

# Teaching Factory Implementation to Grow the Entrepreneurship Character of Vocational School Students

**<sup>1</sup> Marsudi Endang Sri Rejeki, <sup>2</sup>Tri Kuat\***

Universitas Ahmad Dahlan, Indonesia.

Email: <sup>2</sup> tri.kuat@mpgv.uad.ac.id

\* Correspondence author

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## ABSTRACT

The purposes of this study are 1. To analyze the application of teaching factory (TEFA) in the mechanical engineering expertise program at SMK M Sukoharjo, 2. To analyze the reinforcing and inhibiting factors for the application of TEFA in the mechanical engineering expertise program at SMK M Sukoharjo, 3. To analyze the application of TEFA in growing entrepreneurial character of students in the mechanical engineering expertise program at SMK M Sukoharjo. The research method is qualitative descriptive research. The data collection technique used three techniques, namely structured interviews, field observations and data documentation. The informants were school principals, deputy heads of school curriculum, heads of mechanical engineering study programs, productive teachers, and students. Data validity using source triangulation by comparing different sources. Data analysis techniques using interactive data analysis which includes data collection, data reduction, data presentation, data verification, and drawing conclusions. The results of the study found were 1. Application of Teaching Factory (TEFA) in the mechanical engineering expertise program at SMK M Sukoharjo seen from the application of management functions which include planning that has been made well, the organization has been made into an organizational structure that involves all elements in the school, the implementation is in accordance with implementation standards in the industry, supervision is carried out in stages. 2. The reinforcing

factors for the success of TEFA are; a. Adequate infrastructure both in terms of quantity and quality b. Qualified human resources, c. Quality products d. How to work in accordance with industry standards e. Extensive marketing mix. The inhibiting factor is a. Student motivation is still low, b. Low student morale, 3. The application of TEFA can foster the entrepreneurial character of students by involving students in TEFA activities.

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## Introduction

TEFA activities are very suitable for increasing student competence, this is important so that students will be ready to work when they enter the world of work, because they are used to doing the same work that is done in the world of business and industry. business and industry both curriculum, work methods, work culture, and work discipline, so as to provide competence according to the demands of the industrial world and the world of work.

TEFA is implemented by holding activities that are taught to students that are similar or almost similar to those taught at school and those carried out in the world of business and industry (Kuat, 2015). TEFA bridges the competency gap between the knowledge conveyed in schools and the demands of the business and industrial world. Hasbullah (2010) states that TEFA is a learning activity that combines the knowledge taught at school with what is done in the world of work and the industrial world. Learning Objectives through TEFA are to develop work character that is in great demand by the business world and the industrial world. With TEFA learning, students get the provision of knowledge, competence, and work character which are expected to produce products in the form of goods and services (Kuat, 2017). TEFA learning in Vocational High Schools (SMK) still needs to be improved so that SMK graduates can be accepted in the business and industrial world so they do not become unemployed. This means that vocational graduates need to improve their competence to meet the demands of the business and industrial world (Hartanto et al., 2019; Torun & Tumen, 2019). This is in accordance with the results of research conducted by Yunanto (2016) that the application of TEFA at SMK N 2 Gedangsari in the boutique fashion design expertise program was carried out well. As a result, seven parameters of TEFA management, learning media, learning training, workshop and laboratory management, communication media, products and services, are running well while teaching factory resources, and industrial relations have not been maximized. (Yunanto, 2016).

The conditions at SMK M Sukoharjo can be explained that at the beginning of TEFA activities

there were still many obstacles because there were no other schools in Sukoharjo that implemented the TEFA program so there was no comparison to emulate, but since being appointed as a Center Of Excellence (COE) school the implementation of TEFA has experienced notable progress well, especially after being appointed as a Center of Excellence school it became more developed because it received guidance from universities, namely from the Muhammadiyah University of Surakarta. TEFA activities are focused on manufacturing medical equipment in the form of patient beds, infusion hangers, chairs for patient waiting rooms, making equipment for ambulances and others. Until now, we have only managed to get permission from the health minister to get official permission. So far, the products are sold for the environment itself.

Growing the entrepreneurial character of students is very important so that vocational school graduates are not unemployed. Entrepreneurial character is grown by learning while working, meaning that students do learning in practice while working. The assignments given to students are similar to those that will be done when students are already working. It is hoped that by learning while working students will gain real experience in working through practical activities at teaching factories and business centers. Suryana (2008) states that a person has five entrepreneurial characteristics, namely (1) Having a strong belief in determining something (2) Having high initiative in finding solutions to the problems faced, (3) Having an achievement motive: high so that it will always be able to achieve what is expected (4) Have a strong leadership spirit so that they are able to lead their subordinates. (5) Likes a challenge:.

From the description above, the formulation of the problem in this study is (1) How is TEFA applied to the competence of mechanical engineering expertise at SMK M Sukoharjo?; (2) What are the reinforcing and inhibiting factors for the application of TEFA in the mechanical engineering competence at SMK M Sukoharjo?; and (3) How is the application of TEFA in fostering the entrepreneurial character of students in the mechanical engineering expertise program at SMK M Sukoharjo?.

## **Method**

This study aims to obtain an explanation of the application of TEFA to the mechanical engineering skills program at SMK M Sukoharjo. vice principal for curriculum, head of the mechanical engineering study program, productive teacher, and students. Qualitative research, the data collected is generally in the form of words, pictures and not numbers, even if there are numbers they are only as a support (Danim, 2002). The data referred to include interview transcripts, field notes, photographs, personal documents, notes and other notes. The research was conducted at SMK M Sukoharjo in the mechanical engineering expertise program. The validity of the data using source triangulation by comparing between different sources. Data analysis techniques using interactive

data analysis which includes data collection, data reduction, data presentation, data verification, and drawing conclusions. (Miles & Huberman, 2014).

## **Result and Discussion**

### **1. Application of TEFA in Mechanical Engineering Competency at SMK M Sukoharjo.**

#### **Planning**

TEFA planning is done by answering five big questions, namely 5 W + 1 H. What is to answer what is the purpose of establishing TEFA, Who is to plan who is right to carry out TEFA activities according to a particular field of work, When is to plan when the right time to carry out a TEFA activity. Where to plan where the exact TEFA site is set up. Why to answer why TEFA was established and why. TEFA planning includes human resource, product, marketing, and financial planning.

Human resource planning concerns the preparation of educators/teachers who will teach at TEFA, of course, teachers who have a minimum qualification of S1 in the field of engineering will be selected. So as to be able to teach and train and be able to create pleasant learning conditions for students. This is in accordance with the opinion of Ismail et al. (2018), which states that to create pleasant conditions in learning requires teachers who have high creativity and flexibility so as to be able to create educational experiences and be able to make students creative.

Product planning concerns how many products will be produced, what quality is it and what is the form of quality control. Product marketing planning to find out the market segments of the products produced, how many targets are expected from product marketing, and create a brand so that the products produced are always remembered by consumers. Financial planning at TEFA is aimed at protecting the continuity of activities so that production continues. Then careful planning is needed where capital is obtained and what it is used for.

#### **Organizing**

Organizing aims to determine the division of tasks and authority of each in carrying out their duties. The organizational structure of TEFA at SMK M Sukoharjo includes the director, production division, marketing section and technical section. The director has the duty and responsibility to manage TEFA as well as possible so that it develops and advances. The production department has the duties and responsibilities of controlling the production process according to orders from consumers. The marketing department has the duties and responsibilities of finding markets for the products produced, determining marketing methods and creating product branding in the community. The technical section manages technically everything related to the development of TEFA.

This is supported by research conducted by Sanatang (2020), which states that organization is carried out through the establishment of a TEFA organizational structure, job descriptions, and standard operating procedures for each department's activities. However, the implementation of the activities of each department has not been well documented. The human resources involved in the organizational structure are all internal to the school, there is no participation from the government.

In organizing production, the production schedule is written after receiving orders from consumers. Production work is carried out in the TEFA workshop carried out by technicians and assisted by students who are apprentices at TEFA as well as students who practice in turns which are arranged so that students experience real product manufacturing practices. More about this source textSource text required for additional translation information.

### **Implementation**

TEFA learning is carried out in a block system so that students get a comprehensive experience from receiving orders, analyzing orders, carrying out work on making products to delivering ordered products to customers. The implementation of learning strategies and systems is based on an industrial curriculum, learning strategies according to what is applicable in the industry. In making learning worksheets follow the needs of the industry. The TEFA learning activity begins in the morning at 7.00 all students must arrive at the location, then a call is held. During the call, the technician explains what work must be done today, as well as reminds about the use of work safety equipment, division of work assignments, use of tools. and placement back into place after being done and always maintaining work cohesiveness, morale and being responsible for the work for which they are responsible. At 12.00 students who are practicing are given the opportunity to take a break to eat and pray until 13.00. After the break ends, return to work until 16.00, which was previously held in the afternoon and go home.

Product manufacture begins with product design drawings, then supplies the materials and tools needed, prepares cutting, welding, painting, and assembling into a finished product. After the finished product is tested for quality assurance. Then the new packaging is delivered to the customer. In general, the implementation of TEFA activities at SMK M Sukharjo has been going well according to industry standards, this is according to research from Sari, AK, (2022) which states that the results of teaching factory management seen from its implementation have been carried out well. Also supported by Putra W.'s research (2021) which states that the results of research at SMK PGRI 3 Malang show that the fulfillment of infrastructure in the implementation of Tefa is based on the execution of job orders given by the industry. In terms of human resources, teachers already have competency certificates and students implementing Tefa are selected through

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recommendations from teachers. Then for industry support only in the form of job orders and teacher training.

### **Supervision**

Supervision activities are carried out in stages from the school principal, who oversees TEFA activities in general whether they are running well or not, what about production, marketing and financial problems. Then supervision by the head of the expertise program who oversees apprenticeship activities and student practice at TEFA, as well as technical supervision by the head of TEFA on production process activities and quality assurance. Supervision is needed in order that TEFA activities run as planned and so that errors do not occur in products and work methods that are always in accordance with industry operational standards.

The results of this study are supported by the research results of Sari A.K. (2022) which states that the teaching factory management in terms of supervision at SMK N 6 Padang supervision is carried out in an integrated manner by all components of the school. Based on the data obtained, the application of TEFA to the competence of mechanical engineering expertise at SMK M Sukoharjo, in terms of planning, organizing, implementing, and supervising, has gone very well, by producing medical device products, especially patient beds that have been produced and marketed to PKU Hospital. Muhammadiyah in Central Java.

## **2. Factors Reinforcing the Success of the Implementation of Fajtor TEFA at SMK M Sukoharjo**

Reinforcement factors for successful TEFA implementation are supported. First, having adequate facilities and infrastructure both in quality and quantity. Facilities and infrastructure are four-storey buildings with adequate classrooms, Wifi Facilities, and LCDs in each class. TEFA already has CNC machining facilities, lathes, cutting machines, welding equipment, and drawing equipment. Second, having quality human resources (HR) which is characterized by high mastery of competencies so that they are able to teach students well because they have an appropriate educational background and get additional competencies. Third, quality products, meaning that the products produced are guaranteed to be of good quality because before they are released to the market they have gone through quality tests in the laboratory, and are made using the latest machines. Fourth, standard operating procedures according to industry standards. Work operational standards refer to work standards within the industry, as well as industry work culture. Fifth, the extensive marketing mix, product marketing network has been well developed. By cooperating with Muhammadiyah-owned hospitals, especially those in Central Java, there are several that have collaborated so far.

This is supported by research conducted by Sari A.K. (2022), namely (1) teaching factory management at SMK Negeri 6 Padang in terms of (a) planning has been carried out properly such as managing time, tools and practicum materials at workshops; (b) organizing a well-organized teaching factory starting from the head of competency skills, head of salon, subject teacher, and toolman; (c) implementation has been carried out properly; (d) supervision is carried out in an integrated manner by all components of the school. Supporting factors include: competent teachers, supporting facilities and infrastructure, enthusiastic students, toolmen, block system practicum schedules, and collaboration with DUDI, Inhibiting factors in the application of TEFA.

The inhibiting factors in implementing TEFA at SMK M Sukoharjo are; First, low student work motivation. This can be seen when carrying out practical activities there are still some students who are less enthusiastic about doing the practice, also if they are given a somewhat more burdened load, so their enthusiasm for work drops. Second, the work character is low, there are some students who have a lazy work culture, this is indicated by the fact that there are still students who are late to the workshop for made-up reasons, there are students who should be working but have already taken a break. This is supported by the research of Casmudi et.al (2022) which states that there are still obstacles in implementing teaching factories at SMK N 4 Balik Papan that need to be identified and solutions found through consensus meetings at school.

### **3. TEFA Implementation Contributes to Growing Entrepreneurial Interest in Vocational High School Students**

Learning through TEFA can foster the entrepreneurial character of SMK M Sukoharjo students. Through the application of TEFA learning activities, students practice in workshops that produce products. In addition, the activities carried out will make a more positive contribution by involving students, starting from planning products, carrying out production activities, as well as carrying out marketing activities. Involving students in activities at TEFA from receiving orders, analyzing orders, carrying out production, guaranteeing quality and delivering products to consumers is a comprehensive activity that will foster student work character and increase student motivation at work

Empirically schools that have been successful in implementing TEFA by applying work operational standards according to industry standards, work methods according to industry, industrial work culture, use of machines and tools according to industry and work situations and industrial work culture are able to grow students' motivation and work character. Supported by Siswanto (2011) research results which state that teaching factories can enhance students' entrepreneurial spirit by directly involving students in all business processes from planning, production, and marketing. Also in accordance with Perdana NS's research (2018) which states that

(1) the teaching factory learning model effectively increases student motivation to take part in learning activities and has a positive impact on improving the quality of student evaluation results, and (2) the teaching factory learning model with existing production units can produce products/services that are worth selling so that they can increase school income which can be used to help with school operational costs and can be used as a medium for school promotion to the community.

### **Conclusion**

The application of TEFA to the mechanical engineering expertise program at SMK M Sukoharjo in terms of planning, organizing, implementing, and supervising has gone very well by producing medical device products, especially patient beds which have been produced and marketed to PKU Muhammadiyah hospitals in Central Java.

The reinforcing factors for the success of TEFA are; a. Adequate infrastructure both in terms of quantity and quality b. Qualified human resources, c. Quality products d. How to work in accordance with industry standards e. Extensive marketing mix. The inhibiting factor is a. Student motivation is still low, b. Low student morale,

The application of TEFA can foster the entrepreneurial character of students by involving students in TEFA activities.

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