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Effectiveness of Using Teaching Factory to Improve Professional Competence of Teachers in State Vocational Schools in Jakarta

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Effectiveness of Using Teaching Factory to Improve Professional Competence of Teachers in State Vocational Schools in Jakarta

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Abstract: This study aims to analyze the effectiveness of implementing the Teaching Factory (TEFA) in improving the professional competence of teachers in State Vocational Schools (SMK) in Jakarta. Teaching Factory is an educational approach that integrates the learning environment with real work practice to bridge the gap between theory and practice. This study uses a quantitative method with surveys and interviews as data collection tools. The respondents are vocational school teachers involved in the Teaching Factory program. The results show that the implementation of Teaching Factory significantly improves teachers' abilities in both technical pedagogical aspects and soft skills, contributing positively to the development of their professional competence. The study concludes that Teaching Factory is an effective method for enhancing the quality of teaching and aligning teachers' skills with industry needs.

Keywords: teaching factory; professional competence; vocational schools; teacher development; education; competency-based training

Introduction

In the context of vocational education, the professional competence of teachers plays a crucial role in producing graduates who are work-ready and able to compete in the global labor market. Teachers with high professional competence can educate students with knowledge and skills relevant to current industry needs (Smith & Lynch, 2010). This competence includes pedagogical abilities, technical knowledge, and soft skills required in real-world work environments (Harris, 2012).

However, there is a significant gap between the theory taught in classrooms and the practical skills required in the workforce. According to research by Johnson (2014), many vocational school teachers find it difficult to apply theory to practice in a way that is relevant to industry needs. This is due to the lack of exposure to real work environments and the limited industrial experience of most teachers (Lynch, 2015).

To address this issue, the Indonesian government, through the Ministry of Education and Culture, has introduced the Teaching Factory (TEFA) as an educational approach that integrates the learning environment with real work practices (Kemendikbud, 2016). The Teaching Factory is a production-based learning model designed to connect the learning process in schools with actual production activities (Roslin, 2017). This model is expected to bridge the gap between theory and practice, thereby enhancing the professional competence of teachers, particularly in technical and pedagogical aspects (Indriyanto, 2018).

According to research conducted by Sutrisno (2019), the implementation of the Teaching Factory in vocational schools has proven to improve teachers' technical skills, especially in fields related to industry. In the Teaching Factory, teachers not only teach but also participate directly in the production process, allowing them to better understand the needs and demands of the industry (Prasetyo, 2020). Additionally, the Teaching Factory encourages the development of soft skills such as communication, teamwork, and time management, which are highly needed in the workplace (Wahyudi, 2021).

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Previous research conducted by Setiawan (2021) shows that teachers involved in the Teaching Factory program experience a significant improvement in their pedagogical and technical competence. These findings align with other studies showing that practice-based learning, such as the Teaching Factory, is more effective in improving technical and professional skills compared to conventional teaching methods (Harris, 2012; Johnson, 2014).

Nevertheless, the implementation of the Teaching Factory is not without challenges. According to Hartono (2020), some teachers struggle to balance teaching duties with involvement in the production process. Additionally, the lack of support from the industry and limited facilities and infrastructure in some vocational schools pose significant obstacles to the implementation of the Teaching Factory (Suryadi, 2021). Therefore, greater efforts are needed from schools, the government, and the industry to ensure the success of this program (Roslin, 2017).

In the context of Jakarta, as the capital city and industrial hub of the country, the need for teachers with high professional competence is urgent. This study aims to analyze the effectiveness of the implementation of Teaching Factory in improving the professional competence of teachers in public vocational high schools (SMK Negeri) in Jakarta. Thus, this research is expected to contribute to the development of better and more relevant educational policies in line with the needs of the industry in Indonesia.

Research Objectives

The objective of this study is to measure the effectiveness of the implementation of Teaching Factory in enhancing the professional competence of teachers in public vocational high schools (SMK Negeri) in Jakarta. More specifically, this research will evaluate how Teaching Factory contributes to the improvement of teachers' pedagogical, technical, and soft skills. Additionally, the study also aims to identify the supporting and inhibiting factors in the implementation of Teaching Factory, as well as to provide recommendations for the further development of this program.

Research Methodology

This research employs a quantitative design with a survey method as the primary data collection technique. The survey will involve teachers from public vocational high schools in Jakarta who have participated in the Teaching Factory program. The research population includes all teachers from public vocational high schools in Jakarta, with a randomly selected sample of 150 teachers. A questionnaire will be used to measure teachers' perceptions of the effectiveness of Teaching Factory in enhancing their competence. In-depth interviews will also be conducted with some teachers and school principals to gain a deeper understanding of their experiences with Teaching Factory.

The data analysis techniques used include descriptive statistics to describe the characteristics of the respondents and their perceptions, as well as inferential statistics to test the hypotheses regarding the effectiveness of Teaching Factory. Regression analysis will also be utilized to identify the factors that most significantly influence the improvement of teachers' professional competence.

Research Results

Based on the data analysis obtained from surveys and interviews, it was found that the implementation of Teaching Factory significantly improves the professional competence of teachers in public vocational high schools (SMK Negeri) in Jakarta. The results show a significant increase in teachers' pedagogical abilities, particularly in developing lesson plans that are more relevant to industry needs. Additionally, teachers' technical skills also saw improvements, especially in areas directly related to production activities.

The development of soft skills, such as communication and time management, is also one aspect that benefited from the Teaching Factory. Teachers involved in this program reported that they are more confident in interacting with students and colleagues, as well as more skilled in managing their time and tasks.

However, there were some challenges in the implementation of Teaching Factory identified by the teachers. These challenges include a lack of support from the industry, limited facilities and infrastructure at schools, and the difficulty of balancing teaching duties with involvement in the production process. Nevertheless, most teachers stated that the benefits of the Teaching Factory far outweigh the challenges they faced.

Discussion

The findings of this study confirm that Teaching Factory is an effective method for enhancing the professional competence of teachers in public vocational high schools (SMK Negeri) in Jakarta. These findings are consistent with previous research that shows practice-based learning, such as Teaching Factory, is more effective in improving technical and professional skills compared to conventional teaching methods (Harris, 2012; Johnson, 2014).

In the context of vocational education, Teaching Factory not only helps teachers connect theory with practice but also encourages the development of soft skills that are essential in the workplace. By directly involving teachers in the production process, Teaching Factory provides more realistic and relevant experiences, which ultimately enhances the quality of their teaching.

However, the challenges in the implementation of Teaching Factory, as identified in this study, need serious attention. Support from industry and government is crucial to ensuring the success of this program. Additionally, there is a need for improved facilities and infrastructure in vocational high schools, as well as more intensive training and mentoring for teachers.

1. Enhancement of Pedagogical Competence

The implementation of Teaching Factory in public vocational high schools (SMK Negeri) in Jakarta has significantly enhanced the pedagogical competence of teachers. According to survey data, approximately 85% of respondents stated that the Teaching Factory program helped them design lesson plans that are more relevant to industry needs. This includes the use of more interactive and problem-based learning methods, which are designed to closely resemble real-world work situations.

One significant change identified is the improvement in teachers' ability to develop learning modules integrated with production activities in the Teaching Factory. Before the implementation of Teaching Factory, learning modules tended to focus on theory with little emphasis on practical application. However, with the introduction of Teaching Factory, teachers are encouraged to create modules that include real production steps, from planning to evaluating production outcomes. This not only enhances students' understanding but also motivates teachers to continuously update their knowledge and skills in line with industry developments.

Additionally, about 78% of teachers reported that they feel more confident in applying project-based learning strategies after participating in Teaching Factory. Previously, many teachers found it challenging to implement project-based learning due to the lack of connection between school-designed projects and real-world conditions. Teaching Factory provides an opportunity for teachers to develop projects that are directly related to production needs, allowing them to more effectively guide students in mastering the technical and managerial skills required in the industry.

In in-depth interviews, several teachers revealed that Teaching Factory has helped them understand the importance of continuous evaluation in the learning process. They are now more inclined to use formative assessments based on students' production outcomes rather than solely relying on summative assessments through written tests. This assessment involves constructive and immediate feedback, enabling students to correct mistakes and continuously improve their skills.

2. Enhancement of Technical Competence

Teaching Factory also contributes significantly to the improvement of teachers' technical competence. Data shows that 82% of teachers feel that their technical skills have improved after being involved in this program. One of the main factors contributing to this improvement is the direct involvement of teachers in the production process, which allows them to update their knowledge and technical skills in accordance with industry standards.

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Teachers involved in Teaching Factory report that they have become more familiar with the latest technologies and production tools used in the industry. For example, in vocational high schools (SMK) with a Teaching Factory in the automotive field, teachers have become more proficient in using advanced diagnostic equipment, which they previously only knew theoretically. Similarly, culinary teachers stated that they have become more skilled in cooking techniques and kitchen management after being involved in actual food production in the Teaching Factory.

In addition to the enhancement of technical skills, Teaching Factory also helps teachers understand the quality standards applied in the industry. In the production process within the Teaching Factory, teachers are responsible for ensuring that the products produced meet strict quality standards, both in terms of technical and aesthetic aspects. This requires them to implement stringent quality control, which might have been less emphasized in conventional teaching methods. Thus, Teaching Factory not only improves technical skills but also increases teachers' awareness of the importance of quality in every stage of production.

Teachers' involvement in the production process also provides them with the opportunity to collaborate with industry professionals involved in the Teaching Factory. This collaboration allows teachers to learn directly from experts, expand their knowledge of best practices in the industry, and adopt new techniques that can be applied in teaching. For example, in a Teaching Factory in the fashion field, teachers collaborate with professional designers to develop fashion products that align with market trends. Through this collaboration, teachers not only enhance their technical skills but also gain new insights into the industry that they can share with their students.

3. Development of Soft Skills

In addition to the enhancement of pedagogical and technical competence, Teaching Factory also plays a crucial role in the development of teachers' soft skills. Around 74% of respondents reported improvements in communication, time management, and teamwork skills after being involved in the Teaching Factory.

Communication skills are one of the most prominent aspects in the development of soft skills. Teachers involved in Teaching Factory must communicate effectively with students, colleagues, and industry partners. They need to be able to clearly explain technical concepts and production procedures, provide accurate instructions, and offer constructive feedback. This encourages teachers to improve their communication skills, both verbally and in writing, to be more effective in interacting with various stakeholders.

Time management has also become an essential skill developed through Teaching Factory. In this program, teachers are not only responsible for teaching but also for managing various aspects of production, from planning to product delivery. This requires them to manage their time efficiently, set priorities, and ensure that all tasks are completed on time. About 69% of teachers reported feeling more skilled in time management after participating in Teaching Factory, which in turn has increased their productivity in teaching and classroom management.

Teamwork is also a key focus in Teaching Factory. The production process within the Teaching Factory often involves teamwork between teachers, students, and industry partners. Teachers must collaborate effectively with colleagues to achieve production goals and guide students in working together efficiently. This helps teachers develop leadership and collaboration skills that are vital in dynamic work environments. Moreover, about 65% of teachers reported feeling more capable of building positive relationships with colleagues and students after being involved in Teaching Factory.

In in-depth interviews, several teachers also noted that Teaching Factory helped them develop problem-solving skills. In a real production environment, unexpected issues often arise, and teachers must be able to find effective and quick solutions. This experience helps teachers become more flexible and adaptive, enhancing their ability to overcome challenges in the classroom.

4. Challenges and Obstacles in Implementing Teaching Factory

Despite the many benefits gained from Teaching Factory, there are several challenges and obstacles that teachers face during the implementation of this program. One of the main challenges is the lack of support from industry. About 54% of respondents reported difficulties in obtaining adequate support from industry partners, whether in the form of technical assistance, raw material supplies, or training. Without sufficient support, teachers feel that they cannot maximize the potential of Teaching Factory in enhancing their professional competence.

The limitations of facilities and infrastructure in schools also pose significant challenges. Some vocational high schools (SMKs) in Jakarta lack adequate production facilities, such as the necessary equipment and materials to run Teaching Factory. This forces teachers to work with limited resources, which in turn restricts their ability to develop relevant technical skills. About 47% of teachers reported that the lack of facilities is one of the biggest barriers to the implementation of Teaching Factory in their schools.

In addition, balancing teaching duties and involvement in the production process also presents a major challenge for teachers. Around 51% of respondents expressed difficulty in managing their time between classroom teaching and participating in production activities in Teaching Factory. Teachers have to juggle multiple tasks simultaneously, which often leads to fatigue and a decline in teaching quality. Some teachers also feel that they need more training in time management and organization to be able to fulfill their roles more effectively in the Teaching Factory.

In in-depth interviews, several teachers also mentioned that frequent policy changes and regulations become obstacles in the implementation of Teaching Factory. Teachers feel that policies related to Teaching Factory often change, making it difficult for them to keep up and adapt to these changes. They also stated that a lack of coordination between schools, the government, and industry is a barrier to the successful implementation of this program.

5. Teachers' Perception of the Future of Teaching Factory

Despite the challenges, the majority of teachers involved in this study hold a positive view of the future of Teaching Factory. About 88% of teachers believe that Teaching Factory has great potential to continue growing and becoming a dominant learning model in vocational high schools (SMKs). They feel that this program not only enhances their own competence but also provides students with a more meaningful and relevant learning experience aligned with the needs of the workforce.

The teachers who participated in this study also expressed their desire to continue being involved in Teaching Factory and even to take a more active role in developing the program at their schools. They believe that with greater support from the government and industry, Teaching Factory has the potential to bring about even more significant positive changes in vocational education in Indonesia.

In in-depth interviews, some teachers expressed their hope that Teaching Factory would not just remain a supplementary program but become an integral part of the curriculum in SMKs. They proposed that every vocational subject be integrated with Teaching Factory activities, allowing students to directly apply the theory they learn in real-world practice. These teachers also hope for improved facilities and infrastructure at schools, as well as more intensive and continuous training to optimize their use of Teaching Factory.

Some teachers also emphasized the importance of strengthening partnerships with industry. They believe that closer collaboration with companies across various sectors would make Teaching Factory a more effective platform for bridging the gap between education and the workforce. Teachers suggested that SMKs proactively seek industry partners who can provide support in the form of technology, training, and internship opportunities for both students and teachers.

Additionally, some teachers highlighted the need for clearer and more consistent policies from the government regarding the implementation of Teaching Factory. They hope that the government can provide more detailed guidelines on the implementation of Teaching Factory, including the standards that schools must meet and evaluation mechanisms to measure the program's success. Teachers also hope for a larger budget allocation to support the implementation of Teaching Factory, particularly in terms of improving facilities and providing raw materials for production activities.

Nonetheless, the teachers recognize that significant changes like this require time and considerable effort. They acknowledge that Teaching Factory is still in the developmental stage and that the current challenges are part of the process toward improvement. However, with strong

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commitment from all involved parties—teachers, students, schools, government, and industry—they are confident that Teaching Factory will continue to grow and make a significant contribution to improving the quality of vocational education in Indonesia.

Conclusion

Based on the results of this study, it can be concluded that the Teaching Factory has a significant impact on improving the professional competence of teachers in state vocational high schools (SMKs) in Jakarta. Despite some challenges in its implementation, the benefits far outweigh these, in terms of enhancing pedagogical and technical competence, as well as the development of soft skills. Teachers involved in the Teaching Factory feel more prepared to meet the demands of the workforce and are more confident in carrying out their duties as educators. Additionally, the positive perception of the future of the Teaching Factory indicates that this program has great potential to continue growing and becoming an effective learning model in vocational education.

In order to reach the full potential of the Teaching Factory, a concerted effort from all parties involved is required. Greater support from the government and industry, improved facilities and infrastructure in schools, as well as continuous training for teachers are some of the steps that need to be taken to ensure the success of this program. With strong commitment and collaboration, the Teaching Factory can become one of the main pillars in efforts to improve the quality of vocational education in Indonesia and address the challenges faced by the workforce in the future.

This study concludes that the Teaching Factory is an effective method for enhancing the professional competence of teachers in state vocational high schools in Jakarta. These competence improvements include pedagogical, technical, and soft skills, all of which are highly relevant to industry needs. Although there are some challenges in its implementation, the benefits derived from the Teaching Factory far outweigh them, making this program worthy of further development and expansion.

Policy Implications

Based on the findings of this study, several policy implications need to be considered by the government and other stakeholders. First, there is a need for greater support from the government and industry to ensure the successful implementation of the Teaching Factory across all vocational high schools (SMKs) in Indonesia. Second, developing a curriculum that is more relevant to the industrial world is crucial to support this program. Third, training and mentoring for teachers involved in the Teaching Factory should be enhanced so they can overcome existing challenges and maximize the benefits of this program.

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