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Teaching Factory Model Based on Industrial Standard Innovation in Vocational High Schools

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Abstract: This study also aims to determine the extent to which the implementation of the Teaching Factory (TeFa) learning model can be adjusted to the product/service-based learning activities that have been previously carried out at the target schools and to identify the factors that influence the success of the program. The type of research used is descriptive qualitative research. The research was conducted at Vocational High School in Lhokseumawe, which has already implemented the teaching factory model. Data collection in this study used three techniques: in-depth interviews, participant observation and documentation study. The data analysis technique used is the interactive model which includes: data reduction, data presentation, and conclusion drawing. The research results indicate that (1) The TeFa learning model is an industry-based learning model that utilizes production units as a platform for running business or production processes. TeFa learning model developed in Vocational High Schools is integrated with production units for conducting practical activities for students. (2) The policy of school for TeFa learning is to align the existing curriculum with the curriculum needs of the industry. (3) The TeFa learning model is able to improve the competencies of students in the Mechanical Engineering expertise program in Vocational High Schools in Lhokseumawe.

Keywords: Teaching Factory; Learning Model; Vocational High School

1. Introduction

Vocational High Schools play a crucial role in preparing their graduates as potential workforce candidates in line with their areas of expertise, and to meet the labor demands in the industry. High-quality, productive, and job-ready Vocational High Schools graduates are expected to improve the absorption rate of the workforce and compete effectively in the fast-evolving job market today [1]. The gap arises due to the mismatch between the number of job vacancies in the industry and the number of job seekers graduating from educational institutions [2]. The issue of job seekers and available employment opportunities has become a concern, especially for those seeking jobs with Vocational High School qualifications [3].

The government is developing vocational education in Vocational High Schools through the Teaching Factory (TEFA) learning program, aiming to align what is taught in Vocational High Schools with the needs of the industrial world. Teaching Factory (TEFA) is a learning approach oriented toward the industry, focusing on the processes and outcomes of learning in Vocational High Schools that directly address industry requirements.

The Teaching Factory learning activities are used to exchange ideas and new solutions, balancing the time and costs required to study and test these solutions, and deepening both

industrial and academic knowledge through product innovation or real-life problems [4]. The activities combine both models, making the goal of Teaching Factory implementation to transfer actual production and manufacturing environments into the classroom. There are two Teaching Factory learning methods: from factory to classroom, and from laboratorium to factory.

A preliminary study in several Vocational High Schools in Lhokseumawe revealed systematic empirical and theoretical phenomena related to the Teaching Factory learning model. Graduates are unable to meet the needs of the business world and industry and are not absorbed into the workforce in accordance with the current digital era conditions. The challenges include: 1) a lack of collaboration between the school and the industry; 2) the results of student production are only sufficient for internal needs; and 3) students' ability to produce results does not keep up with industry developments.

Previous research on the teaching factory model shows that the teaching factory developed in vocational schools is integrated with production units for facilitating student practice. The 6M and 4D teaching factory learning model has been effective in improving entrepreneurship learning outcomes, assessed from the context, input, process, and product perspectives. Students' entrepreneurial competencies improved after undergoing teaching factory-based learning, indicating that the teaching factory can contribute to enhancing the productive skills of Mechanical Engineering students by involving them directly in the entire business process, from planning and production to marketing. Furthermore, the teaching factory contributes to fostering an entrepreneurial spirit by engaging students directly in the entire business process, starting from planning, production, to marketing [5-10].

This study also aims to determine the extent to which the implementation of the Teaching Factory (TeFa) learning model can be adjusted to the product/service-based learning activities that have been previously carried out at the target schools and to identify the factors that influence the success of the program.

2. Materials and Methods

The type of research used is descriptive qualitative research. The research was conducted at Vocational High School in Lhokseumawe, which has already implemented the teaching factory model. The subjects of this research are the principal, vocational teachers, and students. The data and data sources in this study include both primary data and secondary data.

Data collection in this study used three techniques: in-depth interviews, participant observation and documentation study [11]. The data analysis technique used is the interactive model which includes: data reduction, data presentation, and conclusion drawing [12]. The validity of the data in this study was examined using triangulation techniques. Triangulation is a method of validating data by using something external to the data for verification or comparison purposes. This technique involves seeking other sources related to the focus of the study. To establish data validity, a verification technique is required. Implementation of the verification technique is based on four criteria: credibility, transferability, dependability, and confirmability [13].

3. Results and Discussion

Teaching Factory (Tefa) learning model process must fully involve students. This is done with the aim of preparing students to possess strong competencies and an entrepreneurial spirit before entering the industrial world. In this way, the learning process can yield meaningful results if students are active, constructive, incentivized, collaborate, and engage in real-life activities. The implementation process of the TeFa learning model requires the development of a curriculum that aligns with the objectives of Vocational High Schools. This curriculum serves as a plan and guideline for the goals, content, materials, and methods used in the organization of educational activities to achieve the desired outcomes. The TeFa learning model program can be successful if

the facilities and infrastructure available at the school meet the standards required to carry out production activities, whether in the form of goods or services, in accordance with the educational programs offered by the school.

The TeFa learning model is a systematic plan developed based on logical theory, intended to be used by educators as a guide in the teaching and learning process. The learning model has a broader scope compared to teaching strategies, methods, and techniques.

The learning approach with the teaching factory model is expected to improve students' competencies in specific subjects. Therefore, the implementation of the teaching factory in practice should not only meet industry needs and be profit-oriented, but this model must also maintain its educational and learning aspects. In relation to my research, the practical learning process using the TeFa learning model involves utilizing the school's production unit as the setting for implementing the TeFa model of education.

The practical learning process at Vocational High Schools in Lhokseumawe using the TeFa learning model consists of three stages: the preparation process, the learning process, and the evaluation process.

1. Preparation Process: This stage includes the management of facilities and infrastructure (tools and machines) as well as room management.
2. Learning Process: The learning process involves the development of the planned model, which includes practical learning activities. These activities are conducted in the school's workshop and involve the production unit in the execution of the program.
3. Practical Process: The practical learning process fully engages students, starting from the preparation phase, through the practical activities, and concluding with the final stage of the practical session.

The types of practical activities carried out no longer use the object training system, but instead involve direct practice on real objects. All practical learning processes are conducted based on the concept of implementing the TeFa learning model.

Evaluation in the implementation of the TeFa learning model is divided into two parts:

1. Comprehensive Evaluation: This evaluation is carried out by the school principal and the coordinator for each unit of the TeFa learning model, which is held during the final semester competency meeting for the specific field of expertise.
2. Activity-Based Evaluation: This evaluation occurs once the TeFa learning activities, both production and non-production, are completed. In the evaluation process, direct observation is made on the work process and outcomes produced by the students, using observation sheets and assessments based on the competency test guidelines for vocational high schools, which are presented in the form of practical exams.

Based on the results of interviews with the school principal, the education department, and the productive teachers, it can be concluded that the impact of the TeFa learning model program on students, teachers, industry, and the community in each region is generally quite good, although the implementation of the TeFa learning model has not yet been fully optimized. This is due to the enthusiasm of the school principal, the teachers, and the support of the entire school community in the implementation of the TeFa learning model. Furthermore, before the TeFa learning model program, the target schools had already been implementing product/service-based learning activities through the existing production units, in accordance with the Mechanical Engineering expertise programs in each vocational high school. Therefore, with the introduction of the TeFa learning model program in vocational high school, it only requires some adjustments.

The impact of the Teaching Factory (TeFa) learning model on the School/Community environment includes the community being able to recognize and utilize the products/services produced by Vocational High School students. In addition, several SMKs also offer training programs for the surrounding community members who wish to enhance their skills. As for the

impact on industry, through the implementation of the TeFa learning model, industries gain competent and ready-to-work labor, thus reducing training costs within the industry.

4. Conclusions

Based on the results and discussions of the research above, the following conclusions can be drawn: (1) The TeFa learning model is an industry-based learning model that utilizes production units as a platform for running business or production processes. The TeFa learning model developed in Vocational High Schools is integrated with production units for conducting practical activities for students. (2) The policy of school for TeFa learning is to align the existing curriculum with the curriculum needs of the industry. (3) The TeFa learning model is able to improve the competencies of students in the Mechanical Engineering expertise program in Vocational High Schools in Lhokseumawe.

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