

## Teaching Factory Learning Model as Income Generating Unit with Marketable Products in Public Vocational High School

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**Abstract.** Vocational High School (VHS) is a vocational school intended to give students practical skills and create skilled graduates ready for jobs. Hence, Public Vocational High School (PVHS) 1 Jenangan designed teaching factory learning model. Teaching factory is a learning model focusing on teaching students some practical skills to manufacture quality products up to industry standard. It was expected that this model's outcome could be an Income Generating Unit (IGU) of Software Engineering Study Program in the school. This is descriptive and qualitative research using Miles and Huberman's data analysis model. The research found that using teaching factory as Income Generating Unit with marketable products in software engineering study program is an effective strategy for the effort to provide quality human resources ready to perform jobs and create marketable products.

**Keywords:** Vocational High School (VHS), Teaching Factory, Income Generating Unit (IGU), Software Engineering

### INTRODUCTION

Currently, education is the most important sector for a nation because good education can help enhance human resources quality (Muhardi, 2005). Human resources are the main asset to the development of a nation, including Indonesia. Vocational schools constitute as an educational institution in Indonesia. Vocational schools have a dynamic nature making it possible for them to change their academic curriculum under the changing conditions of the job market and to adapt to the educational and technological advances (Winangun, 2017). VHS offers teaching factory as their program (Adam et al., 2017). Teaching factory is actually the development of the school's business section and its benefit is used to cover, maintenance expenses and improving the quality of human resources. Besides, the program is also useful in providing students with practical experience (Rayyan et al., 2019). Thus, it can be said that teaching factory aims to enhance the quality of learning on the basis of learning by doing (Siswanto, 2011).

PVHS 1 of Ponorogo developed teaching factory learning model in its learning activities (PVHS 1 Jenangan Ponorogo, 2020b). The learning model has been implemented in this school since 2003 when the school enrolled in the Indonesian German Institute (IGI) program and repositioned itself as the Education and Training Center Ponorogo, which handle the management of VHS with the support of Income Generating Unit (IGU) (Lizawati, 2016).

PVHS 1 of Jenangan teaches students engineering in teaching factory implementation. The software engineering study program is designed to study all about software engineering, which includes designing, maintaining, and updating the software, organizing the management of software development, and quality management (PVHS 1 Jenangan, 2020c). Students are expected to create marketable or useful application or software for the people in their environment and satisfy the market demand. However, the teaching factory in PVHS 1 Jenangan faces some obstacles, one of which is that some school staff members do not understand the importance of teaching factory. Therefore, to smooth the process, it is necessary to explain the learning model and its importance to all the staff members. It

is equally important to build partnership with industry to streamline the implementation process of actual practice in industry, especially product marketing, to the school curriculum.

## METHOD

This was descriptive qualitative research as it described the objective condition about software engineering in PVHS 1 Jenangan, Ponorogo. The research involved the school's related officials and staffs who were in charge of the program as the main informants, including the Superintendent for Curriculum, the Head of Vocational Study Program, and vocational teachers.

The data was collected by applying data collection techniques, including observation, documentation, and interviews. The observation was made to gain a vivid image of the school. Documentation is a research method through examining official documents from various sources relevant to the research (Khosiah et al., 2017). Interviews were carried out face-to-face to collect information on the teaching factory in PVHS 1 Jenangan. In this research, the questions were structured so systematically that all the interviewees were asked the same questions, either in their order or the way they were presented (Ilyas, 2006). The variables used in this research were the implementation of teaching factory with some indicators including research on the implementation, collaboration with DU/DI, teaching factory as Income Generating Unit, and the teaching factory (Dewi, 2021; Pidi, 2012).

The data analysis in this research was conducted in four steps: first, recording all phenomena found from observation, documentation, or interviews; second, reviewing documents gained from observation, documentation, and interviews and then classifying important data from unimportant ones (this process was repeated several times to avoid possible mistakes in the classification); third, describing the and considering the focus and purpose of the research; and fourth, giving a final analysis in the report.

## RESULTS AND DISCUSSION

While making observation in PVHS 1 Jenangan and socializing with the teachers in charge, the researcher found that the implementation of teaching factory is an effective strategy to enhance the quality of human resources to the extent that they are ready for jobs and tasks of manufacturing marketable products. The result and discussion about the application are as follows.

### The Application of Teaching Factory in the Local Subject of Productive

The local subject of productive is an important subject in that it teaches students special skills based on the competencies they choose to develop. This is because in order to produce students who are competent in their fields, of course, all parties must support them, not only with productive materials but also from adaptive and normative materials (Gustiar, Kurniawati, & Winarsih, 2021). This enables them to possess skills necessary for fighting off competition for job opportunities and develop into professional performers in the industrial world, particularly in their specialist fields. Vocational schools need to develop plans to provide students with learning opportunities to gain abilities in the three areas of the curriculum (Ramli, 2014).

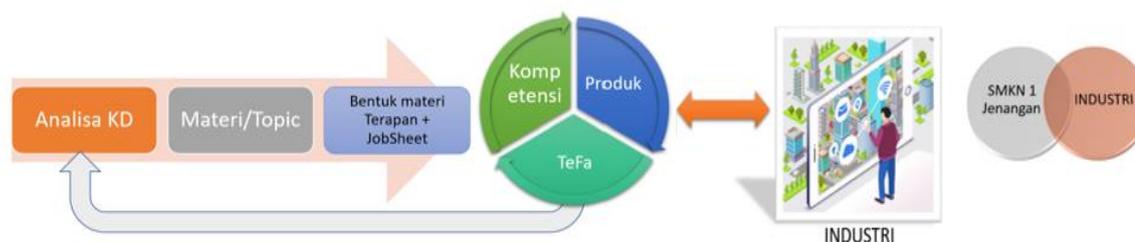


Figure 1. The implementation of teaching factory to the local subject of productive

Figure 1 shows that the implementation of teaching factory to the local subject of productive begins with analyzing basic competencies of the subject or interdisciplinary subjects and then fusing those subjects in the one stressing on applicative learning.

The Figure 1 also shows the need of materials analysis based on competencies and products and the analysis of product usefulness through developing competency map to create products. Moreover, school will foster a collaboration with industry in developing its curriculum, organizing field work practice, generate joint products, conduct technology transfer (guest teachers/training/TOT/INT), administer tracer study program, and conduct classes in industry.

**Teaching Factory as Income Generating Unit in Software Engineering Study Program in PVHS 1 of Jenangan**

The implementation of teaching factory in PVHS 1 Jenangan neededs preparation in some aspects to accomplish its purpose. Those aspects included teachers, collaboration with industry, and the school's infrastructure.

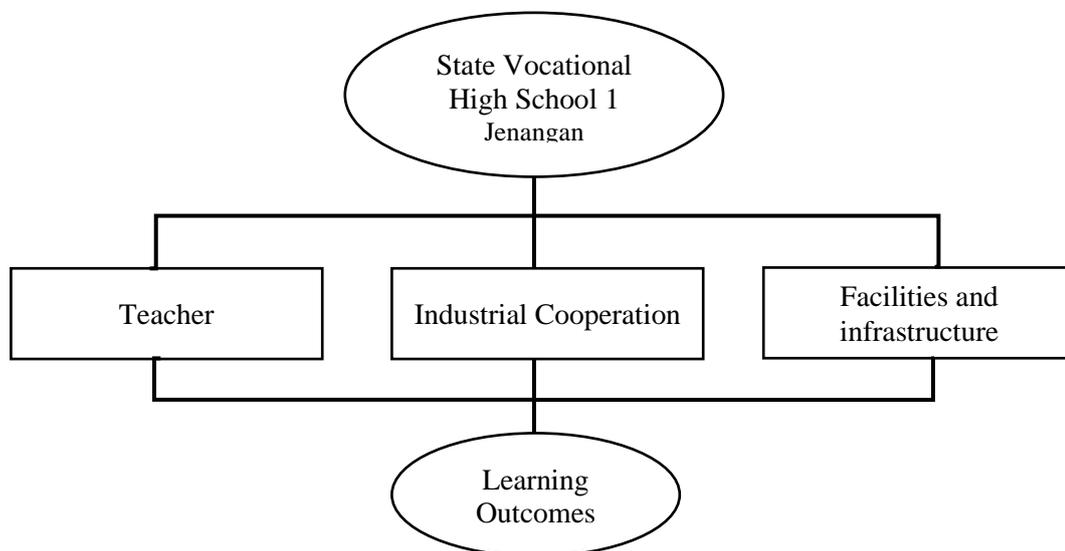


Figure 2. The preparation of some aspects for teaching factory

All the aspects mentioned above are interrelated and cannot be separated. The extensive preparation would affect the learning outcome of teaching factory.

The application of teaching factory in of PVHS 1 Jenangan was seen in students’ website template creation for school’s partner industry. The design was supervised by the teachers and industry representative to make sure it satisfies the demand of industry. Thus, the teaching and learning process uses services according to the needs of the industry (Butare, 2004).

Assigning students to create website designs also helped them to identify the demand of industry and the way to fit into it. Therefore, PVHS 1 Jenangan could produce graduates with great expertise in their fields and manufacture products as their Income Generating Unit. It provides students with the their technical and creativity abilities (Donoghue, Voytek, & Ellis, 2021). The important thing, template website service development can be further amplified by branching out into the marketing and fundraising elements later (Chen, S. et al., 2021)

## **Contributing and Complicating Factors of the Implementation of Teaching Factory in PVHS 1 of Jenangan**

There were two factors which facilitated the implementation of teaching factory in PVHS 1 Jenangan, Ponorogo. First, the curriculum was based on the working and industrial world. Curriculum development is closely related to SNP as a standard guide for improving the quality of education (Adi, Harjanto, & Rohman, 2019).

In other words, teaching factory was adopted from the working conditions in industries for students to simulate those conditions. Thus, graduates have practical experience to work. Second, the teachers were quality human resources due to the in-service training. Teaching factory would be effectively implemented if the teachers in charge have great professional competencies. Because they have responsibility for the entire learning process (Martawijaya, 2012).

Meanwhile, some other factors slowed down the implementation. First, some staffs did not familiar with teaching factory. The program would generate a success if all the involved understand its importance. However, some staffs did not. Therefore, it is necessary that every program is to be communicated. Second, the school bore no partnership with industry. The school would have found it easy to carry out training simulations, particularly of product marketing system, had it built working partnership with industries.

## **CONCLUSION**

It can be concluded that the implementation of teaching factory as income generating unit was an effective strategy to provide human resources with such good quality that they are ready to perform jobs and tasks of creating marketable products. PVHS 1 Jenangan, Ponorogo, needs to employ some strategies like developing curriculum which copes with the need of industry or the market demand, enforcing a certain standard of competencies to know which students meet the standard and deserve to be awarded a certificate of acceptance, fully implementing teaching factory in creating marketable products so that they can be income generating unit for the schools, and learning how to market the products.

The success of teaching factory in producing income generating unit depends on some factors. The first was creativity of teachers and students in creating marketable products. The second factor was the entrepreneurial spirit. Without good entrepreneurial spirit, businessmen/businesswomen will be easily discouraged if their business, in which they implement teaching factory as income generating unit, results in failure. Besides, entrepreneurial spirit will also encourage them to be courageous enough to take risks when they decide to create something new. The last factor was effective and efficient marketing strategies, particularly during the pandemic. Winning marketing strategies makes it easy for the school to market its products.

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