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Influence of a preparation training for student competency competitions in CAD mechanical

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ABSTRACT

Lomba Ketrampilan Siswa (LKS) is an annual activity in student competency competition among students at the Vocational High School (VHS) level in accordance with the areas of expertise taught at each participant's school. This activity is one part of a series of selections to get the best students from all over Indonesia who will be guided by teams in their respective areas of expertise and included in international level competency competencies. Students who take part in the LKS competition are students who are chosen by their school. To get the title of champion, of course, there is a lot of preparation that must be undertaken and one of them is training. This study aims to present data regarding the training program that students undergo as preparation for regional-level LKS competitions. This research uses a qualitative approach with a descriptive research type. The results of this study found that there were several scheduled, independent and incidental training programs.

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INTRODUCTION

Indonesia has entered the era of the industrial revolution 4.0 recently. The industrial revolution 4.0 was marked by the dominance of science and technologywhich required all elements of Indonesian society to become individuals who have skills and are more qualified and broad-minded (Shahroom & Hussin, 2018). Along with the times, it is hoped that new generations will be born who are intelligent, capable, responsive, and educated (Ismail et al., 2020). Qualified, competent, ethical and skilled human resources (HR) are needed to face the industrial revolution 4.0 and society 5.0. Based on the Law on the National Education System Number 20 of 2003 that: "Education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have spiritual strength, religion, self-control, personality, intelligence, morals noble character, as well

as the skills needed by himself, the community, the nation and the state. Efforts are made in order to encourage the quality of Indonesian society, one of which is through education with graduates who are qualified, competent and in accordance with the demands of the current era. The Ministry of Education, Culture, Research, and Technology also responded to this through Puspresnas or the national achievement center which provides national level competitions for VHS students.

The current challenge of the industrial revolution 4.0 in educational institutions, especially vocational schools, is that there are many fields of work that have so far been filled with human labor but have been replaced by technology, machines, robots, IoT or other intelligence (Mulyadi, 2019). It forces the vocational schools to prepare a higher competency for their students in facing the recent conditioncurrent era. SMK as a formal educational institution that is expected to be able to support the acceleration of national development must be sensitive to its potential. Vocational and curriculum adjustments are absolutely necessary so that there is relevance between education in SMK and the field of work. In the SMK environment,

LKS SMK is one of the efforts to encourage SMK to improve the quality of the implementation of teaching and learning activities that refer to the Indonesian National Work Competency Standards (SKKNI) (Suparmin et al., 2020). LKS SMK aims to monitor the quality and capability maps of SMKs in the expertise programs held. "Because it turns out that through these competition activities it will be able to encourage institutions that are active in the field of education and workforce training to prepare graduates with higher quality in accordance with the demands of the world of work" (Sutopo et al., 2019).

In order to achieve success in this LKS event, the strategy created for developing student competence is the first step in achieving success towards real competition. This coaching is not only concerned with a learning process with a method that is generalized to all students. This coaching can be done with existing extracurricular and intracurricular activities and facilitated by the school.

SMK Negeri 1 Seyegan is one of the vocational schools that opens the Department of Metal Fabrication and Manufacturing Engineering. This vocational school has good potential in providing students who are competent in their fields to take part in the Student Competency Competition (LKS). By implementing 4 years of education, 3 years for education and 1 year for industrial practice with collaboration between the school and the business / industrial world which already has a big name. In addition, Seyegan 1 State Vocational School also has adequate facilities and infrastructure for the learning process so that students are highly motivated in improving their abilities. This school has never been absent from LKS competitions at the regional level.

Based on this background, the researcher is interested in choosing the title "The Influence of Training in Preparation for Student Competency Competitions in the Field of Mechanical Engineering CADD in the Department of Metal Fabrication and Manufacturing Engineering at SMKN 1 Seyegan." LKS participants which include:

1. The training was conducted to improve student competence in preparation for the Student Competency Competition (LKS) in Mechanical Engineering CADD.
2. Obstacles faced in providing training to prospective student LKS participants.
3. Efforts were made to overcome the obstacles encountered during the training process.

METHODS

This research uses a qualitative approach with a descriptive research type. Informants of this research are students and supervisors of students. Collecting data used in this study using interviews, observation, and documentation. which is expected to answer the focus of the research. The research was conducted at SMK Negeri 1 Seyegan which has seven expertise programs, one of which is Metal Fabrication and Manufacturing Engineering. Data collection techniques used interviews, observation, and documentation. A purposive sampling with total of five respondents was applied. The informants included: LKS Supervisor Teachers, LKS Advisors, and students who would take LKS at SMK Negeri 1 Seyegan. The following are the stages of the research process, as presented in Figure 1

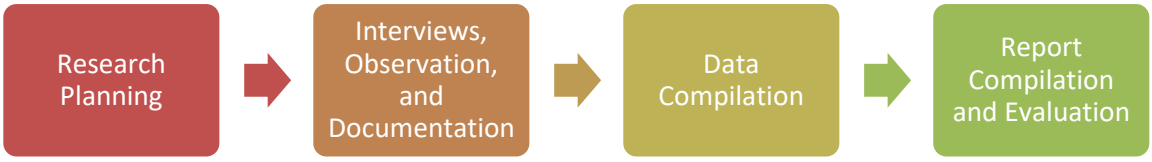

Figure 1. Research Flow Chart

Research Planning; It is the initial stage to start implementation, which consists of planning tools and materials, preparation of the subject matter, preparation of questions and instruments to be examined, research agenda and schedule.

Implementation of Interviews, Observations and Documentation;

The implementation of this interview was in accordance with a predetermined schedule and the availability of informants to be interviewed with questions that had been prepared previously at the research planning stage. Then the implementation of this observation was carried out during the training process up to two days before of the Daerah Istimewa Yogyakarta (DIY) 2023 LKS implementation. Documentation was carried out throughout the research process according to research needs.

Compilation of Research Result Data

The research data compilation was performed following the carrying out interviews, observation, and documentation or research data collection.

Compilation of Reports and Evaluations

The last step of this research is the preparation of a report for this research and evaluation of the implementation of the research. The overall evaluation here is from the beginning of the process to the final process and the implementation of the Yogyakarta Special Region Level Student Competency Contest in 2023.

RESULTS AND DISCUSSION

The training was conducted to improve student competence in preparation for the Student Competency Competition (LKS) in Mechanical Engineering CADD.

Training for prospective participants in the Student Competency Competition (LKS) is an activity carried out to increase student competence starting from introductions, mentoring, knowledge and skill development and also the mental formation of prospective LKS participants. This training, of course, must be done with careful preparation and planning so that student progress in the training process is effective and efficient.

Based on research on training as an effort to increase the competency of prospective LKS participant students, it can be seen that: First, the purpose of holding student competency training is of course to train and improve students' abilities according to the field being contested, namely in mastering the Autodesk inventor software. Second, the target in this student competency training is prospective LKS participants who are accommodated in special extracurriculars for students majoring in Metal Fabrication and Manufacturing Engineering. Third, there needs to be wider outreach to TFLM students and also the benefits of attending the training in the hope that TFLM students will be interested in joining the program. Fourth, there is a link between the school's vision and mission with this training. This linkage is to produce superior graduates in work and entrepreneurship through increasing student competence. Fifth, the need for a special team to handle this training. The team in question is teachers who are competent in their fields, external mentors who are also competent in their fields and the admin team to handle all the administrative needs of training and competition preparation until the competition is held. Sixth, to achieve a training process that produces, of course, good results, an appropriate training method is needed. The method used is that teachers and supervisors can explain the basic theory before students enter into practicum. The next method used is to motivate students in each training activity to boost student morale and strengthen students' mentality. The provision of practical tools and materials is very much needed in training as the main facility to support the success of a learning process. Provide tips and detailed information to students related to the material presented and the way it is taught.

The most important stage in a training is monitoring progress and also evaluating it at the end of each training. With monitoring, supervisors and teachers are expected to be able to monitor the development of the students participating in the training as a whole. Evaluation is also very much needed in the process of achieving a successful training, this evaluation serves to find weak points which will be corrected in the future and find solutions so as not to hinder the process of the next training. The evaluation habit also trains the memory power of the participants and familiarizes the participants with ways or solutions so that they are easy to work on.

Obstacles faced in providing training to prospective LKS participants in the Mechanical Engineering CADD field.

Implementation of student competency training is not entirely running smoothly. In its implementation, things can happen that are beyond the expectations of supervisors, teachers, teams and students. The constraints experienced during the training process are as follows:

1. Student interest in participating in the training
2. Less structured training program planning
3. Training times are often delayed due to the availability of mentors
4. The surrounding environment is not conducive
5. Fatigue in students because of the implementation time after the KBM hours are finished
6. Less concentration of students
7. Limited availability of computer facilities
8. Funding for the procurement of training equipment

Based on the results of research in the field, the obstacles above are the biggest obstacles experienced by supervisors and students. From the supervisor's point of view, they also feel that there has been socialization for TFLM students at SMK N 1 Seyegan, but there are still few interested people. In addition, students who had joined the training gradually left the training and only a few students remained. From here the selection process that was carried out was also disrupted due to the lack of competitors in the selection and in the end only focused training for 1 student.

Efforts were made to overcome the obstacles encountered during the training process for prospective LKS participants in the Mechanical Engineering CADD field.

In the context of the success of student competency training activities for prospective participants in the Student Competency Competition (LKS), it is necessary to make efforts to overcome the obstacles that arise as previously explained. In general, in the training process, it is undeniable that these obstacles will still occur and one must be prepared in every way to handle them.

The first obstacle experienced was students' interest in participating in the training. The effort that has been made to attract students' interest is by socializing to TFLM students as a whole by providing the lure of benefits that will later be useful when in the industrial world. In addition, things are done to attract students' interest by giving special treatment to students who are candidates for LKS participants. The special treatment in question is giving dispensation when training begins to be intensive, providing food allowance, facilitating a comfortable room, freeing students to practice with school facilities.

The second obstacle is the less structured training program planning. During the training, the program only runs with students' initial abilities being measured to what extent and proceeds to work on more complex ones. This is because this training program is a new program. Efforts are being made to form an administrative team with the aim of systematically designing and compiling a training program that has been adapted to the availability of tutors and students' free time.

The third obstacle is the delayed training time. Efforts are made in the form of bringing in mentors from outside educators or teachers who have more flexible time to carry out training programs. The administrative team will communicate with supervisors and students to avoid delays in training.

The fourth obstacle is the surrounding environment which is not conducive. Efforts that can be made are to provide a comfortable room for training with adequate facilities and have a conducive atmosphere, not crowded and far from distractions. The room provided, of course, can also affect the mood of students in undergoing training.

The fifth obstacle is the fatigue experienced by students. Efforts are made to prevent this from happening by communicating to the school to use vacation time or certain times for training. Of course, here requires the role of the administrative team to take care of everything. Starting from permits, time agreements, and also the availability of mentors.

The sixth obstacle is related to the lack of student concentration. This lack of concentration from students usually occurs due to fatigue and an empty stomach. Efforts are being made to adjust the timing of the training and provision of consumption for the trainees to maintain student concentration. In addition, the use of material delivery methods is also very concerned so as not to make students lose concentration because it takes too long in theory or too long in practice.

The seventh obstacle experienced during the training process was the limited availability of computer facilities. Because the computer laboratory room does not allow use outside of learning hours, the number of computers that can be used is limited. Efforts are made to maximize the number of existing computer facilities. Install all computers with the software used and ensure all computers can be used. In addition, it is necessary to have a maintenance team who is ready when there is a problem with the computer.

The eighth obstacle is funding for training tools. The effort that can be done is to propose to the school related extracurriculars and programs that have achievement benefits to make the school's name proud.

So far, the constraints that existed during the implementation of the training could be resolved properly, although there were times when mentors and teachers gave up their time, thoughts, energy and money for the smooth running of the training. Existing obstacles must be faced calmly and without pressure. This also helps students in terms of enthusiasm for training. Motivation from the school, from the teachers, from the principal is also needed to raise the enthusiasm of the students participating in the training.

CONCLUSION

Based on the discussion research data and results, it can be concluded as the follow. Socialization of student competence training as a special program to get students competent in their fields with the aim of being included in the Student Skills Contest needs to be held since students enter the first semester. This is done because it takes advantage of the enthusiasm of early semester students who are still passionate about learning and thirsty for knowledge. The obstacle that became the main focus of the training was the absence of an administrative team and a fixation team so that there was a lack of time management and training programs. Lack of funding and student interest is also a major problem that must be addressed immediately. Efforts made to overcome obstacles in the training process are still relatively simple with adjustments to conditions and are temporary and ongoing.The formation of character, work ethic, mentality, and skills of graduates is expected to be realized by the existence of training and extracurricular programs that are in line with the majors of interest to students

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Terlalu banyak singkatan2 yang tidak lazim dalam Bahasa inggris (SMK, DIY, LKS, TFLM dll)-→silahkan disesuaikan