amounted to 23 students. The research instrument is a questionnaire. Data were analyzed by using T-Test. Guidelines for decision making in this study if significance > 0.05 then H_0 accepted and vice versa if significance < 0.05 then H_0 rejected and H_a accepted That is a difference between learning motivation cycle 1 with cycle 2 and the application of problem-solving learning strategies managed to improve student learning motivation from cycle 1 to cycle 2. Data processed by using SPSS 17 program. The results obtained significance $0.00 < 0.05$ which means H_0 rejected and H_a accepted, be the difference motivation learning cycle 1 with cycle 2 and implementation of learning strategy problem solving successfully increase student learning motivation from cycle 1 to cycle 2.

Keywords: Learning Motivation, Problem Solving, Solso

1. INTRODUCTION

The process of teaching that occurs in the classroom is very decisive results that will be achieved by students in a learning. Many factors influence the learning process. One important factor is the motivation of students to follow the learning process.

This is because the motivation to learn is an internal and external encouragement that is in students who are learning to make changes in behavior. In principle, motivation gives reinforcement, encouragement, direction to the actors who are closely related to the principles in learning that have been encountered by learning sciences experts. With the motivation from within the students make the rise of desire and desire of students to succeed, hope and future ideals, encouragement and needs in learning to change towards the better.

While observing Problems that often arise in class X TKN SMK N 10 Padang is in the students there is no impulse desire in learning, motivation in self is felt less, when the teacher explain the lesson students tend to do activities that are not related to the lesson, disturbing friends, speaking in class. So the willingness to learn does not exist. Observations seen in the learning process of teachers are still using conventional teaching methods in teaching, lecture methods used are considered less effective in the learning process of auxiliary engine. This method causes the motivation in students is very less. This will be the cause of low student learning outcomes so that it takes a method or learning strategy that can generate student learning

motivation of class X TKN SMK N 10 Padang especially on the subject of ship propulsion engine. Increased student motivation can be started from the activities undertaken by students while learning so that students will experience activities that cause students are happy in learning. from the activities of the students we can apply a learning strategy that can encourage student motivation, one of them is using problem solving learning strategy. The problem solving learning strategy is supposed to be able to develop and improve the students 'motivation, activity and understanding in learning, to run the students' reason and to think in learning to a lesson concept. Problem solving is one way that can create a student-centered learning process. Students can develop reason, skills, creativity in solving problems experienced by students. In the implementation of problem solving learning strategies students must think, identify problems, gather facts and theories that support and develop a deep understanding of the problems faced by students [4] problem solving is a learning process that emphasizes more active, more inductively oriented engagement than deductive and discovery by the students themselves.

In the learning process students are required to analyze a condition or problem faced in the field of engineering, ship machining activities are very demanding a solution to the constraints or problems faced ship propulsion engine. It requires students to think scientifically so that the problem is solved. [2] "Learning activities need to prioritize problem solving because by dealing with problems learners will be encouraged to use the mind creatively and



work intensively to solve the problems faced in life".

In this study the researcher will use the problem solving learning strategy which is enclosed by solso which has the following steps [3]:

1. Identification of Problems
2. Representation / Presentation of Problems
3. Planning Solutions
4. Implementing Planning
5. Assess Planning
6. Assess the results of the solution

The characteristics of the problem-solving strategy are as follows: learning begins with a problem, the problems given must relate to the real world of the students, organize learning around the problem, not around the discipline of science, give great responsibility in forming and running directly their own learning process, using small groups and demanding students to demonstrate what they have learned in terms of products and performance. By using problem solving learning strategy (Problem Solving) is expected to increase student motivation.

Motivation is perceived as a boost that can help the learning process. The word motivation comes from the word "motiv" which can be interpreted as the strength contained within the individual, which causes the individual to act and do. Motives can not be observed directly, but can be interpreted in his behavior, in the form of stimulation, encouragement or generating the emergence of a certain behavior. Motive is the driving force from within and within the subject to perform certain activities in order to achieve the goal. Even the motive can be interpreted as an internal condition (preparedness).

Motivation is all the power that drives a person to do something. With a self-motive someone will be compelled to act on something. The power that drives a person to do so because of a strong desire that affects him. [6] "motivation is as a driving force that transforms energy within a person into a form of real activity to achieve a particular goal". [1] Some indicators of learning motivation are as follows:

- 1) The desire and desire succeed in students in learning so that students try in learning in order to obtain good learning outcomes.
- 2) There is encouragement and need in learning as the spirit of the parents and make learning a need for the students themselves.
- 3) There is hope and aspiration of the future of the students. With these ideals can motivate students to learn well.
- 4) The existence of awards in learning when students are successful which is a plus for students so that students' motivation in learning to stay awake.
- 5) The existence of interesting activities in learning. With interesting activities, this is an encouragement for students to enter in these learning activities.

6) The existence of a conducive learning environment, allowing a student to learn well and not interfere with the motivation to learn that has been owned by students. The environment can also to foster student motivation so that with a good atmosphere will grow student motivation in learning.

It can be concluded that motivation is an impulse to the students to get their desires and desires to succeed in reaching their hopes and aspirations for the future.

2. METHOD

The type of research to be conducted is classroom action research (PTK) or Classroom Action Research, each cycle consisting of planning, action, observation and reflection. Classroom action research is intended to improve or improve the quality of learning. This research will investigate about learning activities by using problem solving learning strategy.

Location of learning process in this research that is at SMK N 10 Padang. The classroom action research time is carried out in even semester 2013-2014. Research subjects in this class action research is the students of class X TKN which amounted to 23 people who are all male.

The research instrument is used to measure the value of variables to be studied. The instrument used in this study is a questionnaire to motivate learning auxiliary driving machine.

Instrument testing is conducted to find out and select valid and reliable items. With this trial will be obtained the instrument of validity (validity) and reliability (reliability) so it is feasible to be a measuring tool in data collection. The results of the study using T-Test. Guidelines for decision making in this study if significance > 0.05 then H_0 accepted and vice versa if significance < 0.05 then H_0 rejected and H_a accepted that there is an increase in learning motivation between cycle 1 to cycle 2 and the application of problem solving learning strategies managed to improve motivation to learn students from cycle 1 to cycle 2. Data is processed using SPSS 17 program.

3. RESEARCH RESULTS AND DISCUSSION

Based on the results of research, student motivation in cycle 1 can be defined:



Table 1. Description of Data Motivation Cycle 1

| | | |
|----------------|---------|------------------|
| N | Valid | 23 |
| | Missing | 0 |
| Mean | | 118.61 |
| Median | | 118.00 |
| Mode | | 112 ^a |
| Std. Deviation | | 10.470 |
| Variance | | 109.613 |
| Range | | 44 |
| Minimum | | 94 |
| Maximum | | 138 |
| Sum | | 2728 |

Based on the description of motivation data cycle 1 obtained the result that the student's motivation in cycle 1 has an average of 118.61. Median of 118, Mode sebsar 112, Standard deviation of 10.470. Variance of 109.61 with a range of 44 mainimum values of 94 and maximum value of 138, the number of data cycle 1 of 2728. While for the description of data cycle 2 is:

Table 2. Description of Data Motivation Cycle 2

| | | |
|----------------|---------|---------|
| N | Valid | 23 |
| | Missing | 0 |
| Mean | | 134.70 |
| Median | | 136.00 |
| Mode | | 139 |
| Std. Deviation | | 12.477 |
| Variance | | 155.676 |
| Range | | 51 |
| Minimum | | 108 |
| Maximum | | 159 |
| Sum | | 3098 |

Based on the description of the data motivation cycle 2 obtained the result that the student's motivation on cycle 2 has an average of 134.70. Median of 136, Mode of 139, Standard deviation of 12.477. The variance of 155.67 with a range of 51 mainimum values of 108 and maximum value of 159, the sum of data cycle 2 of 3098.

The description of the histogram of learning motivation variable then first find the number of interval class by using the following formula:

$$\begin{aligned} \text{Many Classes (K)} &= 1+3,3 \text{ Log N} \\ &= 1+3,3 \log 23 \\ &= 5,49 \\ &= 6 \text{ kelas} \end{aligned}$$

$$\begin{aligned} \text{Interval} &= \frac{\text{the highest value} - \text{the lowest value}}{\text{Many Classes}} \\ &= \frac{138-94}{5,49} = 8,01 = 8 \end{aligned}$$

With the help of SPSS 17 the frequency of each interval class is then tabulated to Table 3 below:

Table 3. Frequency Distribution of Cycle Learning Motivation 1

| Motivation Value Learning | Frequency | Presentation (%) |
|---------------------------|-----------|------------------|
| 94-101 | 2 | 8,69 |
| 102-109 | 1 | 4,34 |
| 110-117 | 7 | 30,43 |
| 118-125 | 8 | 34,78 |
| 126-133 | 2 | 8,69 |
| 134-141 | 3 | 13,07 |
| Total | 23 | 100 |

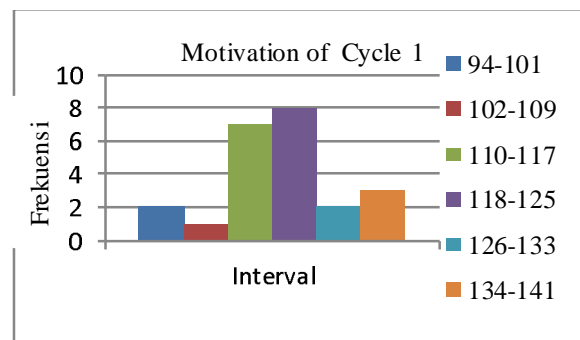


Figure 1. Histogram Frequency Distribution Cycle Motivation 1

Based on the frequency distribution of learning cycle motivation 1 students in cycle 1 can be made by dividing categories to five groups, ie groups are very good, good, moderate, not good, not good.

Very Good Category: $\geq (Mi + 1,5 Sdi)$

Good Category: $(Mi + 0,5 Sdi) \text{ s / d } (Mi + 1,5 Sdi)$

Medium Category: $(Mi-0,5 Sdi) \text{ s / d } (Mi + 0,5 Sdi)$

Less Good Category: $(Mi-1,5 Sdi) \text{ s / d } (Mi-0,5 Sdi)$

Not good category: $\leq (Mi-1,5 Sdi)$

To calculate ideal Mean and ideal deviation standard using formula:

$$\begin{aligned} Mi &= 1/2 (\text{Ideal lowest value} + \text{Highest Ideal Value}) \\ &= 1/2 (33+165) \\ &= 99 \end{aligned}$$

$$\begin{aligned} Sdi &= 1/6 (\text{The highest ideal value} - \text{the lowest Ideal Value}) \\ &= 1/6 (165-33) \\ &= 22 \end{aligned}$$

The classification of the data can be seen in Table 4 below:



Table 4. Classification of Data Motivation Cycle 1

| Category | Span | Total of Respondents | Percentage (%) |
|-----------|-----------|----------------------|----------------|
| Very good | ≥ 132 | 3 | 13,04 |
| Good | 110 – 132 | 17 | 73,92 |
| Medium | 88-110 | 3 | 13,04 |
| Poor | 66-88 | 0 | 0 |
| Not good | ≤ 66 | 0 | 0 |
| Total | | 23 | 100 |

Based on the calculation, the grouping of motivation variables obtained as much as 3 respondents with very good category, 17 respondents with good category, 3 respondents with medium category. From these data indicate that student motivation is in good category.

The description of the histogram of learning motivation variable then first find the number of interval class by using the following formula:

$$\begin{aligned} \text{Many Classes (K)} &= 1+3,3 \log N \\ &= 1+3,3 \log 23 \\ &= 5,49 \\ &= 6 \text{ kelas} \end{aligned}$$

$$\begin{aligned} \text{Interval} &= \frac{\text{the highest value} - \text{the lowest value}}{\text{Many Classes}} \\ &= \frac{159-108}{5,49} = 9,28 = 9 \end{aligned}$$

With the help of SPSS 17 the frequency of each interval class is then tabulated to Table 5 below:

Table 5. Frequency Distribution of Cycle Learning Motivation 2

| Motivation Value Learning | Frequency | Presentation (%) |
|---------------------------|-----------|------------------|
| 108-116 | 1 | 4,34 |
| 117-125 | 6 | 26,05 |
| 126-134 | 3 | 13,07 |
| 135-143 | 8 | 34,78 |
| 144-152 | 3 | 13,07 |
| 153-161 | 2 | 8,69 |
| Total | 23 | 100 |

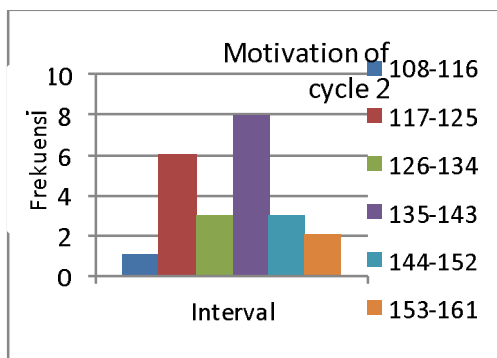


Figure 2. Histogram Frequency Distribution Cycle Motivation 2

Based on the frequency distribution of students' learning motivation 2 cycles in cycle 2 can be made by dividing the category to five groups, very good, good, medium, poor and not good.

Very Good Category: $\geq (Mi + 1,5 Sdi)$

Good Category: $(Mi + 0,5 Sdi) \leq (Mi + 1,5 Sdi)$

Medium Category: $(Mi - 0,5 Sdi) \leq (Mi + 0,5 Sdi)$

Less Good Category: $(Mi - 1,5 Sdi) \leq (Mi - 0,5 Sdi)$

Not good category: $\leq (Mi - 1,5 Sdi)$

To calculate ideal Mean and ideal deviation standard using formula:

$$Mi = 1/2 (\text{Ideal lowest value} + \text{Highest Ideal Value})$$

$$= 1/2 (33+165)$$

$$= 99$$

$$Sdi = 1/6 (\text{The highest ideal value} - \text{the lowest Ideal Value})$$

$$= 1/6 (165-33)$$

$$= 22$$

The classification of these data can be seen in Table 6 below:

Table 6. Classification of Cycle Motivation Data 2

| Category | Span | Total of Respondents | Percentage (%) |
|-----------|-----------|----------------------|----------------|
| Very good | ≥ 132 | 13 | 56,52 |
| Good | 110 – 132 | 9 | 39,13 |
| Medium | 88-110 | 1 | 4,35 |
| Poor | 66-88 | 0 | 0 |
| Not good | ≤ 66 | 0 | 0 |
| good | | | |
| Total | | 23 | 100 |

Based on the calculation, then the grouping of motivation variables obtained as many as 13 respondents with very good category, 9 respondents with good category, 1 respondent with medium category. From the data shows that student's motivation in cycle 2 is in very good category. To see an increase in student learning motivation from cycle 1 to cycle 2 can also be used t test.

To see an increase in student learning motivation from cycle 1 to cycle 2 can also be used t test. before the t test done the researcher has done the normality and homogeneity test to the data of learning result in can the data of learning result of normal and homogeneous distribution. This t test serves to see the improvement of students' learning motivation from cycle 1 to cycle 2.


 Tabel 7. T Test Motivation Learning
 (Paired Samples Tes)

| | T | Df | Sig. (2-tailed) |
|--------------------------------|--------|----|-----------------|
| Pair 1 Cycle 1 - Cycle 2 | -6.861 | 22 | .000 |

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The decision guide in this study if significance <0.05 then H_0 is rejected and vice versa if significance > 0.05 then H_0 is accepted. Based on Table 4.9 obtained significance value 0.00 <0.05 which means H_0 rejected and H_a accepted, that there is a difference in learning motivation cycle 1 with cycle 2 and the implementation of problem solving learning strategies managed to improve student learning motivation from cycle 1 to cycle 2.

The findings of the data in accordance with the author's observation during the learning implementation. This indicates that students who are taught with problem solving learning strategies make students happy and motivated in the learning process. Learning with students who have motivation in learning will be easier in understanding each subject matter given compared with students who are not motivated in learning. As is well known, learning motivation is "the overall driving force within the student that leads to learning, which ensures the continuity of learning" [5]. The statement shows that motivation is very instrumental in the learning process, a student must have a push and move himself to do the learning process.

4. CONCLUSION

Problem solving learning strategy can improve students' learning motivation. This can be seen from the increase in student motivation that occurs from cycle 1 to cycle 2. Problem Solving Learning Strategy can be used to improve student learning class X TKN SMK N 10 Padang on learning Driving Machine.

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