PROCEEDINGS

Revitalization Of Vocational In Free
Trade Era (ICERVED) 2016

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PROCEEDINGS

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(ICERVED 2016)

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BUSINESS ADMINISTRATION DEPARTMENT
POLITEKNIK NEGERI MEDAN

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PREFACE

I say thank you to Allah swt for His beneficence and mercy as the international seminar in vocational education has been implemented succesfully. The topic of the proceeding seminar is *Revitalization of Vocassional Education in Free Trade Area 2016* has brought many writers discuss their papers on the topic above.

This international seminar is held by Department of Business Administration, State Politechnic of Medan (Politeknik Negeri Medan). The seminar discuss many topics deal with vocational education. I believe that the presenters as well as the participants of the seminar will get advantages of this great events. Various information for more than six papers from Malaysia, French, New Zealand. Poland, and Indonesia presented in the seminar prove that this seminar is important and valuable to be implemented.

This event will never be able to be implemented if it is not carried out by the good team. In this opportunity I say thank you and highest appreciation to Director of State Politechnic of Medan and all of his staff and administrators, the writers, the committee of this seminar who have participated in this seminar.

I hope what we get from this international seminar will enhance our knowledge of vacational education presented by many writers. It also hopes that this event will not stop but it will be continued in the future.

Medan, 29 January 2016
Head of Business Administration,

Nursiah Fitri, S.E.,M.Si.

CONTENTS

The Implementation Of The Learning Model Project-Work Based On The Character In The Practical Lessons As Part Of The Effort To Raise The Quality Of Vocational Education

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Abstract

This research is done with the purpose is: (1) to produce a set of procedures/stages learning model project work based on characters; (2) know the level of the success of the integration process aspects of the characters through learning model project work based on characters. The study was conducted using Research and Development approach with steps: (1) preliminary study to gather information about the needs of development; (2) drawing conceptual model; (3) perform validation model through the activities of FGD; (4) revised conceptual model; and (5) test conceptual models. The results of the research that has been carried out is: (1) stages in learning project work based on the character is the exploration of the aspects of the characters associated with the characters practical work, participant grouping, discussion arrangement of work preparation sheet, the implementation of the practice comes with assistance and mentoring, assessment process; (2) based on the results of the test that has been carried out, the level of the success of the integration process aspects of the characters through learning model project work based on the characters is 5 percent not yet done, 12 percent accomplished has not been consistent, 16 percent done with consistent and 70% have routine becomes; (3) based on the results of the test is obtained that the value of the average student practice learning achievements is 87. Thus it can be concluded that the implementation of the learning model project work based on the characters in the subject of this practice can improve the quality of higher vocational education.

Keywords: Learning project-work based on characters, work practices, higher vocational education.

INTRODUCTION

Basically any goods produced by a manufacturing industry, especially in the field of machinery composed of several parts or components are assembled / combined into a unit or a particular product. To produce or products that are of high quality, of course, required a wide range of competences both related to academic competencies (hard skills), as well as competencies related to the value of the character (soft-skills), which among other things has the attitude meticulous, painstaking, disciplined, caring, independent, confident, abilities and honest cooperation. In the process of making a quality product that is composed of many components certainly needed a good working

processes and systematic. One of the working system used is often referred to as project-work.

Vocational education aims to produce graduates who are ready to use or ready for work. To form graduates who are ready for the next job are required to master competency in the academic field (hard skills), also needs to be invested noble character or character values (soft-skills) to learners. For that to practice learning organized to be effective, both in providing academic competence and in instilling the values of character, it is necessary innovations teachers in applying and developing methods or models of learning so that learning objectives can be achieved to the maximum that mastered the academic competence and its characters either by learners.

According to Calhoun and Finch (1976: 2), that the definition of vocational education was developed from the translation of the concept of vocational education and occupational education, which means an educational program that is directly connected with the preparation of a person to enter the working world, or for additional preparation needed in a career. Furthermore, according to Finch and Crunkilton (1979: 2,) vocational education is defined as education that provides supplies to students in order to work in order to sustain its life. Based on these opinions mean that vocational education is needed to prepare students to be ready for work in the neighborhood and outside communities, the primary mission of educators and policy-makers is to set up a strong foundation in the learning process for the student to mastery and application academic skills and concepts required to face the real working world.

According Wardiman (1998) characteristics of vocational education has the characteristics: 1) is directed to prepare students to enter employment, 2) is based on demand-driven (needs of the workforce), 3) emphasis on the acquisition of knowledge, skills, attitudes and values the value of the working world, 4) an assessment of the success of learners should be on "hands-on" or performance of the world of work, 5) a close relationship with the world of work is the key to successful vocational education, 6) are responsive and adaptable to the technological progress, 7) is more emphasis on "learning by doing" and hands-on experience, 8) requires that cutting-edge facilities for practice, 9) requires investment and operating costs are greater than general education.

Based on the various opinions on the above, it is clear that the focus of vocational education is to equip students with a set of skills and abilities (competencies) that can be used to work in a particular field or develop itself in accordance expertise. Thus, the standard setting competencies in accordance with specific areas of expertise is needed as a reflection on the competencies expected of all graduates of vocational education. So that the future of vocational education contributed greatly to the progress and development in all fields of human resources puts us in a respectable position parallel with other nations.

Learning Project-Work

Project-based learning is learning which do individual or group and carried out within a specified period, to produce a product, and the results were displayed or presented. According Fortus (2005), that learning-work project is a learning process that gives a strong emphasis on problem solving as a collaborative effort, which is done in the learning process in a given period. Further according Alamaki (2004), that in addition to increasingly collaborative project must also be innovative, unique, and focused on solving

the problems associated with the lives of the students or the needs of the local community or the industry.

Project-based learning is an innovative learning approach, which emphasizes learning through activities contextually-complex (Bern and Ericson, 2000). The focus of learning is on the concepts and core principles of a discipline of study, involving learners in the investigation of problem solving and activities of tasks means that other, allowing learners to work autonomously construct their own knowledge, and peaked produce real products (Thomas, 2000). Thus this project-based learning has tremendous potential to make the learning experience more interesting and meaningful.

Not all learning activities involve active and can project called project-based learning. There are five criteria for a learning can be referred to as project-based learning, namely: 1) centeredness (centrality), 2) focusing on the question or problem, 3) investigation constructive or design, 4) autonomous learners, and 5) realism. As for the benefits of project-based learning method is: 1) increase the motivation of learners, 2) improve the ability to solve problems, 3) improve collaboration, and 4) increasing skills in managing resources.

Character building

Character education is placed as the basis to realize the vision of national development, namely to realize a society that has high morals, ethics, culture, and based on the philosophy of Pancasila (Source: Buku Induk Kebijakan Nasional Pembangunan Karakter Bangsa 2010-2025). Character education role which is essential for overcoming the problems of nationality developed at this time, such as: the shifting value of ethics in the life of the nation; waning awareness of the cultural values of the nation; the threat of national disintegration; and the weakening of national independence.

Character education is not just to teach what is right and what is wrong. Moreover, character education is an attempt to instill good habits (habituation) so that learners are able to behave and act based on the values that have become his personality. In other words, education of good character should involve a good knowledge (moral knowing), feeling good or loving good (moral feeling) and behavior (moral action) to form the embodiment of the unity of the behavior and attitudes of learners (Source: Buku Induk Pembangunan Karakter, 2010).

In order to further strengthen the implementation of character education in the educational unit has identified 18 values derived from religion, Pancasila, culture, and national education goals, namely: (1) religious, (2) to be honest, (3) tolerance, (4) discipline, (5) work hard, (6) creative (7) independent, (8) democratic (9) curiosity, (10) the spirit of Nationality, (11) love of country, (12) rewarding achievement, (13) friendly/communicative, (14) love of peace, (15) joy of reading, (16) the environment concern (17) social care, (18) responsibility (Source: Center for Curriculum, Development and Education Culture and National Character: Guidelines for Schools. 2009: 9-10). Although it has formulated 18 national character-forming values, but the education unit can determine development priorities to continue the values of preconditions that have been developed. Selection of these values move from the interests and conditions of each educational unit, which is done through the analysis of the context, so that its implementation is possible there are differences in the type of character values developed between one school or region to another. Implementation of character values that will be developed can be started from the values that are essential, simple, and easy to implement, such as: clean, neat, comfortable, disciplined, polite and courteous. Based on these facts, it becomes the responsibility of education especially vocational education to create graduates who besides having academic competence is also characterized by a superior. Therefore, it becomes imperative to implement the values of characters in the learning process, not least in practice learning. One of the efforts to

implement the values of characters in the learning of the practice is to develop a model of work-based learning project-character for practice learning in Higher Education.

Seeing how widespread the problems, so in this study is limited to the problems of the development of practice learning model that is able to integrate aspects of the character. Based on the problem definition, the issues to be addressed in this study are: (1) how the stages of the learning model of project-work based on character for the practice courses in Higher Education?; (2) how the level of adherence to the process of integrating aspects of the character through learning model of project-work based on character?

RESEARCH METHODS

This research was conducted using a "Research and Development" developed by Borg and Gall (1998: 782). Without prejudice to the validity of the process and the findings in this study, Research and Development, which developed Borg and Gall (1998: 784), adapted and held a slight modification in stages. The stages in this study are as follows: (1) a preliminary study to gather information about the needs of the development; (2) the preparation of the conceptual model; (3) to validate the model through FGD; (4) revising the conceptual model; and (5) test the conceptual model.

The location for this research activity is the manufacturing industry and the Department of Education Mechanical Engineering, Faculty of Engineering, State University of Yogyakarta. Data collection techniques were performed using observation sheets, questionnaires, documentation, evaluation of learning outcomes and interviews. Observation sheet used while testing the model. Questionnaires and interviews used to explore data and faceted competencies required by the industry. Documentation used to record some of the activities that have been implemented. The data were analyzed by means of qualitative and quantitative. To test the effectiveness of the models developed in comparison with the old model, were analyzed using t-test.

RESULTS AND DISCUSSION

1. Preliminary studies

At the stage of preliminary study begins by reviewing the literature and research results that support this research, regulations and implementation guidelines for the practice-based learning curriculum has been established, identification of competencies to be achieved, as well as the analysis of the needs of the development of the model.

The next stage is the observation to the manufacturing industry to collect information on competencies and aspects of characters needed in the industry as well as the climate or the system work in the industry. Tools to dig information using closed questionnaire that lists academic competencies derived from the National Competence Indonesia (SKKNI), as well as aspects of the character that is adapted to the character of manufacturing employment practices. The results of this activity can be seen in table 1.

Table 1. Percentage level competency requirements

No	Type Competence	NI (%)	QI (%)	I (%)	VI (%)
1	Academic	1.11	6.67	37.78	54.44

2	Aspect characters	0	6.67	35.56	57.78
	Average	1.11	6.67	36.67	56.11

Description :
NI: Not Important, QI: Quite Important, I: Important, VI: Very Important

2. Preparation of Draft Conceptual Model

Results of a preliminary study activities become a reference in drafting the conceptual model will be developed. Preliminary draft has been prepared can be seen in Figure 1.
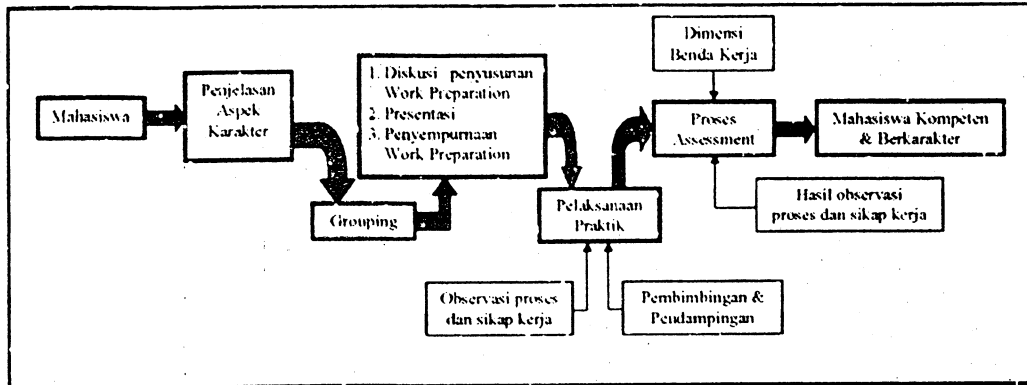
Figure 1. The initial draft conceptual model

3. Process Validation

The validation process carried out through the FGD. Based on the results of this activity, there are some suggestions and inputs to revise the draft conceptual been developed. Based on the advice and input on these activities, then held a draft revision of the conceptual model that has been developed, which is in the process of Character and the Explanation Aspect Assessment process.

4. Conceptual Model Revision Process

The revision process is done based on the results of the FGD. Based on the feedback and suggestions that have been obtained, then the process aspect character explanation revised to exploration activities aspect characters. These exploration activities are intended to gain knowledge and understanding of students to aspects of characters that can be integrated into practice learning machining (manufacturing), so if the student is expected to know and understand it well, will civilize faceted practice in learning activities.

The next revision of the assessment process, besides conducted by professors also conducted a self-assessment, so it will cultivate students to be honest and deepen students' ability uses the measuring instrument. The revised conceptual model can be seen in Figure 2.

Figure 2. Conceptual model revised

The sequence of the revised models can be explained as follows:

(1) Input

Input or input is a student or students who will follow the practice learning machining. This model can be applied in each machining practice learning regardless what level or semesters.

(2) Exploration character values

The next stage is the process of exploring the character value adjusted to the character of the work machining process, namely the ability to read the working drawings, select work tools with intelligent, decisive step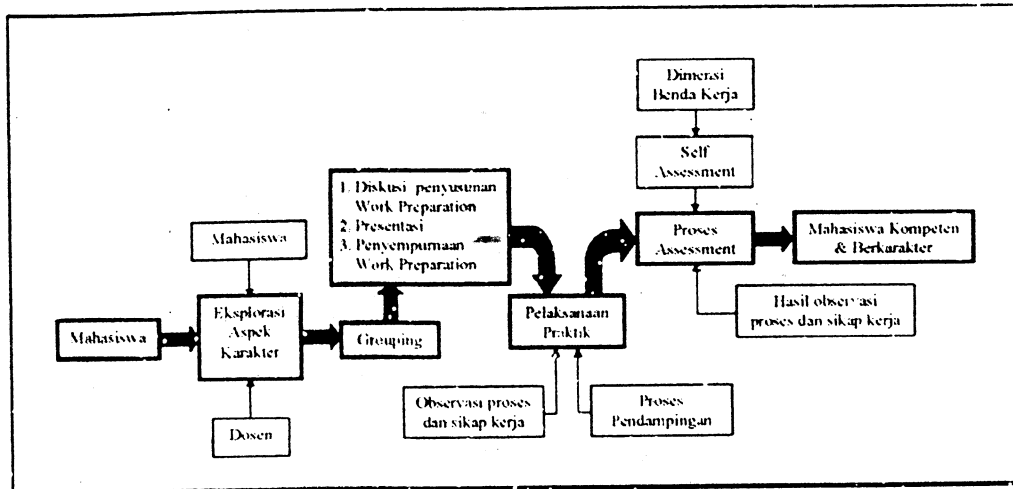s / procedures, determining the criteria of employment, using the work tools with a skilled, caring for the work, keep work attitude, maintaining a work environment, adhere to workplace safety, work discipline, capable of working as a team, compliance will work regulations.

In the exploration process is implemented by the method of discussion, in which students were asked to identify what aspect or character value to be started when they carry out machining practices. It is intended if students are able to explore or identify the character values, then surely they had already been aware for implementing the values of these characters in the process of learning by doing. Thus, if students carry out practice with the correct procedure, by itself, the student has to implement a character value.

At this stage, the role of the lecturer is to help guide and explain each character value that can be integrated in the learning machining practices.

(3) Grouping

The formation of the group held by lecturers with the group's membership is drawn at random. Groups formed so that students work together, especially in the process of preparing the Work Preparation (work plan). The purpose of the formation of this group is to familiarize the students to have a sense of tolerance and cooperation. Once the group is formed, then the teacher can divide the job each working group, to further studied in advance by the student, then compiled Work Preparation.

(4) Preparation "Work Preparation Sheet"

Before carrying out the practice, then each student is required to prepare Work Preparation Sheet (WPS) or pieces of work of each job planning practices. Generally WPS contains a sequence of steps, tools and machinery used, calculation of cutting parameters, prediction time jobs, tools and safety measures. In this case, WPS are arranged in groups in the hope that students are able to work in teams. WPS must be structured coherently and correctly, so as to become a student in implementing practice guidelines. After WPS is completed by each group, then presented in the classroom so that other groups can provide input to the WPS presented by the other groups. In this stage the lecturer acts as a facilitator in the discussions held with students and enhance their WPS stacking. In this stage of the integrated character value is being able to work together in teams, dare to express their opinions, and tolerance.

(5) Learning Implementation Practice

The next stage is to go in learning the practice. Students carry out the practice by referring to the working steps or working procedures in accordance with WPS that have been prepared. As an alternative job that can be practiced is a job that is collaborative skill, practice it means a job that consists of several components that are then paired with one another. So that this job can be done in groups where each student get a job to work on a single component. In this case besides the student must work together, also must have a sense to adjust to each other or component tolerances so that they do can be paired with either into a single unit. In the implementation of this practice, it can be observed student work processes and the integration process of the character values held by each student using observation sheet. The role of the faculty in practical activities are always provide coaching and mentoring, so that students get the solution immediately when they encounter obstacles in carrying out the practice.

(6) Process Assessment

The final stage is an assessment process, which in this case consists of several components of the assessment, the assessment work process, the dimensions of the work-piece and observations aspects of the character of students. To instill a sense of honesty in the students, then the assessment process carried out by self-assessment as students are welcome to provide point measurements of the dimensions of the work-piece they have earned by using the assessment sheets. Nonetheless lecturers also take measurements of the dimensions of the work-piece has accomplished student, so as to check the correctness of the measurements that have been done by the students. Then lecturer assessing the learning outcomes of students practice.

5. Process Testing

Pilot models implemented in the Department of Mechanical Engineering Education FT UNY, namely the process of machining complex subjects. In the process of this trial do not change the existing practice job, but only adjust the procedure by procedure-Work Project learning model based on the characters that have been developed and identifies the first aspect of the character that can be integrated in the instructional practices that will be implemented. Aspects of these characters is discipline, hard work, working, honest and caring. While the practice of job to be done by the students there are four job that couples shaft worm gear, worm gear, a threaded shaft (screw worms), and a speed-reducer casing. The process of testing carried out by using a quasi-experimental methods

in two classes, namely classes T1 and T2, where T1 and T2 as an experimental class as the control class.

Data from observation of student activities related to the implementation aspects of the character of the experimental class and a control class can be seen in table 2 below.

Table 2. Data observation implementation of aspects of the class character of control

No	Aspect of the character	Have not been implemented (%)		Has been executed yet consistent (%)		Done consistently (%)		Entrenched (%)	
		T1	T2	T1	T2	T1	T2	T1	T2
1	Honest	5	10	10	20	10	20	80	50
2	Discipline	10	20	10	20	20	10	60	50
3	Work hard	10	20	10	15	10	15	80	50
4	Cooperation	0	30	20	15	20	15	60	40
5	Care	0	20	−10	20	20	20	70	40
	Average	5	20	12	18	16	16	70	46

Description: T1 = Class Experiment, T2 = Class Control

Data speed machining practices work and achievements accomplished students in the experimental class and control class, can be seen in Table 3 below.

Table 3. Speed of work and student achievement

The meeting, to	Number of Job are finished		Nilai rata-rata	
	T1	T2	T1	T2
4	1	1	85	67
8	3	2	87	70
12	4	3	87	68

Description: T1 = Class Experiment, T2 = Class Control

The next stage of test requirements analysis is done according to the type of analysis that will be used to determine differences in both attitude / activity and student achievement between the experimental class and control class. The test requirements analysis is the normality and homogeneity test.

To test the normal distribution of data or not using the ratio of the value of the ratio of skewness and kurtosis. Data can be said to be normally distributed if the value of the ratio of skewness and kurtosis ratio values are in the range of -2 to +2 (Muhammad Nisfiannoor, 2009). Of normality test results can be concluded that the distribution of data both for classroom control and experiment normal distribution. In this case for the experimental class data, the ratio of the value of the variable skewness (-1.748) and the ratio of kurtosis (−0,288), and to control class shows the value of skewness variable ratio (0.821) and the ratio of kurtosis (-0.370).

To test the homogeneity of the research data obtained by levene statistical significance at 0.189 Based on Mean larger 0.05. Similarly, the test results of students' learning activity data obtained by levene statistical significance at 0.189 Based on Mean larger 0.05. Thus the study's data was homogeneous. Based on the test results of the analysis requirements, the different test can be done with parametric test, so the test technique used is the t-test.

Application Activity Student Characters

From the results of research on application of character in students, it was found that 70% of students of the experimental class, character aspect has been entrenched in student self, while for grade control only 46% of students who had been entrenched. Based on the results of different test, known value t count = 7.211; p = 0.000. Thus it is evident that there are differences in the application of aspects of characters between the experimental class students with grade control. In this case the civilizing character of the experimental class students better than students in the control class.

Achievement of Student Learning

From the results, the average value of learning achievement experimental class is 87. The average value of the learning achievement of grade control is 68. Based on the results of different test, known value of t-test = 10.573; p = 0.000. Thus it is evident that there are significant differences between student achievement experimental class with a grade control. In this case the experimental class learning achievement better than the control class

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

1. Stages in learning project work based on the character is the exploration aspects of characters associated with the character of work practices, grouping, discussion preparation work preparation, implementation practices accompanied by mentoring and tutoring, as well as the assessment process

2. Based on the results of trials that have been conducted, the level of adherence to the integration process learning model aspects of the character through the character-based project-work has not been done is 5%, 12% has not been consistently implemented, 16% implemented consistently, and 70% has been entrenched.

3. Based on the results of trials that have been conducted, the level of speed and performance of students taught using learning model project-work based on the character better than the students who are not taught by this model (the number of jobs completed for the experimental class is 4 job, and achievement average of 87, while the number of jobs completed in the control class is 3 job, and job performance by an average of 68).

Suggestion

1. The integration process aspects of characters in any learning process must be carried out, so that the conceptual models that have been developed if it will be implemented, must be adapted to the characteristics of each lesson, it is associated with aspects of the character that will be integrated.

2. At the level of the conduct of the learning process by using models that have been developed, would require some teachers, especially in the process of observation and assistance, so that learning should be done by a team consisting of two or three teachers.

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