



IMPLEMENTATION OF PEER TEACHING METHOD TO REDUCE COMPETENCE GAP OF VOCATIONAL STUDENTS

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KEYWORDS

Peer teaching
Competence
Machining frais

ABSTRACT

This study aims to describe the implementation, obstacles and benefits of peer teaching methods in machining practice frais course. The method was a descriptive qualitative. The population comprised of semester 1 students of Study Program of Mechanical Engineering Education Faculty of Engineering UNY. Data were collected by observation and interview. Data analysis used interactive model. The results show that this implementation works well with several benefits and obstacles. Benefits: 1) Improving discussion habits and exchanging knowledge to improve learning activities. 2) Provide an active learning experience. 3) Accelerate machining frais competence for high school graduate students. 4) Strengthening machining frais competence for vocational graduate students. 5) Improving students' enthusiasm, teamwork and confidence to do frais work. Obstacles: 1) introductory theory explanation was less conducive because students are listening while standing. 2) WPS discussion during the learning process reduces the practice time allocation. 3) Some students did not use glasses as a safety tool.

INTRODUCTION

Vocational education is a formal education held at higher education levels such as polytechnics, vocational schools, colleges and the like. Vocational education is one of the subsystems of national education, in accordance with the provisions of Law no. 20 year 2003 on National Education System (Sisdiknas), which aims to prepare graduates enter the world of work in the field of industry and services. In addition, in the Long Term Development Plan of the Ministry of National Education (RPJP Depdiknas) Year 2005-2025, SMK will become an icon in the development of the secondary education in Indonesia. Therefore vocational education should be able to print graduates with the competencies required by the world of work.

Competence can be developed through direct experience in the learning process in the classroom as well as practice learning in the workshop. Learning should be student centered (student centered learning). The learning process should be designed in such a way that students learn actively (active learning) and fun. Active learning is one of the key factors in the construction of knowledge, and student participation in all daily activities and interaction of learning is the power to access higher information and skills. Increased experience regularly and directly in doing a job will give students the ability to solve problems in a reflective and sustainable manner. Each year there are 160 new students of Department of Mechanical Engineering Education. Based on the origin of the school, the new students can be grouped into 2, namely high school and vocational high school graduates. Comparison of high school graduates and freshman vocational students approximately 50%: 50%. This shows that their initial ability is not homogeneous. High school graduates feel practice courses in this case the practice of bench is a new thing, so to master need a long adjustment. Meanwhile, for vocational graduates this is an ordinary thing because they already have experience of practice directly before. The contents of some practical courses is a form

of repetition, the impact of vocational graduates tend to think bench work practices feel boring. The learning process that has been applied in the Department of Mechanical Engineering Education FT UNY has not been able to reduce the gap between high school and vocational skills. Learning process is still a lot of use of teacher centered learning approach. The lessons that are followed by vocational engineering students of D3 level engine and mechanical engineering students of S1 degree who are prospective vocational school educators still use lecture, demonstration and practice methods. Therefore it is necessary to apply the learning method that can overcome the gap problem. The method chosen is the learning between peers (peer teaching). According to (sinambela, 2014), Peer teaching or peer tutor is a method of learning that is done by utilizing learners who have the privilege, intelligence and skills in the classroom to explain, guide, and direct and give the students a perspective that the skill is somewhat less or slow in receiving lessons of similar age or class. According to (Cahyono & Suwarni, 2015), the purpose of applying peer teaching model is that children who are slow can be assisted, while children who have good ability can develop, so clever children can be used to help their friends who are slow in learning. Through this method is believed will be able to bridge the achievement of student competence from high school and vocational school simultaneously and mutually beneficial.

RESEARCH METHODE

The type of this research is descriptive qualitative. The research was conducted in the machining machining course of Mechanical Engineering Education Study Program. The subjects of this study are students and lecturers penges frais machining practice course. The object or data of this study is the implementation of learning. Data were collected from: a) informants consisting of students and lecturers; b) place and event of the ongoing event of learning activity of frais machining practice.

Techniques used to collect data include observation and interviews. Researchers make direct observation of the learning process of machining machining frais. Researchers conducted interviews to students and lecturers. The collected data needs to be checked for its validity. Validity or validity of data used is triangulation that is source triangulation, method, and review of informant. Data analysis technique used in this research is interactive analysis technique developed by Miles & Huberman. Activities in data analysis of this model are data reduction, display data, and conclusion drawing / verification. The analysis steps are shown in Figure 1.

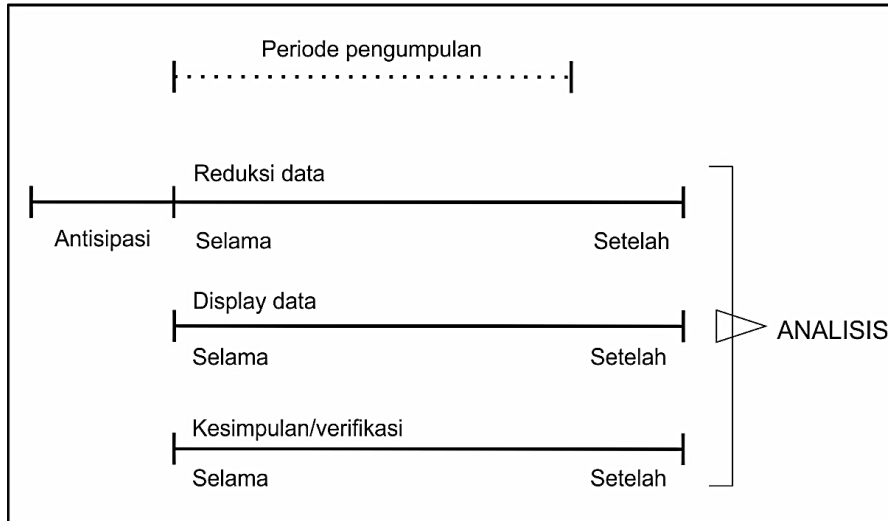


Figure 1. Components In Data Analysis

RESULT AND DISCUSSION

Learning practice of machining technique of frais using peer teaching method is done by following steps. Steps of the peer teaching was:

1) Initial activity

The classroom organizes the line and leads the prayer. Lecturers examine attire attire students, presenting to see the presence / discipline of students, perform apersepsi and motivate students communicatively and explain the purpose of learning.

2) Introduction teory

The lecturer describes the introductory material of the practice, provides an explanation of the practice to be done as well as its declaration signs and asks the students to explore their understanding. Students actively answer lecturers' questions and ask if there are things that have not been understood

3) Forming peer teaching group

Lecturers asked students to form a group consisting of 2 people, namely SMK graduates and high school graduates. Students proactively seek partners. Students discussed the workmanship of a machine component and recorded the results of the discussion on Work Preparation Sheet (WPS). Lecturers observe the course of student discussions and answer questions from students who need additional explanations.

4) Presentation of WPS

Students presents the results of the discussions contained in the FSW in front of the class. Other students provide inputs for improvement of WPS and lecturers to ensure that work steps will be done no mistakes.

5) Peer-teaching Students practice in groups,

One person operates a frais machine and one is guided by a WPS that has been made. Students of SMK graduate are given the opportunity to operate the machine first. Furthermore, alternately students of high school graduates who operate the machine. Practice in groups of two people allows students to discuss and share experiences and knowledge to complete the work. Lecturers observe the practice process and admonish the students when they make mistakes.

6) Assessment and evaluation

The lecturer assesses the work objects of the student's frais practice and reflects on the lessons learned. Students with lecturers conclude what has been learned through peer teaching methods.

7) End activities

The lecturer communicates to the student the lesson plan at the next meeting. The learning ends with praying.

The early activities are well under way. Students march and pray in order. Students use work clothes (wearpack) and shoes. The lecturer reprimands a student who has long enough hair because it will endanger the safety of work. Students also pay close attention to the apperception, motivation and learning objectives submitted lecturer.

The introductory theory of practice is delivered lecturers well and students pay close attention. Lecturers ask students to explore their understanding and students can answer the question. In this activity there is no question from student to lecturer related material submitted so that lecturer appealed, if any question can be submitted when the learning took place. In general, the introductory activities of the practice went well, but the implementation done in the workshop and students listening while standing, felt less conducive especially the students who were in the back row. As much as possible introductory theories delivered in the classroom.

The formation of peer teaching groups consisting of 1 graduate of SMK and 1 high school graduate runs well. Students proactively seek partners. Furthermore, students discussed the workmanship of a machine component and recorded the results of the discussion on Work Preparation Sheet (WPS). The lecturer observes the course of student discussion. Some groups ask questions to lecturers. In general the discussion process of making WPS runs well, but there are some shortcomings. The absence of theory space can be used for discussion and making WPS. The lecturer says that this course is a practice course in the workshop so it is not provided theoretical space for the learning process. In addition, the WPS manufacturing process takes no time and can reduce the time allocation for practice. Therefore, the process of making WPS in groups can be used as the task of take home group so that students stay present when entering the class.

Students said that they are more excited about making WPS because there are friends who can be invited to discuss if they encounter problems when making WPS. Peer teaching method is very helpful for students who do not understand the steps of making a machine component, spindle machine spin calculation, material knowledge and other knowledge related to machining process of frais. This is consistent with the research of (Arjanggal & Suprihatin, 2010), which shows that peer tutor learning method improves students' understanding of task given abilities. The results of this study are also in accordance with research (Sujatmiani, 2015), which states that the method of peer teaching can improve learning outcomes. The peer teaching method allows students to exchange experiences and knowledge.

The presentation of the results of the WPS discussion can not be done because there is no theoretical space that can be used. Lecturers menyiasatinya by asking students to collect WPS that have been made. The lecturer checks the student work and provides feedback and ensures no errors, either work steps or calculations of rounds

and work safety. The students said that the inputs and suggestions given by the lecturers are very useful for the improvement of machining machining process planning.

Group practices where one person operates a frais machine and one person guided by the WPS is carried out by the students in an orderly manner. Students feel more confident to practice with peer teaching method because there are friends who can be invited to communicate, discuss and exchange experiences to complete the work of frais. This is in accordance with the results of research (Eskay, et al., 2012), which states that the method of peer teaching can enhance the cooperation of learners and avoid anti-social behavior.

Students gain knowledge and experience from one group's friends. Occasionally students ask the lecturer when group members do not understand about a thing. In general, the implementation of group practice goes well, but there are some students do not use safety goggles when operating the machine.

The lecturer evaluates the implementation of learning. Furthermore, the lecturer conducted an assessment of the work objects of the student's practice of frais done with a pre-made practice score sheet. Assessment includes the process and performance of work objects. Evaluation works well, but the activity of concluding less work well because student already feel tired to practice. As an evaluation material, the activity of concluding learning can be done after the presentation of WPS.

CONCLUSION

Implementation of peer teaching method on learning practice of machining frais Mechanical Engineering Study Program Faculty of Engineering UNY run well with several benefits, among others: 1. Improving the habit of discussion and exchange of knowledge so that student learning activities in the course of machining practice frais increases. 2. Provide active learning experience (active learning) to construct students' knowledge. 3. Accelerate the achievement of the competence of machining frais for students who come from high school graduates. 4. Strengthening the competence of machining machineries for students coming from SMK 5 graduates. Increase the spirit, cooperation and confidence of students in doing frais work. The impulse implementation of peer teaching methods on learning practices of machining frais, among others: 1. Submission of introductory theory of practice is less conducive because students are listening while standing in the workshop. 2. Discussion of WPS conducted during the learning process reduces the time allocation practice. 3. Some students have not been disciplined using safety equipment in the form of glasses.

REFERENCE

- Arjanggal, R. & Suprihatin, T. (2010). Metode Pembelajaran Tutor Teman Sebaya Meningkatkan Hasil Belajar Berdasar Regulasi-Diri, *Jurnal Makara Sosial Humaniora*, vol. 4, no.2, (pp. 91-97).
- Cahyono, D. & Suwarni. (2015). Kolaborasi Model Pembelajaran STAD dengan Tutor Sebaya untuk Meningkatkan Hasil Belajar Mata Pelajaran Strategi Pemasaran, *Jurnal Pendidikan Bisnis dan Manajemen*, vol. 1, no. 2, (pp.125-136).
- Depdikbud. (2005). Rencana Pembangunan Jangka Panjang Departemen Pendidikan Nasional (RPJP Depdiknas) Tahun 2005-2025. Jakarta: Depdikbud
- Eskay, M., Onu, V. C., & Obidoa, M. (2012). Use of Peer Tutoring, Cooperative Learning, and Collaborative Learning: Implications for Reducing Anti-social Behavior of Schooling Adolescents, *US-China Education Review*, vol. A, no. 11, (pp. 932-945).
- Sinambela, E. E. (2014). Meningkatkan Hasil Belajar Aljabar Peserta didik dengan Menggunakan Metode Tutor Sebaya di SMP Negeri 175 Jakarta, *Jurnal Vformatif*, vol. 4, no. 1, (pp. 31-45).
- Sugiyono. (2015). *Metode Penelitian Pendidikan*. Bandung: Alfabeta.
- Sujatmiani. (2015) Penggunaan Metode *Peer Tutoring* dengan Kassitu untuk Meningkatkan Motivasi dan Hasil Belajar IPA Fisika, *JRKPF UAD*, vol. 2, no. 2, (pp. 46-49).
- Republik Indonesia. (2003). *Undang-undang Nomor 20 Tahun 2003 tentang Sistem Pendidikan Nasional*.