PROCEEDINGS
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Theme:
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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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FOREWORD

Welcome for all respected scholars, researchers, post graduate students and especially Keynote Speakers to the 4 ICTVET. The theme of the conference focus on Technical and Vocational Education and Training for sustainable societies and consist of six subthemes. i.e Development of learning model on TVET, Workplace Learning and entrepreneurship, Innovation on applied engineering and information technology, Management and Leadership on TVET, Vocational and Technical Teachers education, and Assessment and Evaluation on TVET.

Sustainable society should be followed by the improvement of various factors that have impacts to the quality of vocational and technical education and training, particularly to overcome the competitiveness of the world business. As we have already known the rapid change of technology as well as the change of demography, having a great effects to the life of peoples in this world. The competitiveness need a collaborativeness to survive the life of millions peoples who lost their jobs. Young peoples as a productive generation have to be creative and innovative to face the competitiveness. So this proceeding contents consist of various findings of research in the field of vocational and technical education as well as applied technology and mainly based on the subthemes of the conference.

Finally, we would like to thank a million for all participants of this conference and all parties who support the success of this conference. Hopefully the seminars and scientific work of this seminar can be a reference material for basic education and elementary school teacher education in Indonesia.

Padang, July 2, 2018

Tim Editor
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xiv
THE EFFECT OF STRATEGY OF TRAINING MODELS IN LEARNING ELECTRICAL INSTALLATION

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ABSTRACT: This study aimed to determine the effect of model training strategy on learning outcomes in electrical installation courses in engineering majors of electrical engineering faculty of state universities of Padang. The subjects of this study are students of electrical engineering education courses (S1) force 2016. Which consists of 55 people as an experimental class and 52 people as a control class. Assessment instruments using performance appraisal, and the data obtained were analyzed using two-tension test (t-test). From the results of data analysis showed that the class using the model training strategy has a higher average value when compared with students using conventional learning. Based on the calculation of t-test obtained t arithmetic> t table is 4.21255> 2.0042. Thus, the hypothesis in this study is that there is a significant influence of electrical installation learning results in electrical engineering majors engineering faculty of state universities Padang

Keywords: Influence Strategy, Training Model, Learning Outcomes

1. INTRODUCTION

The success rate of Indonesia's national development in all fields will depend on human resources as the nation's asset in optimizing and maximizing the development of all human resources. These efforts can be done and pursued through education, both through formal education and non-formal education channels. One institution on a formal education path that prepares its graduates to have excellence in the world of work and the Industrial world.

Education is a process of establishing qualified human resources. Improving the quality of education can only be achieved through improving the quality of the learning process which leads to improving the quality of educational outcomes. The realization of the government's efforts to prepare educational graduates in entering a challenging era of globalization is to apply an industry-minded curriculum.

Student competency will be formed and developed through a learning process that uses student-centered, learning-oriented approaches and methods. This learning will provide a challenging and fun learning experience. Students are expected to use the in-depth approach and strategic approach to learning, not just learning to remember information or learn to graduate. Lessons that need to be developed by lecturers in the framework of the formation of competencies are interactions that enable students to build knowledge, attitudes, and skills through various transformations of the learning experience.

Associated with learning to improve student competence, curriculum development needs to be oriented to the world of work. Law No. 20/2003 on National Education System emphasizes the autonomy of educational units, competency-based curriculum and paradigm shift from teaching to learning. The existence of paradigm shift from teaching to learning requires a more innovative learning pattern, giving priority to increasing the potential of study subjects, learning facilities, and facilities and infrastructure. The establishment of student competence is an educational process that requires the involvement of various parties, among others, family, school/campus, work/industry, government and professional associations.

State University of Padang (UNP) as one of the institutions of higher education institution in Indonesia always strives to realize the national education function stated in Act on National Education System Number 20 the Year 2003, that is to develop the ability and form the character and civilization of dignified nation in order to educate the life and organize the process education to produce educators who will participate to build the country through education.

Department of Electrical Engineering Faculty of the Engineering State University of Padang seeks to increase the quality of graduates of education today that leads to the mastery of both academic and professional competence. So the lecturing process plays an important role to equip graduates to be able to adapt to employment "

Therefore it is recommended to the lecturer as a learning facilitator able to package the lectures that motivate students to work in the business world/industry. Improvement of student learning outcomes in learning can be done with a variety of ways, one of them with the application of effective learning strategies.

Fakultas Teknik, Universitas Negeri Padang
One of the learning strategies is learning model training strategy. Learning strategy Model Training is a strategy that focuses on job skills that are skills that involve all the senses, and are trained repeatedly in the form of organized and coordinated actions.

Learning Model Strategy Training will improve students' activity. Because in this strategy there is a demonstration or performance by lecturers before the students do lectures so that the students understand the procedure of doing the practice properly and correctly, the practice of diversion with the assignment of practical tasks that are more complex than the practical tasks taught so that students can develop an understanding of the material is linked to problems in the field or industry by giving the task of a visit to the industry so that students can match the lessons learned in school with the state of the field or the industry.

The lesson uses the Training Model's strategy of 6 stages: (1) Submission of objectives, (2) Explanation of supporting materials, (3) Demonstration of performance, (4) Practice simulation, (5) Transfer Practices and (6) Industrial Visits. Problems occur above, the author tries to improve learning outcomes is by comparing the students learning outcomes between learning strategies Model with conventional, this is in accordance with the title of research that the authors do is Influence Strategy Model Training on the recovery of electrical installations in engineering majors Electrical Engineering Faculty State University Padang.

2. RESEARCH METHODS
The method of investigation is the experimental method. This research consists of two classes namely control class and experiment class. In the experimental class in doing the learning in accordance with the procedure of model training strategy and on the control, the class is done by conventional learning.

This type of research is an experimental research that is categorized into quasi-experimental type. The research was conducted at the Department of Electrical Engineering Faculty of the Engineering State University of Padang in Electrical Engineering Education Study Program S1 As the subject of research is the 3rd semester students of Electrical Engineering Education Study Program (S1) FT UNP which took the electrical installations totaling 107 people, consisting of two classes ie 2LA and 2LB. Where 2LA is an experimental class using Model Training strategy and 2LB is a control class that uses conventional learning. The determination of this class is done randomly from the existing class, this is done because the average score of student's GPA does not differ significantly. Thus, based on the t-test the two classes have the same initial capability.

The research design used in this study is presented as follows:

Table 1. Research Design

<table>
<thead>
<tr>
<th>Class</th>
<th>Treatment</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment</td>
<td>X₁</td>
<td>O₁</td>
</tr>
<tr>
<td>Control</td>
<td>X₂</td>
<td>O₂</td>
</tr>
</tbody>
</table>

Information:
X₁=Treatment with Training Models
X₂ = Conventional learning
O₁ = The results of the experimental
O₂ = Results of a control class performance assessment

The type of instrument used in this study is the assessment of performance. According to Depdiknas (2009: 14) "Performance assessment is an assessment done by observing the activities of learners in doing something". Validity in this research is content validity. Implementation Content validity is by arranging aspects to be assessed in the electrical installation courses according to the curriculum in the Department of Electrical Engineering FT UNP.

After data collected conducted analysis data. Prior to testing the research hypothesis, student learning outcomes must meet the requirements of normality test and homogeneity test:

1. Normality test
Normality test is used to determine the distribution of student learning outcomes, whether the data is normally distributed or not. Normality test is done by using chi-square test proposed by Riduwan (2006: 124). Criteria test normality if ≤ then the data is normally distributed.

2. Homogeneity test
Homogeneity test was conducted to find out whether the research data has the same variance. The homogeneity test of experimental class and control class is done using F test with the formula of Sudjana (2005: 249). Homogeneity testing criterion is if Fhitung <Ftabel means data have homogeneous variance, otherwise if Fcount> Ftabel means data not homogeneous.

3. Hypothesis test
To determine whether there is a difference to the learning outcomes between the two classes of subjects, for normal and homogeneous distributed data, an average two-t-test (s) using the formula Sudjana (2005: 241) is used. The t value of the calculated result is compared with the t value of the table. The provisions for acceptance of the research hypothesis are:

a. Ho accepted if t count ≤tabel and Ha rejected.
3. RESULTS AND DISCUSSION

Data Description

This research was conducted in semester July - December 2017 Academic Calendar State University of Padang. The implementation of the research consists of 6 lecture meetings that include: Design of Electric Installation of simple House, Electricity Installation of Multi-storey Home, Maintenance, and Maintenance of Electrical Installation. Based on the result of the research, it is found that the average value (1) of the students' experimental learning result is higher than the control class as can be seen in table 2

Table 2. Average and Percentage Completion of Experiment and Control Class

<table>
<thead>
<tr>
<th>Class</th>
<th>Amount</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment (2LA)</td>
<td>55</td>
<td>85.5</td>
</tr>
<tr>
<td>Control (2LB)</td>
<td>52</td>
<td>81.3</td>
</tr>
</tbody>
</table>

Strategy Training model is essentially a strategy that can facilitate students in the lecture so that students become skilled. By using the strategy Training model requires students to work in stages and structured, which includes: the preparation stage, demonstration, imitation, and practice.

Based on the description and analysis of data that has been done on student learning outcomes on electrical installation learning through learning model training in the experimental class and conventional learning on the electronics engineering education faculty of Universitas Negeri Padang, there are differences in learning outcomes between the experimental class and the control class. This difference can be seen from the highest value of the experimental class 96 with an average of 85.5, while the control grade is at a high of 89 with an average of 81.41. Thus, it can be stated that the students 'learning outcomes in the experimental class are higher than the students' learning outcomes of the control class.

Strategy Training model is essentially a strategy that can facilitate students in the lecture so that students become skilled. By using the strategy Training model requires students to work in stages and structured, which includes: the preparation stage, demonstration, imitation, and practice. The following is the normal curve of the experimental class and control class as follows:

From the graph, the difference in the mean values of the two classes taught. Where the experimental class (2LA) obtained an average value of 85.5, while for control class (2LB) taught by conventional methods obtained an average value of 81.4.

Data Analysis

The data analysis here is done manually. Differences in learning outcomes were analyzed using t-test by first looking at whether the subject was normally distributed and had a homogeneous variant. Therefore tested normality and homogeneity test.

a. Normality test

Based on the calculation results in the experimental class at \( \chi^2_{hit} = 6.37 \) and control class at \( \chi^2_{hit} = 0.908 \). While for both classes at significance level with \( \alpha = 0.05 \), got \( \chi^2_{hit} = 9.488 \). It can be concluded that the data obtained from the two classes are normally distributed.

b. Homogeneity Test

Test homogeneity to see whether the two classes are homogeneous or not. Based on calculation results obtained \( F_{hit} \) is 1.389 and \( F_{table} \) value in experiment class and control class with \( dk_{numerator} = 23 \) and \( dk_{denominator} = 22 \) is 2.04 at a significance level of 0.05. Thus \( F_{count} < F_{table} \) means that both classes have a homogeneous variance.

c. Hypothesis test

Based on the normality test and homogeneity test of the final test variant it was found that the two classes were normally distributed and had homogeneous variance, so t-test was used to see the difference between the two classes. From the calculation results obtained count = 3.62, and the value of ttable = 2.0157. Thus \( t_{count} > t_{table} \), then Ho
is rejected and also receive Ha. It can be concluded that there are significant differences in student learning outcomes that apply the strategy of Model Training with the conventional learning model in the electrical engineering practice course on the students of Electrical Engineering Education (S1) Program of Electrical Engineering Faculty of Engineering Universitas Negeri Padang.

Discussion

Based on the results of data analysis there are significant differences in student learning outcomes that apply the strategy of Model Training with the conventional learning model in Electrical Installation courses in the lectures of undergraduate students (S1) majoring in Electrical Engineering Faculty of Engineering, State University of Padang. Where the application of Strategy Strategy Model Training scores higher than students who are taught conventionally.

This is because the Model Training strategy is able to generate student motivation in learning so that students are more motivated to improve their learning achievement. Model Strategy Training is a strategy that teaches how to bring students to learn and teach. The atmosphere of training means, not to bring students to the industrial world with sophisticated equipment.

But how the industry trains newly skilled employees are imitated by the strategy of the Model Training Program consists of five main models: 1) work instructions, 2) work methods, 3) employment relations, 4) work safety, 5) program development. All these programs are used to support the success of learning in the course. Application of learning strategy of Model Training in Electric Installation lecture able to increase student motivation in lecture. This is seen with the seriousness of students in doing all job sheet at every lecture meeting.

4. CONCLUSION

Conclusion

Based on data analysis and discussion, it can be concluded that the learning motivation students using Model Training strategy are better than conventional learning. This can be seen from the learning result obtained by the students who apply the strategy of the Training model is higher than the class that takes the conventional model. Thus there are differences in learning outcomes are significant between the application of training models on electrical installation lectures with conventional learning on students Electrical Engineering Education Studies (S1) Faculty of Engineering Universitas Negeri Padang.

Suggestions

It is expected that FT-UNP Leaders, especially lecturers to always try to improve student's learning achievement and foster self-reliance learning so as to complete the study on time with good achievement quality. For the next researcher, it is suggested that the factors that influence the learning achievement are included as part of the research so that the research result is more objective.

5. REFERENCES