

Evaluation of Implementation of Teaching Factory Programs in State Vocational School, South Jakarta

Putri Ghanim Septia Habiba^{1,*}, Bedjo Sujanto², Neti Karnati³

^{1,2,3}Manajemen Pendidikan UNJ, Jl. Rawamangun Muka, Jakarta Timur

*Corresponding author, tel: 0859 2156 1419, email: putrihabiba194@gmail.com

Abstract

Evaluation of Implementation of Teaching Factory Program in SMK Negeri South Jakarta. This study aims to determine the discrepancy between the performance of implementation of teaching factory program in SMK Negeri South Jakarta with standards. The method used in this research was The Discrepancy Evaluation Model (DEM) with four stages that have been modified in accordance with the research objectives, namely design, installation, process, and product or results. The process of collecting data is done by using observation, interview, and documentation study. The results showed: 1) The teaching factory program formulation has been well defined that includes aspects of urgency, has clear goals and objectives, and measures of success. 2) The teaching factory program has been quite well designed, including implementation guidelines, human resources, and labs. 3) The teaching factory has been implemented well which includes learning, practical activities, marketing and promotion, management, industrial relations, monitoring and evaluation. 4) The products of the teaching factory program, which provides positive results in the form of the creation of an industrial culture that is able to increase productive competence and foster entrepreneurial spirit of students, and produce products/services that have added value with quality that can be absorbed and accepted by the community.

Keywords: Teaching Factory, SMK, The Discrepancy Evaluation Model (DEM)

1. Introduction

Education aims to prepare students to take on a role in a variety of environments on a permanent basis for the future. But in its development, education in Indonesia always faces problems. The education problem facing Indonesia is that the quality of education is still low. Based on data from the Global Human Capital Report (World Economic Forum 2018: 283), on the 6th pillar of skills, Indonesia is ranked 62 out of 140 countries. This condition shows that Indonesian human resources are less competitive in the global market.

The low level of Indonesian human resources is directly proportional to the Open Unemployment Rate (TPT). Based on Central Statistics Data (BPS, 2018), the TPT number in Indonesia in August 2018 decreased to 5.34 percent from August 2017. A total of 124.01 million people were working residents, while as many as 7 million people were unemployed. Judging from the level of education, the number of unemployed people who came from the Vocational High School (SMK) ranks at the top of the list which is 11.24 percent. Compared to conditions a year ago, TPT at the vocational level of education had decreased by only 0.17% (Figure 1).

Figure 1. Open Unemployment Rate (TPT) by Highest Education Level Completed (percent)

Vocational school is a vocational education unit at secondary education level which aims to prepare students to be able to work, either independently or fill existing job openings as middle-level labor according to their competency (Law No. 20 of 2003). However, based on Figure 1, it can be seen that vocational graduates who are actually prepared to be able to work, instead dominate TPT among other levels of education. The high contribution of SMK graduates to the number of unemployed people in Indonesia is one sign that SMKs experience several obstacles in the effort to achieve vocational education goals.

Constraints faced by Vocational Schools include the weak cooperation / synergy between Vocational Schools and the business / industry world, there is often a mismatch between theories obtained with the practice process carried out, even the results learned in schools both theories and practices differ from conditions in the world work. In addition, the challenges faced by SMKs are limited equipment, low practice costs, and a learning environment that is not yet in line with the industrial / business environment.

Seeing the existing phenomena, the government issued Presidential Instruction No. 9 of 2016 concerning SMK revitalization to improve the quality of human resources. The mission created to achieve this vision is to improve the expansion and equitable access to quality vocational high schools for all levels of society, improve the quality of vocational schools through the application of disciplinary attitudes, noble character, environmentally sound, and learning centered on students who are contextual in computer technology, empowering Vocational High School and creating graduates who are entrepreneurial and have expertise competence through the development of cooperation with industries and various relevant businesses in the form of a "teaching factory".

Teaching factory is a learning concept in production / service based SMKs that refers to standards and procedures that apply in the industry and are carried out in an atmosphere like what happens in the industry (Directorate of Vocational Development, 2016: 2). Innovative learning and productive practices are educational methods that are oriented towards managing students in learning to be in line with industry needs or demands. Production-based learning is a process of learning expertise or skills that are designed and implemented based on actual work procedures and standards (real jobs) to produce goods or services that are in accordance with market or consumer demands. The goods produced can be in the form of products or services that can be sold or that can be used by the community, schools or consumers as proof that vocational students are not only competent in certain skills, but are also able to apply their competencies into something useful..

2. Methods

This study uses a qualitative approach with a program evaluative research method. The evaluation model used is the gap evaluation model (The Discrepancy Evaluation Model - DEM) developed by Malcolm M. Provus (1969). Provus defines evaluation as the process of program conformity to program standards and then determines whether a discrepancy occurs between a number of aspects of the program and standards that govern aspects of the program, and uses information about the gap to identify program weaknesses. (Wirawan, 2016: 151). The evaluation of the teaching factory program at SMK Negeri South Jakarta includes four stages of the gap evaluation model, namely design, installation, process, product.

This study also uses secondary data analysis and surveys. Secondary data is sourced from statistical data published by the Central Statistics Agency and the Ministry of Education and Culture related to the input and output data of the education system, such as the quality of SMK graduates, teacher data, infrastructure, education funding, and so on. While primary data were obtained from school surveys specifically related to the implementation of teaching factories. In addition, interviews were also conducted with a number of speakers (informants) in the South Jakarta Administration City.

The evaluation criteria of the teaching factory program used in this study are based on the program implementing guidelines, namely the Teaching Factory Implementation Management by the Directorate of Vocational High School Development. Criteria is something that is used as a standard or benchmark of the condition of the object being assessed. The criteria used to measure the aspects evaluated can be seen in Table 1.

Table 1: Teaching Factory Evaluation Criteria

No	Stages of the Gaps Evaluation Model	Aspect	Evaluation Criteria
1	Design Stage	Urgency	There is a crucial problem underlying the program
		Purpose	Programs have clear and rational goals to realize
		Target	Programs have clear goals
		Measure of success	There is a clear measure of program success
2	Installation Stage	Implementation on guidelines	There are clear technical guidelines or implementation guidelines for implementing programs such as:
		Human Resources	The support of experienced HR production and teaching factory. Number and suitability of HR, student teacher ratios (ideally): for working tools 1: 6-12 students for manual work 1: 12-20 students
		Workshop / lab	The existence of workshops / labs that are in accordance with the standard vocational infrastructure facilities, including: 1. There is equipment that is proportional to the number of students / classes 2. The governance of the use of tools 3. Maintenance, Repair & Calibration (MRC) management is well arranged so that the facilities are always ready to use 4. Workshop layout according to function and neatly arranged
3	Process / Measurement Stage	Learning	1. The existence of teaching materials based on teaching factory 2. Teaching factory based assessment system 3. Learning system of block and continuous schedule
		Practice Activities	There is an effort to develop industry-based learning, including 1. Material practices using raw materials for the production process 2. Practice basis: student practice results are products / services (finished or semi-finished products) that are ready to sell 3. Entrepreneurship, students are involved in every stage of teaching factory with aspects of target delivery, cost, quality and efficiency related to customer expectation and satisfaction.
		Marketing and Promotion	There is an effort to develop marketing and promotion of teaching factory promotions, which include: 1. Marketing & promotion plan

No	Stages of the Gaps Evaluation Model	Aspect	Evaluation Criteria
			2. Communication media for Teaching Factory 3. Brochures / leaflets / other facilities
		Management	Financial administration, which records transactions according to standard accounting procedures
		Industrial Relations	There is a relationship or cooperation between SMK and Industry in the form of: 1. Form of cooperation that is able to meet the needs of teaching factory (industrial / MOU / recruitment and others) and industry needs. 2. Project work 3. Technology transfer 4. Investment by industry
		Supervision and evaluation	There is continuous monitoring and evaluation
4	Product / Results Stage	The quality of the teaching factory program	The positive results achieved from the implementation of teaching factory are related to the creation of culture / industrial culture that is able to increase productive competence and foster student entrepreneurial spirit.
		Products / services	There are goods and services / services produced and have added value with quality that can be absorbed and accepted by the community. In more detail the sub parameters include: 1. Products produced can meet internal needs 2. Market acceptance 3. Product innovation / diversification

3. Results

An evaluation of the implementation of the teaching factory program at SMKN South Jakarta for each of the stages showed the following results.

3.1 Teaching Factory Program Design

The teaching factory program formulation has been well defined as indicated by an explanation of the urgency aspect, having clear goals and objectives, and complemented by a measure of program success. The urgency of teaching factory is contained in Law No. 17 of 2007 concerning the National Long-Term Development Plan (RPJPN) 2005-2025 In the appendix of this Act, elaborates one of Indonesia's challenges is the low quality of human resources which results in low productivity and competitiveness of the nation's economy.

The teaching objectives of the factory have been published in the guidelines for implementing a teaching factory that is published by the Directorate of Vocational Development. The general factory teaching objectives are: 1) Integrating work experience into the school curriculum; 2) The product / service industry based learning process through schools with industries that run in synergy; 3) The pattern of learning habits reflected by the "school world" is changed to "the industrial world" in the form of learning by doing and

directly on experience; 4) To run a teaching factory, schools are required to have school factories / workshops / other business units; and 5) The success of the learning process not only lies in the use and quality of the product, but also lies in the quality of human resources (teachers and students), participation in cooperative relations with industry, and provision of entrepreneurial knowledge.

The targets are: 1) students get the opportunity to learn theory and practice in school with an atmosphere that feels like the atmosphere in an industrial work system. 2) Continuing cooperation between schools and DU / DI. 3) The teacher easily guides students to learn in meeting the KKM required as a graduation standard, guides students to be able to learn to work by following the schedule of blocks that have been arranged, then students are able to carry out and complete work in the form of product / service products that have a level standardization of the company. 4) Vocational School graduates do not hesitate and are awkward in working in the real industry so that the level of absorption of vocational school graduates in the industrial world will increase. 5) Schools in quality improvement, fulfillment of Sarpras and achievement of vision and mission become easier to implement. 6) Constraints faced by the industry in the recruitment of quality workers can be overcome and helped by SMK as partners. Based on interviews, document reviews and observations, it can be concluded that the objectives of this teaching factory program have been understood by the sample SMKN.

3.2 Teaching Factory Program Installation

The teaching factory program has been quite well designed, including implementation guidelines, human resources, and workshops / labs. Based on the document search results, the implementation guideline entitled Governance of Teaching Factory Implementation has been prepared by the Directorate of Vocational Development as a reference for implementing the teaching factory program. However, the document does not explain in detail step by step the implementation of the teaching factory program, there are only general instructions and technical implementation. In addition, some SMKs have not fully referred to the teaching factory implementation guidelines issued by the Directorate of SMK Development. This is because not all SMKs understand teaching factory.

In planning the program, adequate human resources have been prepared. For productive subject teachers in vocational schools the qualifications are good enough and most of them are in accordance with the expertise program that they are in charge of. However, the average number of productive teachers is still lacking, as are teachers with industry experience. To overcome the shortage of productive teachers in a number of vocational high schools, it has been added with dual skills teachers and honorary teachers.

In program planning, the workshops / laboratories in SMKN sample conditions vary, this is related to the condition of existing equipment. Almost all average expertise programs are good enough in preparing equipment, with good management of tools and management of Maintenance, Repair & Calibration (MRC). However, there are still some facilities that are lacking because of limited school land. This resulted in the less than ideal practice space to carry out teaching factory.

3.3 Implementation of the Teaching Factory Program

The results of evaluations of the implementation of the teaching factory program on aspects of learning, practical activities, marketing and promotion, management, industrial relations, supervision and evaluation can be categorized as good. Learning already uses teaching materials and assessment systems based on teaching factory. In addition, a block schedule and continuous learning system has been carried out.

The practice activities reviewed are in accordance with the criteria which include: 1) practice materials using raw materials for the production process; 2) practical results are products / services that are ready to sell; 3) students are involved in every stage of teaching factory (planning - process - handling - marketing) with aspects of target delivery, cost, quality and efficiency related to customer expectation and satisfaction.

In the aspect of marketing and promotion, some schools have not made marketing and promotion plans. The means used as a promotional medium are brochures that are still limited to certain circles. A sample product / mock up is displayed in the school corridor.

The management process is carried out properly including recording transactions according to accounting procedures and there are SOPs in each teaching factory activity unit. In the aspect of industrial relations, in general SMKs have collaborated with industry to develop production unit facilities, but not all expertise programs have cooperated with industry in sufficient numbers. One form of technology and knowledge transfer that has been carried out is Alfamidi class. To hold the program implementation, monitoring and evaluation has also been carried out continuously.

3.4 Teaching Factory Program Achievements

The implementation of the teaching factory program at SMK Negeri South Jakarta is able to provide positive results in the form of the creation of an industrial culture that is able to increase productive competence and foster student entrepreneurial spirit. In the aspect of products / services, the products / services are generally industry standard and suitable to be marketed. The sale of products / services can also help with school operational costs, at least for the purchase of practical materials. However, when viewed from the side of innovation and product diversification, generally SMKs do not produce products / services that are different from products / services that already exist, so there are no distinctive characteristics of the work of the SMK.

4. Discussion

Starting from the elaboration of urgency, goals, objectives, up to the definition of success measures. Urgency raised especially is the low quality of human resources resulting in low productivity and competitiveness of the nation's economy.

Program definition is also related to program goals and objectives. The goal is needed so that the program has a clear direction, so that in the end it can provide effective solutions and tangible benefits for the parties being targeted by the program. Likewise with goals, clarity of objectives will provide direction in making concrete steps to realize the goals to be achieved. The evaluation results show that the teaching factory program has been accompanied by clear and rational goals to be realized. Program targets have also been made and are mentioned in the teaching factory document. However, the target should have a time limit, so that it is not difficult in the assessment process to see the success of the program.

The next aspect with regard to program definition is a measure of success, that is, a measure used to assess whether a program's goals are successful or not. Indicators of success can be related to the process and can also be directly related to the final result (Muhaimin, Suti'ah, and Prabowo, 2009: 350). The evaluation results confirm that the teaching factory program in its design has been accompanied by a measurable measure of program success. The success of the teaching factory implementation can be simply seen from two main indicators including: 1) Utility and continuous use of equipment (can be seen through the implementation of a block and continuous learning system). 2) Integration of production processes or services into teaching materials.

At the program installation stage, this research shows several important aspects related to program installation such as implementation guidelines, human resources, and well-planned workshops. Implementation guidelines need to be made as guidelines for implementing a program. The guidelines provide uniformity of the program and do not appear to be acting independently in implementing the program. The existence of the implementation guidelines also made the program implemented according to the objectives and objectives, because in the process of making the guidelines it would have been focused on realizing the program's objectives. The Directorate of Vocational Development has published a program implementation guideline entitled Governance of Teaching Factory Implementation as a reference for implementing a teaching factory program.

In the installation phase of the program, it is also necessary to prepare sufficient human resources. In this case, we need experienced teachers of production and teaching factory. Human resources have a very important role, because it will determine whether the program runs well or not. In the context of policy implementation, Edward III, quoted by Agustino (2006: 158), said that the failure that often occurs in policy implementation is caused, among others, by staff / employees who are inadequate, inadequate, and

incompetent. Qualification of productive subject teachers in vocational schools is good enough. However, it is necessary to add productive teachers and industry experienced teachers so that the ratio of teachers to students is in accordance with the criteria, which is ideally 1: 6-12 students for tool work and 1: 12-20 students for manual work.

The installation program has also prepared a workshop / lab as a means and infrastructure for the implementation of teaching factory. As explained by Edward III in Agustino (2006: 158) that facilities are an important factor in policy implementation, because without the means and infrastructure, policy implementation will not succeed. Generally, the condition of workshops / labs in the sample SMKN is in accordance with the standard SMK infrastructure. The equipment in the workshop / lab is proportional to the number of students / classes. In addition, the management of the use and lending of equipment and inventory are managed with clear SOPs, although some SMKs have not run according to teaching factory criteria. MRC management is well structured and there is a clear person in charge so that the facilities are always ready to use. However, due to limited land, some SMKs have less than ideal practice space.

The results of the evaluation at the implementation stage showed the teaching factory program had run quite well by the South Jakarta State Vocational School. The teaching material used aims to achieve multipurpose competence (marketable). While SMKs that have competency programs that do not produce products / services, use simulations of real work situations in the field. In addition, a block schedule and continuous learning system has been carried out according to the teaching factory learning criteria.

Practical activities carried out are directed at industry-based learning. The learning process is intended so that students are familiar with the whole process of producing goods / services from the planning stage (design, planning process, cost calculation), the production stage, and the presentation of results. In addition, in practical activities, students practice entrepreneurship in real terms. Its implementation involves involving students in aspects of target delivery, cost, quality and efficiency related to customer expectation and satisfaction. This shows that the practical activities at the South Jakarta Vocational School went well.

The implementation of marketing and promotion for products / services resulting from practice is quite good. Promotion of products / services resulting from student practice needs to be developed in the form of other means. At present, some SMKs only use brochures as a promotional medium, so they are still limited to certain circles.

The management process is carried out properly including recording transactions according to accounting procedures and there are SOPs in each teaching factory activity unit. Generally, Vocational Schools have recorded daily transactions up to financial statements.

Aspects of industrial relations have been going quite well. Vocational Schools have collaborated with industry to develop production unit facilities. One form of technology and knowledge transfer that has been carried out by several SMKs is the Alfamidi class.

Teaching factory monitoring and evaluation is a monitoring service to the teaching factory management in order to be able to carry out its main tasks and functions better and quality. The basic functions of supervision and evaluation are efforts to improve or improve the performance of teaching factories internally that are clinical in nature and external functions in the context of evaluating performance in the form of accountability in managing teaching factory assistance. Supervision and evaluation are activities that are programmed, planned, and ongoing. Supervision and evaluation has been carried out continuously, according to the criteria.

The implementation of the teaching factory program at SMK Negeri South Jakarta can be said to be quite good. Teaching factory is able to create an industrial culture, so that it can increase productive competence and foster student entrepreneurial spirit. Products / services produced by students are generally industry standard and suitable to be marketed. However, SMKs need to innovate and diversify their products so that the products / services produced are different from the existing products / services, so the products / services have the characteristics of the work of the SMK.

5. Conclusion

Based on the results of research and discussion, it can be concluded that the implementation of the teaching factory program at SMKN South Jakarta is in accordance with standards / criteria.

- i. The formulation of the teaching factory program has been well defined that includes aspects of urgency, has clear goals and objectives, and measures of success
- ii. The teaching factory program has been quite well designed, including implementation guidelines, human resources, and workshops / labs. Although generally good, the aspects of HR and workshops / labs have not shown ideal conditions.
- iii. The teaching factory has been implemented well which includes learning, practical activities, marketing and promotion, management, industrial relations, supervision and evaluation. However, aspects of marketing and promotion, as well as industrial relations need to be improved.
- iv. The achievements or products of the teaching factory program, which provides positive results in the form of the creation of an industrial culture that is able to increase productive competence and foster entrepreneurial spirit of students, and produce products / services that have added value with quality that can be absorbed and accepted by the community. Nevertheless, innovation and product diversification need to be improved.

References

- Agustino, L. (2006). *Politik dan Kebijakan Publik*. Bandung: Puslit KP2W Lemlit Unpad.
- Bennett, J. (2003). Evaluation Methods in Research. In *Continuum Research*.
<https://doi.org/10.1385/1-59259-148-5:24>
- Chelimsky, E., & Shadish, W. (1997). *Evaluation for the 21st Century: A Handbook*.
<https://doi.org/10.4135/9781483348896>
- Corbin, J., & Strauss, A. (2008). *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory* (3rd ed.). Thousand Oaks, CA, US: Sage Publications, Inc.
- Cresswell, J. (2014). Collecting data in mixed methods research. In *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*.
- Kuswanto, Agung. (2014). *Teaching Factory Rencana dan Nilai Entrepreneurship*. Semarang: Graha Ilmu.
- Muhaimin, Suti`ah, Sugeng L. P. (2009). *Manajemen Pendidikan Aplikasinya dalam Penyusunan Rencana Pengembangan Sekolah/Madrasah*. Jakarta: Kencana Prenada Media Group.
- Undang-Undang RI Nomor 20 Tahun 2003. (2003). Sistem Pendidikan Nasional. Jakarta.
- Undang-Undang RI Nomor 17 Tahun 2007. Rencana Pembangunan Jangka Panjang Nasional (RPJPN) 2005-2025
- Wirawan. (2016). *Evaluasi: Teori, Model, Standar, Aplikasi, dan Profesi*. Jakarta: Rajawali Pers.