

Teaching Factory Management on Vocational High School Case Study: Arts and Creative Industry Competency

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Abstract – Vocational High School (VHS) students have the limitation of places and time for internships that can be overcome by establishing a teaching factory (TEFA) in schools. The purpose of this study is to show the implementation of teaching factory management in vocational high schools with art and creative industry competence. This research used the survey method. The respondents were students and teachers. The Questionnaire and interview were analyzed descriptively with words. The results showed that the implementation of TEFA management was well planned and socialized around the school. The actuating of TEFA improved student skills in production and had a positive effect on the work readiness of vocational students. TEFA also considered entrepreneurship skills based on business principles and culminated emersion of new creator in creating start-up businesses in the creative industry. TEFA does not only involve schools and industries but also requires the third parties outside of schools, such as the government as the regulator; meanwhile the community is the recipient of products/ services from TEFA.

Keywords – management, teaching factory, TEFA, Vocational High School.

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1. Introduction

In order to ensure high quality of the papers, the authors are requested to follow instructions given in this sample paper. Regular length of the paper is 6 to 12 pages. The introduction section should provide review of the existing literature on the topic which will help contextualize our research within the broader scientific field and show the novelty of our work.

Management is a process consisting of planning, organizing, mobilizing, and controlling that is carried out to determine and achieve certain goals by relying on available natural and human resources. According to Law No. 20 of 2003 concerning the National Education System: "Vocational education is education that prepares participants to work in certain fields" [1]. So, vocational education management includes the process of planning, organizing, mobilizing, and supervising vocational education units (Vocational High School/VHC and Higher Education) to determine and achieve goals under vocational education listed in the National Education System Law by relying on the resources owned by the vocational education unit.

Vocational education aims to create a skilled workforce with certain skills because the industry of a nation is largely determined by the quality of skilled workers who are directly involved in the production process. Vocational education also aims to provide knowledge and skills for students to enter the workforce and at the same time produce skilled labor needed by the community. To bring vocational education closer to the world of industry and the world of work, vocational education seeks to create a laboratory/workshop which is replicated of the real world of work and learning using the same work tools, materials, operations, and standards as the real world of work.

Preparing students to become professional workforce according to society; theoretical and practical proportional is important so that education does not produce hidden materialism when it puts too much emphasis on practical matters. Nor can it ignore the practical needs of society, because it means that education can be said to be dysfunctional. Only experts or professionals can show how a skill is performed, learned or trained. For this reason, trainers and educators in vocational education have to have good experience in the skill fields to be taught. Training and field experience practices accompanied by vocational competency certification are important for vocational educators [2].

The preparation of students to become professionals demands that particular management. Vocational education management is different from other general education. Vocational education management oversees the vocational education unit, including leadership in teaching, program planning, technician support, vision-mission alignment, policy development, and fostering the unit's culture. In planning the vocational education learning program contains links and matches with the industrial world as well as learning theory and practice in schools [3]. This requires extensive and active management of cooperation from vocational education providers that are not available in other general education. Such laboratory/workshop standards require proximity to industry and the world of work, so that the school can replicate the industry and the world of work environment.

Learning at work in the form of an apprenticeship has become a necessity. Limited places and time for internships can be overcome by establishing TEFA in schools. This challenge then gives an idea of how the factory concept is presented in schools as part of the teaching process. Then the concept of Teaching Factory (TEFA) emerged. TEFA presents the concept of a factory for teaching. Not a factory for business or profit purposes in schools, a factory for the vocational learning process [4].

In Government regulation number 41 of 2015, Teaching Factory is a production facility that is operated based on actual working procedures and standards to produce products under real industry conditions, without seeking profit. In the Grand Design, TEFA in VSH is defined as "a production/service-based learning concept in VHS which refers to the standards and procedures applicable in industry and is implemented in an atmosphere like what is happening in the industry" [5].

Teaching factory (TEFA) is learning where students directly carry out production activities in the form of goods or services in the school education environment.

The goods or services produced have quality so that they are worthy of sale and are accepted by the public or consumers. The results obtained are expected to increase the source of school income which is useful for the sustainability of educational activities. TEFA presents the real world of industry/work in the school environment to prepare graduates who are ready to work [6]. TEFA provides opportunities for students to think, practice, and apply their competencies in a real work environment. These conditions provide greater opportunities for the achievement of the goals of vocational education, namely developing skills, abilities, knowledge, attitudes, and work habits needed for students to become skilled, useful, productive, and reliable workforce [7].

The threat of the presence of the 4.0 industrial revolution on labor reduction does not apply to all industrial activities, one industrial activity that does not have a significant impact on the reduction of labor is the creative industry because creative industries are based on creativity, art, culture, and innovation. The existence of the creative sector, if developed, will become the driving force for the economy in the 21st century [8]. The creative industry is a driving force for the creative economy and plays a role in reducing unemployment [9]. Based on data from the Focus Economy Outlook 2020, the creative economy contributed IDR 1,100 trillion to Indonesia's Gross Domestic Product (GDP) throughout 2020 [10].

SMKN 12 Surabaya as a vocational high school (VHS) with expertise in the arts and creative industries has a mission to support government programs in the development of creative industries. It aims to produce graduates with character and competence who can compete in the job market and have the entrepreneurial spirit. It is hoped that the application of TEFA in schools will encourage students to have work readiness and an entrepreneurial spirit. Through TEFA, it is hoped that schools will always follow industrial developments such as curriculum development, internship, and so on. Likewise, SMKN 12 Surabaya has developed TEFA since 2018. The successful implementation of TEFA learning in VHS requires good management. Learning management is an educator's effort in planning, implementing, and facilitating the learning process and evaluating learning outcomes. Based on the above background, this research is conducted to describe the planning, organizing, implementing, and evaluating TEFA at SMKN 12 Surabaya. This school has special expertise in the arts and creative industries that no other school has in East Java, Indonesia.

2. Methodology Section

In this research, the type of research used was descriptive research with a quantitative approach. This research referred to the management of the teaching factory (TEFA) at SMKN 12 Surabaya. Jl. Siwalankerto Permai No.1A, Siwalankerto, Kecamatan. Wonocolo, in Surabaya City.

Respondents in this study were: students and teachers. There were 36 students and 6 teachers consisting of two competency skills: interior design and creative leather crafts. Primary data obtained from data collection techniques was a questionnaire distributed to students as respondents. Students' questionnaire used Guttman scale model in the form of yes and no answers. The contents of the questionnaire instrument were adapted from instruments from Muslim's (2019) research in implementing teaching factory in Vocational High School. Supporting data obtained from the results of interviews and observations at school. The interviews were conducted with teachers in the competency of interior design and leather creative crafts. The interview was guided by a questionnaire which was also adapted from Muslim's (2019) research. The questionnaires are divided into four categories of POAC Management which are Planning, Organizing, Actuating, and Controlling. The evaluated categories and aspects can be seen in Table 1.

Table 1. Component and Aspect Evaluated

Category	Aspect	Number of question
Planning	Socialization and support	4
Organizing	Standar Oparating Procedure (SOP), setting, lesson plan	5
Actuating	Hardskills, softskills, entrepreneur skills, 21century skills	15
Controlling	Market research and partnership with SME	7

The data analysis technique employed in this research is descriptive quantitative analysis. This involves describing and interpreting the data from the evaluated variables by examining trends using percentages of the data. Data from interviews and observations conducted by researchers were used to explain the data from the data generated by the questionnaire from student respondents.

3. Results

Management functions or uses (planning, organizing, actuating, and controlling), directly or indirectly, always relate to the human element, both vertically and horizontally.

Planning includes a series of activities to determine goals, create programs, determine methods and procedures and determine a schedule for the implementation of work. Organizing regulates the elements related to organizing humans according to their capacities and capabilities. Actuating is the process of mobilizing organizational members, namely running the organization effectively and efficiently, while controlling is an effort to find out that the results achieved by the organization are as planned. Educational management can be defined as the process of managing organizational resources to achieve educational goals. If the management function is shown in terms of management, then management education can be defined as the process of planning, organizing, directing, and controlling (managing) human resources and other resources to achieve educational goals effectively and efficiently. The developed TEFA management is integrated with the production unit for the implementation of student practice [11]. SMKN 12 Surabaya as the organizer of TEFA has to be able to take managerial actions to achieve TEFA goals based on the vision and mission of the school.

Based on student responds, the organizing category has the high point (35.8) or 99% of students agreed to the organizing TEFA in school. The actuating category has an average score of 35.7 points, which is lower than the organizing category. It also means that 99% of students agreed to the implementation. Then planning category has 34.25 of average or 95% of students say 'yes' to the planning. The last category is the controlling. It has 32.7 of average or 91% of students agreed that TEFA has partnership with SME. Below is the Figure of bar chart comparing the four aspect of POAC management of TEFA in School (Figure 1).

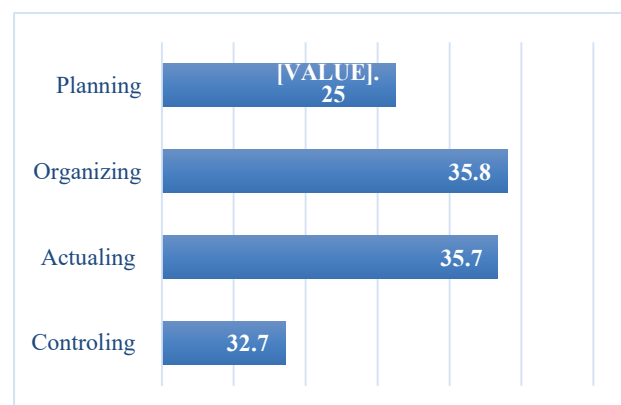


Figure 1. Bar chart of student responds in TEFA Management POAC

It can be seen from the figure that organizing the TEFA was the most important for the students. TEFA cannot be run well without good organization.

4. Discussion

Planning TEFA

Planning in TEFA is done by planning a work program that is tailored to the vision and mission of the school [12]. The planning of the TEFA program at SMKN 12 Surabaya is based on the vision of the school as a barometer of the art and design vocational school. Meanwhile, the mission to support the vision of the school includes producing graduates with character and competence who can compete in the job market and have an entrepreneurial spirit. So that the work program planning is a follow-up to the school's vision. This planning is very important so that the school's vision can be achieved in a planned and systematic manner.

In preparing TEFA plans that will be implemented, it is carried out through a process of analyzing conditions and potentials, as well as analysis of the TEFA-based curriculum. The TEFA work program in schools is well planned and based on the Law on the National Education System (UUSPN) No. 20 of 2003 article 15, which states that vocational secondary education aims to prepare students, especially to work in certain fields, in this case, the areas that SMKN 12 focuses on are the arts and creative industries.

Based on the revitalization of the VHS curriculum, schools have also implemented a creative industry-based curriculum, namely a curriculum that is aligned with industrial needs [13]. Through TEFA in schools, it is hoped that new businesses (start-ups) based on creative industries will emerge; therefore partners are collaborating with schools from small and medium enterprise (SME) in creative industries. This is in line with the facilities and infrastructure owned by the school. As art schools and creative industries do not have large equipment or machines. The school provides workshops for students to work with standard equipment owned by small and medium industries. Most of the raw materials are provided by schools.

The factory teaching program can be run if the school facilities meet the standards for conducting production activities [14]. Due to limited machines/tools, the school did not fully build a factory in the workshop but only a small part of the factory or what could be called a mini-factory. With this mini-factory, it can ease the burden on schools and partners not to make the factory completely. Through this mini-factory, we can get closer to the real theory and practice [15].

Socialization aims to gain a correct shared understanding of the TEFA and the unity of steps in its implementation [5]. The planning process begins with outreach activities within the school: the teachers and administrative staff.

This socialization is carried out in the school environment, with parents and the community around the school [16]. The school has socialized well the TEFA program according to 97% students. The parents and community were invited in the socialization so that they understand the importance of the program, not only for the students but also for the community. Apart from getting support from schools and parents, TEFA also received support from the community around the school as users of products of TEFA's workshops.

The readiness of existing facilities and infrastructure at schools is a part of the planning. The facilities provided can stimulate TEFA learning and students can have access to these facilities openly [17]. The need for machines, tools, and materials in the workshop to the funding used to finance all the needs in the TEFA workshop [18]. Schools do not depend entirely on students and industry to support TEFA. The school also provides material to help students produce goods.

Organizing TEFA

In TEFA students have the opportunity to learn practical aspects of subjects, including the process of product emergence in an integrated manner, more effectively and efficiently [19]. TEFA is a combination of competency-based learning approaches and production, where the practical learning process is carried out resembling a practical process in the real world of work by carrying out activities of producing goods or services in a school environment [16]. TEFA is a replication of the real world of work and learning using the same work tools, materials, operations, and standards as the real world of work [11]. According to the survey all students felt the experience of real work situations based on real work procedures while in TEFA laboratory.

The production process is carried out when there is a need for goods/products from the client [20]. Organizing TEFA in schools is seen from the arrangement of the process of receiving orders from clients [21]. According to 95% of the students, the order is received by students by writing a receipt and then consulting with the companion teacher to analyze the materials and tools needed. If the client has agreed with the price proposed, the work process can be continued during work, students are always accompanied by the teacher. The teacher is also the quality control for the products produced by students. The product delivery process is also carried out with a receipt from the student to the client. The production teacher is fully responsible for the student's work.

In line with what was conveyed by Lamancusa et al. (2008), Ismayati et al. (2020), Triyono (2012), and Muslim (2019) TEFA is oriented towards problem-based learning, namely: learning that requires students to solve problems presented by clients to produce a product. During the process of working on the product, the students did hands-on learning by learning by doing. TEFA also directs students to be independent and collaborate between students and teachers. It is proved that 97% of students agreed that they did active learning, independent learning and collaboration while they were doing TEFA learning.

Actuating TEFA

Vocational education providers and partner institutions conduct workshop settings and assist with the same practicum equipment as the equipment used in the industry [3]. The implementation of TEFA can be adjusted to the conditions and learning resources available in schools [22]. Partnerships between schools and partners also share equipment resources and trainers.

Work readiness is influenced by internal student factors obtained during the TEFA learning process [23]. Internal factors are factors that exist within the students themselves. Along with the result, all students agreed that during the TEFA learning, they develop soft skills of intellectual intelligence, emotional intelligence, spiritual intelligence, and social intelligence. TEFA teaches students to learn responsibly in the world of work, learn to build commitment in the world of work, and train students to continue to learn and adapt to new knowledge.

The implementation of teaching programs plays a role in increasing the competence of students who are needed in work and fostering student interest in entrepreneurship [22]. In TEFA, it has paid attention to the principles of entrepreneurship as well as developing and implementing business-based learning. All students were agreed that the TEFA simultaneously provides guidance/consultation to students both individually and as a team and learn to build commitment in the world of work.

The 21st-century job vacancy requires communication skills, teamwork skills, problem-solving skills, creativity and innovation skills, leadership skills, self-management skills, and learning skills [24]. Likewise in the creative industry entering the 21st century, the need for the development of vocational learning is increasingly leading to the development of education and training for creative jobs. Competency standards for vocational education graduates to meet the development needs of a highly creative workforce [4].

The skills generated in TEFA are not only for now but to face the Industrial Revolution 4.0 in the 21st century. Industrial Revolution 4.0 is built on technological advances [25] enabling smart, efficient, effective, individualized, and cost-appropriate production [26]. The Industrial Revolution 4.0 highlights the importance of changes in employment trends in shifting global forces [27]. By the skill needs of the Industrial Revolution 4.0, TEFA has taught about digital literacy as a feature of the 4.0 industrial revolution. Through TEFA students not only practice soft skills but also like teamwork [28] by teaching communicative skills and collaborative thinking skills as 21st-century skills.

Evaluating TEFA

Schools need to monitor and evaluate the implementation of TEFA in terms of clarity of target and market segments as well as market reach, as well as adjust the methods and actors of promotional activities [5]. TEFA management monitoring services are carried out through monitoring and evaluation to make TEFA better and better in quality according to its main duties and functions. Monitoring and evaluation are used as efforts to improve the performance of TEFA [29].

The implementation of TEFA in terms of evaluation aspects states that the measure of product success and the success of TEFA implementation is seen from the marketing aspect. In terms of marketing, TEFA is seen from the school's efforts to market products [30] by carrying out production marketing activities that involve teachers and students in the production process so that through TEFA it has improved students' abilities in doing market research. The teacher as the manager of TEFA has developed a market network and distribution of TEFA products which is supported by the full involvement of students in TEFA. From the results of the evaluation, there is a significant effect of the implementation of the TEFA program on vocational students' job readiness, a line with Ismayati's research (2020).

Besides marketing the carrying capacity of the industry is also a determinant of the success rate of students in implementing TEFA [31]. Not all the students said that the industry supports in terms of production facilities in schools. Schools receive orders from the partner of industries with production systems carried out as in industry partners. The industry partners also supervised the TEFA in school.

5. Conclusion

TEFA management at SMKN 12 Surabaya begins with TEFA socialization with internal schools, parents, and the community around the school.

As a start, two skill competencies for TEFA learning were appointed, namely the competency for the expertise in Interior Design and Furniture Engineering and Creative Leather and Imitation Crafts. TEFA in schools has been well organized and has become a replication of the real world of work and is implemented based on actual work procedures and standards. TEFA is oriented towards problem-based learning and builds independently and collaborates with an emphasis on practical learning (learning by doing). Work readiness is influenced by internal student factors, TEFA has a positive impact on developing student work skills consisting of intellectual intelligence, emotional intelligence, spiritual intelligence, social intelligence, responsibility, commitment, and training students to continue to learn and adapt to new knowledge. TEFA also emphasizes entrepreneurial principles by offering business-oriented guidance through both individual and group sessions. The development of work skills at TEFA is expected to be able to face the Industrial Revolution 4.0 in the 21st century.

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