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Analysis of the Effectiveness of Teaching Factory (TEFA) Implementation in Vocational High Schools in Makassar City Based on the CIPP Evaluation Model

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Abstract

This study aimed to analyse the implementation of Teaching Factory, based on CIPP evaluation model (Context, Input, Process and Product) in Vocational High Schools in Makassar City. Methods This study carried out an evaluative research in the form of CIPP model (Contexts, inputs, processes and products). The research data were collected through observation, interview, documentation and questionnaire at SMKN 5 Makassar, SMKN 8 Makassar and SMK SMTI Makassar. The results discovered that the aspect context, enter, course of and product fell into the very good category. E. The context component suggested that the TEFA program is consistent with industrial needs and vocational education revitalization policies. The input component showed sufficient readiness of facilities, infrastructure, human resources and industrial support. The second, process component suggested that industry-standard practices of production- and service-based learning were effectively implemented. Results regarding the product component show that students developed higher competencies, work skills, and entrepreneurial attitudes. The study also identifies several of the main challenges, including limited available funding and unsuitable availability of production facilities at some schools. This paper provides recommendations for improving the quality of TEFA implementation through: (1) enhance facilities support, (2) develop technical implementation guidelines for TEFA, and (3)

strengthen industrial partnerships in vocational schools.
***Keywords*:** Teaching Factory, CIPP Evaluation, Vocational High School, TEFA, Makassar City.

INTRODUCTION

Industry-based Learning Strategies such as Teaching Factory (TEFA) have been implemented in Vocational High Schools (SMKs), enabling students to improve their competencies in accordance with the needs of business and industry. This approach to learning focuses on genuine learning experiences, by producing goods and services directly within the school. As it is implemented, students learn theory in classrooms but are engaged in work processes similar to what they might experience in an industrial plant. One of the parts of vocational education revitalization is Teaching Factory-based learning, which enhances students' technical skills democratically with good teamwork competence and character discipline and responsibility. In addition, the existence of TEFA makes vocational school graduates ready to directly work and become entrepreneurs and be creative for students (Sudira, 2016; Hasanah & Purnamawati, 2017; Tjiptady et al., 2019).

Teaching Factory is also part of the efforts to change vocational education through Industry 4.0 technology development. The expectation is that vocational schools must produce not only graduates with academic prowess, but also students who have experience in the hands-on field and an understanding of industrial work habits. TEFA gives students access to develop problem-solving abilities, communication skills and professional appearances which the labor market appreciates. Moreover, by introducing industrial standards into the process of teaching and learning, Teaching Factory helps to strengthen school academic performance with industry expectations. Consequently, TEFA becomes one of the strategies to improve quality and competitive vocational grads in Indonesia.

Makassar City, as one of the educational and industrial centers in Eastern Indonesia, has numerous vocational schools that have adopted teaching factories to improve their learning processes. It is implemented through the establishment of production and service units according to the field of activity where each school specializes. Nonetheless, the facts on the ground show that TEFA is being faced with numerous obstacles such as insufficient production facilities and infrastructure in some TechVoc schools, lack of working capital to operate these institutions, and inadequate marketing systems to sell products made by students. Moreover, there are schools that still struggle to find sustainable partnerships with businesses and industries. These conditions may hinder the effectiveness of this Teaching Factory program in enhancing learning quality and competencies. As a result, comprehensive evaluation is required to

assess the level of success in TEFA implementation on vocational schools Makassar City (Prasloranti et. al, 2021; Kristian, 2023; Nuraeni, 2025).

METHOD

The research was an evaluative research using Context, Input, Process and Product (CIPP) model. The choice of CIPP evaluation model is because descriptive explanation that this model can provide a more broad picture about the implementation of Teaching Factory program in vocational school in Makassar City. The three schools where the research was conducted were SMKN 5 Makassar, SMKN 8 Makassar, and SMK SMTI Makassar that had implemented Teaching Factory-based learning. To collect the data this study used observation, interview, documentation and questionnaire from principals of schools who received TEFA, teachers in productive subjects area where TEFA available, managers at the centre and students. Various data collection methods were used to garner detailed information about the implementation of the TEFA program at each School.

The research instruments were constructed based on the CIPP evaluation criteria involving Needs, Readiness, Implementation Process and Outcomes generated from the Teaching Factory program. This study involved direct observations of facilities and infrastructure conditions, learning activities, and production implementation within schools. Interviews were conducted with school stakeholders and students to gain more detail on the obstacles to, and successes in, implementing the program. Used documentation on the research data (in the form of photographs related to activities undertaken, Reports from their program implementation and partnership documents with industries). The quantitative data regarding the respondents' perceptions of all measures related to the effectiveness of the Teaching Factory program was collected through questionnaires.

Data were analyzed by means of descriptive quantitative as well as qualitative techniques. For quantitative analysis, questionnaires were columnized according to defined evaluation categories. Qualitative analyses consisted of reduction, presentation and conclusion drawing based on the results of observations, interviews and documents. Triangulation of data (historical–triangulation source and method, meaning that the researchers compared the information from various sources) was excellently done to guarantee valid data. The data entered was subsequently analyzed descriptively to determine the effectiveness level of Teaching Factory implementation through vocational schools in Makassar City using the CIPP evaluation model.

RESULT AND DISCUSSION

Study results show that the Implementation of Teaching Factory for Vocational schools in Makassar city is classified as "very good". Schools showed that their vision, goals and programs were closely aligned with industry through the context

component. The role of government support: the implementation of TEFA was also well-supported by these revitalization policies for vocational school (TEFA).
For example, the status of teachers, facilities and infrastructure as well as education business and industry partnerships are certainly variables that is included in some parts in because how to respond critically needed competencies. However, many schools did have reduced production equipment and operation funding.
The process element demonstrated that the production-form learning actions were carried out properly. Students participated directly in the production of goods and services according to industrial standards Furthermore, industrial work culture, such as discipline, responsibility, and teamwork, was clearly reflected in the learning process.
In the product component, the findings revealed that students experienced improvements in technical competencies, work skills, and entrepreneurial attitudes. The products and services generated through TEFA also provided students with authentic work experiences that prepared them for the professional World.
These findings demonstrate that TEFA can serve as an effective solution for improving the quality of vocational school graduates, enabling them to better meet industrial demands and compete in the labor market.

CONCLUSION AND RECOMMENDATION

Based on the findings of this study, the implementation of Teaching Factory in vocational schools in Makassar City demonstrated very positive results across the context, input, process, and product components. The Teaching Factory program has proven effective in improving students' competencies, both in terms of technical skills and non-technical abilities such as discipline, responsibility, teamwork, and entrepreneurial spirit. The implementation of production-based learning also provided students with authentic work experiences, enabling them to become more prepared for workplace demands after graduation. Moreover, Teaching Factory program has strengthened school-industry collaboration through case-based learning activities, industrial internships and the establishment of production units at their respective schools.

However, several issues need to be addressed as well, and this study identified some of them. Such challenges are production facilities, infrastructure requirements, operational funding and adequate marketing systems of products developed by students. Many of the schools struggled to establish lasting relationships with the industries. These conditions might impact the program and lessen its ability to improve learning quality and student production outputs. Consequently, there is an urgency for additional support from the government, schools and industries to overcome the challenges and implement a better and sustainable Teaching Factory programs.

The study proposes that across the board higher education institutions should inspect and improve production facilities in context to quality with relaxation and regular engagement with business and industrial sector. The government is also likely to offer stronger policy and budgetary backing for the setting up of Teaching Factory programmes in vocational schools. In addition, this could allow schools to develop more professional marketing systems for products developed by the students and improve their competitiveness in society. The second should engage productive subject teachers in continuous professional development through industrial training and managerial capacity building. Appropriate collaboration among stakeholders will make Teaching Factory a succesful vocational learning strategy to produce high-competency, professionalism and competitiveness of vocational school graduates.

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AUTHOR CONTRIBUTION AND COMPETING INTEREST

All authors contributed significantly to the completion of this research and manuscript preparation. The first author was responsible for conceptualizing the study, designing the research methodology, collecting and analyzing the data, and drafting the manuscript. The co-authors contributed to data interpretation, manuscript review, editing, and providing academic input to improve the quality of the article. All authors have read and approved the final version of the manuscript prior to submission.

The authors declare that they have no competing interests related to the publication of this article.

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