

## Implementation Level of Teaching Factory in Vocational High Schools in West Java, Indonesia

Daryanto<sup>1</sup>, Soeprijanto<sup>2</sup>, Imam Nursyahied<sup>3</sup>, Setiadi Dwi Wahyu Nugroho<sup>4</sup>, Desti Aulia Salsabina<sup>5</sup>, Shinta Fadillah<sup>6</sup>

Pendidikan Teknik Elektro, Fakultas Teknik, Universitas Negeri Jakarta

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### Abstract

*This study aims to analyze the implementation level of the Teaching Factory (Tefa), identify major challenges, and recommend strategies for its development in vocational high schools in West Java, Indonesia. Teaching Factory is an innovation in vocational education that integrates learning with real production practices based on industry standards. Using a descriptive survey with a mixed-methods approach, this research involved 50 selected SMKs and 200 respondents, including principals, teachers, and students. Data were collected through questionnaires, interviews, field observations, and document analysis. The results show that 20% of schools have fully implemented Tefa, 50% are in partial implementation, 20% are in the early stages, and 10% have not implemented it at all. Key challenges include limited facilities (80%), insufficient operational funding (70%), weak industry partnerships (65%), and low teacher competence in managing production-based learning (50%). Some schools also reported difficulties integrating Tefa into the curriculum due to administrative constraints. Despite these challenges, several success factors were identified: strong school leadership, BLUD status for financial flexibility, collaboration with industry partners, teacher innovation, and use of digital tools. Best practices include structured Tefa management, real project integration into learning, and online product marketing. In conclusion, the Teaching Factory has strong potential to improve vocational education quality and relevance. Strategic support is needed to scale successful models, improve infrastructure, train teachers, and strengthen industry-school partnerships. The findings serve as a useful reference for policymakers and vocational education stakeholders.*

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### Corresponding Author:

Daryanto

Universitas Negeri Jakarta

Email: [daryanto@unj.ac.id](mailto:daryanto@unj.ac.id)

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## 1. INTRODUCTION

Vocational education plays a strategic role in preparing a competent workforce that meets the needs of the workplace. One important innovation in vocational education in Indonesia is the implementation of the Teaching Factory (Tefa), a production- or service-based learning model that approximates the real-world work environment. This model aims to narrow the gap between education and industry and improve the job readiness of Vocational High School (SMK) graduates.

Several previous studies have reviewed various aspects of Tefa implementation, such as its positive impact on improving student skills, graduates' job readiness, and enhancing collaboration between schools and industry. However, Tefa implementation in the field remains varied and faces various challenges. Previous studies have identified several common obstacles, such as limited infrastructure, lack of financial support, and limited partnerships with industry.

The scientific novelty of this study lies in its comprehensive analysis of the level of Tefa implementation in West Java vocational schools, identification of specific obstacles encountered, and formulation of appropriate development strategies based on actual

conditions on the ground. This study highlights the dynamics of Tefa implementation in various regions with diverse characteristics and emphasizes the importance of an integrated approach to addressing these obstacles.

Based on this background and novelty, the research problem formulation includes the extent of Tefa implementation in West Java vocational schools, the main obstacles in Tefa implementation, and strategies that can be applied to improve the effectiveness and sustainability of Tefa. The purpose of this study is to provide strategic recommendations that can be used as a basis for policy making to strengthen the implementation of the Teaching Factory in West Java vocational schools.

## 2. RESEARCH METHOD

This study used a descriptive survey design with a mixed methods approach, combining quantitative and qualitative approaches. The study was conducted from March to May 2025, involving 50 vocational high schools (SMK) in West Java, selected purposely based on regional representation and level of Tefa implementation.

The research procedure consists of the following stages:

1. Determination of samples and respondents, including school leaders, teachers, and students in 50 vocational schools
2. Preparation of research instruments in the form of structured questionnaires and in-depth interview guidelines.
3. Implementation of the survey through direct and online distribution of questionnaires.
4. Conducting in-depth interviews with selected sources from school leaders, teachers, students, education department officials, and partner industries.
5. Field observations in 10 vocational schools to directly observe the conditions of Tefa implementation.
6. Documentation studies in the form of curriculum, activity reports, modules, and policy documents related to Tefa.

Data testing was conducted using descriptive statistics for quantitative data and content analysis for qualitative data. The qualitative data analysis process included transcription, coding, interpretation, and triangulation to ensure the validity of the findings. Scientific references such as Creswell (2014) on mixed methods research, Miles and Huberman (1994) on qualitative data analysis, and Sugiyono (2016) on educational research methods were used to strengthen the validity of this research procedure.

## 3. RESEARCH RESULTS AND DISCUSSION

### 3.1. Research result

Implementation of Teaching Factory in Vocational High Schools in West Java

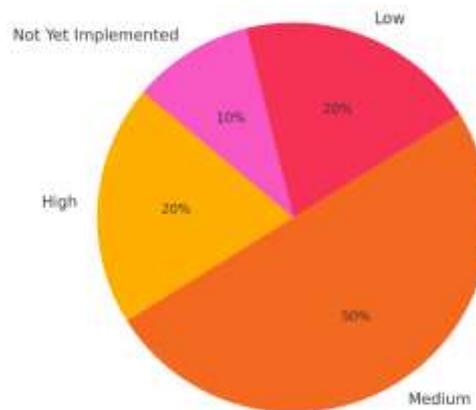
Table 1. Level of Teaching Factory Implementation in Vocational Schools in West Java (N=50)

Implementation Category	Number of Vocational Schools	Percentage
High	10 Vocational Schools	20%
Currently	25 Vocational Schools	50%

Low	10 Vocational Schools	20%
Not Yet Implemented	5 Vocational Schools	10%

Figure 1. Percentage of Teaching Factory Implementation in West Java Vocational Schools

Percentage of Vocational Schools by TEFA Implementation Category



Supporting Factors for Implementation

Table 2. Supporting Factors for the Implementation of Teaching Factory

Supporting Factors	Percentage
School Management Support	90%
BLUD Status and Government Funding Support	60%
Active Collaboration with Industry Partners	40%
Innovative Teachers with a High Will to Learn	55%
Utilization of Technology and Learning Innovation	50%

Figure 2. Supporting Factors for the Implementation of Teaching Factory in Vocational Schools in West Java

Supporting Factors for TEFA Implementation in Vocational Schools



Table 1 presents the level of Teaching Factory (Tefa) implementation in 50 vocational schools surveyed in West Java. The data shows that Tefa implementation in West Java vocational schools has achieved varying levels of success. Approximately 20%, or 10 vocational schools, have fully implemented Teaching Factory programs to meet high industry standards, characterized by complete facilities, the availability of production units, and the availability of products or services regularly marketed to the public and industry.

Meanwhile, the majority of vocational schools, 25 (50%), are in the partial implementation category. Vocational schools in this category have initiated Teaching Factory, but the program remains limited in scope. This program is typically only implemented in a subset of skill programs, with equipment and facilities that do not yet fully meet industry standards.

In the early-stage category, 10 vocational schools (20%) have just begun or are in the pioneering stages of implementing Tefa. These schools have generally only undertaken a few limited production activities or simple projects. Meanwhile, approximately 10%, or 5 vocational schools, have not implemented Tefa at all and are still conducting conventional practical learning without strong integration with real-life production activities.

This figure indicates that most vocational schools (SMK) in West Java are transitioning toward full implementation of Teaching Factory, with a small number already reaching the mature stage. However, this also indicates that implementation gaps remain that need to be addressed through strategic interventions to ensure more equitable achievement.

### 3.2. Discussion

The findings of this survey provide insight into the significant variability in the success of Teaching Factory implementation in West Java, influenced by various factors. Full implementation is generally found in vocational schools (SMK) with strong support from school management, adequate funding (especially for vocational schools with Regional Public Service Agency (BLUD) status), and strong partnerships with industry. This aligns with previous studies by Rahman and Kusmiran (2020) and Setiadi and Kurniawan (2021), which emphasized the importance of synergy between schools, industry, and supporting government policies in the success of Tefa implementation.

Vocational schools in the partial category still face several major obstacles, particularly inadequate facilities and limited human resources, particularly teacher competency in running industry-based production units. This situation aligns with the findings of Agustina and Suryadi (2020), who stated that the biggest challenge to Teaching Factories is the lack of adequate infrastructure and human resource competencies. Therefore, interventions such as improving facilities, ongoing teacher training, and strengthening industry collaboration are crucial to support the transition of vocational schools to full implementation.

In the early stages, even before implementation, the main obstacles are limited operational funding, low levels of industry partnerships, and suboptimal internal policy support. This is supported by research findings by Wibowo and Ardiansyah (2021), which also identified limited operational funds and low industry involvement as key obstacles for schools in the early stages of Teaching Factory implementation. Therefore, strategies to improve sustainable funding schemes and strengthen

relationships with industry are absolutely necessary for these vocational schools to be able to transform to a more robust implementation stage.

Thus, the survey results highlight the importance of a comprehensive approach to supporting the implementation of Teaching Factory in vocational schools, from providing infrastructure, funding, improving teacher competency, to strengthening strategic partnerships with industry.

#### 4. CONCLUSION

The results of this study indicate that the objectives outlined in the introductory chapter, namely mapping the level of Tefa implementation and identifying specific constraints and development strategies, have been effectively achieved. Prospects for developing the results of this study include expanding Tefa implementation more evenly through suggested strategic interventions. Further research can be directed at evaluating the effectiveness of the recommended strategies and exploring the long-term impact of Tefa implementation on the competencies and work readiness of vocational high school graduates.

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