

Integrating Teaching Factory and Competency-Based Training in Visual Communication Design: Strengthening Creative Entrepreneurial Skills for Sustainable Student Well-being

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ABSTRACT

Vocational education has a strategic role in equipping students with skills according to industry needs and building an innovative entrepreneurial spirit. However, there are still challenges in ensuring optimal integration between industry-based learning and strengthening creative entrepreneurial skills. This research aims to explore the integration of Teaching Factory and Competency-Based Training in Visual Communication Design vocational education to strengthen students creative entrepreneurial skills. The research used a descriptive qualitative approach with interview, observation, and documentation study methods with relevant stakeholders, such as educators, industry partners, and students. The results showed that Teaching Factory provides an authentic production-based learning experience, while Competency-Based Training ensures the suitability of students' skills with industry standards. The integration of these two approaches is proven to improve students' work readiness and competitiveness in the creative industry, although challenges remain in infrastructure, industry engagement, and strengthening entrepreneurial mindsets. Recommendations include enhancing partnerships with industry, developing adaptive curricula, and utilizing digital technology to support innovative learning ecosystems. With a more systematic approach, vocational education has the potential to produce competent and highly competitive graduates, while at the same time creating sustainable prosperity for the community.

Keywords: Teaching Factory, Competency-Based Training, Vocational Education, Creative Entrepreneurship, Visual Communication Design

1 Introduction

Facing the increasingly dynamic changes in the global market, vocational education is a crucial element in equipping the younger generation with skills that are aligned with industry need [1], [2]. Focusing on the development of practical skills, this vocational education not only produces a ready-to-use workforce but also opens opportunities for students to pursue an entrepreneurial path. In this context, the integration of entrepreneurship education in the vocational curriculum plays a strategic role. In addition to teaching business skills, this approach also instills an entrepreneurial mindset that fosters creativity, independence and innovation [3], [4]. Thus, vocational education not only functions as a provider of labor for industry but also as a place to build the character of young entrepreneurs who have the potential to create jobs for the wider community.

The development of entrepreneurship among Indonesian youth is accelerating, driven by various socio-economic factors as well as the expansion of digital platforms. The trend of digital-based entrepreneurship is increasingly prominent, as seen from the high activity of the younger generation in building start-ups compared to previous generations [5]. Although data shows that the number of entrepreneurs in Indonesia now reaches 1.65% of the population of around 4.26 million people, this figure

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is still below the 2% standard commonly used as a reference by developed countries [6]. This fact illustrates that the entrepreneurial spirit among Indonesian youth is quite high and has great potential in supporting national economic growth. On the other hand, there is room to strengthen the scope and quality of entrepreneurship education in vocational schools, so that more students are ready to take on the role of independent entrepreneurs [7].

In facing the dynamics of the digital economy and creative industries, the integration of Teaching Factory and Competency-Based Training is the main approach that is getting more attention in shaping a competent generation that is ready to face the demands of the labor market. Teaching Factory allows students to be directly involved in industrial processes through authentic production-based learning, while Competency-Based Training focuses on strengthening skills according to industry standards, creating a contextual and applicable learning ecosystem that encourages creative entrepreneurial skills and sustainable welfare for students [8]. Although these approaches have been applied in various vocational education contexts, implementation challenges remain, particularly in ensuring optimal linkages between learning concepts, industry skills and the development of students' entrepreneurial potential. Previous studies have shown that Teaching Factory implementation can improve students' practical skills and engagement in the industrial ecosystem, but its effect on strengthening creative entrepreneurship still needs to be further investigated [9].

This study aims to describe the implementation patterns of both learning models as well as the challenges that arise in their implementation. The focus of this research is to provide an in-depth description of educational strategies that can enhance students' entrepreneurial capacity, so that they are competitive in the creative industry and able to build sustainable welfare through the utilization of their skills. The results of this study are expected to be useful for educators, policy makers, and industry practitioners in designing more effective vocational education strategies in producing graduates who are not only job-ready but also have strong entrepreneurial potential. In addition, this study contributes to the development of vocational education theory by highlighting how competency-based and contextual approaches can shape innovative and independent students in facing industry challenges.

2 Literature Review

In the context of vocational education, the integration between Teaching Factory and Competency-Based Training has a strong foundation in various learning theories and skill-oriented education models. Teaching Factory, as a production-based learning approach, is rooted in the theory of constructivism that emphasizes authentic and practice-based learning experiences [10], [11]. Students involved in this system have the opportunity to develop technical skills while understanding industry dynamics first-hand. Meanwhile, Competency-Based Training is based on behaviorism and competency theory, which focuses on achieving specific skills in accordance with industry standards [12].

A number of previous studies have examined the effectiveness of Teaching Factory in improving the quality of vocational learning. For example, a study conducted by Surya Patria found that this approach can improve students' technical skills and work readiness, especially in the creative industry [13]. In addition, research by Lia Amalia highlights how the Competency-Based Training model contributes to strengthening skills based on national and international work competency standards [14], [15]. Nonetheless, there are still challenges in effectively integrating these two approaches, especially in relation to developing students' creative entrepreneurial skills.

In this study, the framework used refers to the combination of Teaching Factory, Competency-Based Training, and creative entrepreneurship approaches. This approach aims to explain the relationship between industry-based learning experiences and the formation of entrepreneurial skills that can support students' well-being in a sustainable manner. Previous studies have also highlighted that Teaching Factory-based learning can be combined with Project-Based Learning to enrich students' experience in completing projects oriented towards creative product development [16].

As such, this research seeks to fill the gap in the literature by exploring how the Teaching Factory and Competency-Based Training integration model can play a role in strengthening students' creative entrepreneurial skills. Through a descriptive qualitative approach to explore the integration of Teaching Factory and Competency-Based Training in vocational education, particularly in the field of Visual Communication Design, in an effort to strengthen students' creative entrepreneurial skills. This study will analyze various relevant theories and empirical findings to develop recommendations for the development of vocational education that is more responsive to the needs of the creative industry.

3 Research Methods

This research uses a descriptive qualitative approach, which aims to understand in depth how the integration of Teaching Factory and Competency-Based Training contributes to strengthening students' creative entrepreneurial skills in vocational education, especially in the field of Visual Communication Design. This approach allows the exploration of phenomena based on the experiences, perspectives, and interactions between various stakeholders involved in the implementation of this learning model. The research subjects included the Head of Curriculum, Head of Department, Students/Graduate Student, Industry Partners, and Teachers who have strategic roles in the successful integration of Teaching Factory and Competency-Based Training. The sampling was done by purposive sampling, considering the direct involvement of the subjects in the implementation and development of industry-based learning in the school environment. Data collection was conducted through in-depth interviews, observations, and documentation that enabled analysis of empirical experiences as well as challenges and opportunities faced in the implementation of these two learning models. The research instruments in this study are described in the following grid.

Data analysis in this study used the Miles and Huberman Model (in the journal Zulfirman, 2022), which consists of three main stages: Data Reduction, Data Display, Drawing Conclusions [17]. Data analysis produces conclusions based on the pattern of findings, provides answers to research questions and strategic recommendations for optimizing Teaching Factory and Competency-Based Training. Through this approach, the research is expected to provide a systematic and in-depth perspective on how the integration of Teaching Factory and Competency-Based Training can be strengthened in vocational education to improve students' creative entrepreneurial skills.

4 Result and Discussion

Implementation of Teaching Factory in Vocational Education

The study results show that the implementation of Teaching Factory in vocational education provides a learning experience that is closer to the industrial world. This model allows students to be directly involved in industry-based production, so that they not only hone technical skills but also understand the business ecosystem more deeply. This finding is in line with research by Surya Patria (2024), which confirms that Teaching Factory improves students' work readiness and creative competence in the visual communication design industry [13].

However, the main challenge in the implementation of Teaching Factory lies in the availability of production facilities that are in line with industry standards. Some vocational schools still experience obstacles in building a sustainable production ecosystem due to limited infrastructure and resources. According to research by Ngadiana et al. (2025), the success of Teaching Factory is highly dependent on the support of industrial partners in providing production-based facilities and projects [11].

The Role of Competency-Based Training in Strengthening Student Skills

In addition to Teaching Factory, Competency-Based Training contributes to improving student skills through an industry standard-based approach. In a study by Amalia and Suwatno (2016), this learning model proved effective in matching students' skills with the needs of the labor market [14]. Through this approach, students not only learn theory but also obtain certification which is proof of their competence. However, in the context of integration with Teaching Factory, it was found that a more systematic strategy is needed to ensure harmonization between the technical skills taught and the needs of the creative industry. Factors such as curriculum flexibility and industry involvement in the development of competency standards are aspects that need further attention.

Strengthening Students' Creative Entrepreneurial Skills

One of the main impacts of the integration of these two models is the improvement of students' creative entrepreneurial skills. The study by Firdaus et al. (2021) shows that students involved in the Teaching Factory program are more capable of creating innovative products and have the courage to explore business opportunities [9]. Integration with Competency-Based Training strengthens the entrepreneurial aspect through specific training in accordance with industry standards.

Table 3. Research Instrument Grids (Interview, Observation, and Documentation)

Aspects	Dimension	Indicator	Source	Methods
Implementation of Teaching Factory	Concept and application of learning model	1. Understanding of teaching factory 2. Implementation strategy in Vocational School	Head of Curriculum Head of Department Teacher	Interview Observation
Competency Based Training	Industry Competency Standards	1. Competency suitability with industry needs 2. Effectiveness of learning methods in Industry	Industry Partners Head of Department Teacher	Interview Documentation
Creative Entrepreneurial Skills	Development of Creativity and Innovation	1. Students ability to create innovative products 2. Students readiness to develop business	Students Graduate Students	Interview Observation
Implementation Challenges	Obstacles in implementing the integration model	1. Infrastructure limitations 2. Industry support for teaching factory	Head of Curriculum Industry Partners Teacher	Interview Documentation
Strategic Recommendations	Strategies for optimizing vocational learning	1. Solutions to improve the effectiveness of Teaching Factory and Competency Based Training 2. Strengthening Collaboration with Industry Partners	Head of Curriculum Industry Partners	Interview Documentation

However, there are challenges in forming a strong entrepreneurial mindset in students. Although they have adequate technical skills, there is still a need for an educational approach that emphasizes

creativity and innovation as part of the learning process. Research conducted by Apriani et al. (2023) underlines the importance of entrepreneurship education based on social values and sustainability, so that students are not only skilled in production but also have a more holistic business awareness [3].

Analysis from various studies shows that although the integration of Teaching Factory and Competency-Based Training promises various benefits, its implementation still faces challenges such as infrastructure limitations, lack of industry involvement, and more systematic expansion of creative entrepreneurship competencies. However, with support from more adaptive education policies and closer partnerships between schools and industries, the potential for this integration to strengthen students' creative entrepreneurial skills is growing.

From the presentation of the results and discussion, this finding confirms that the successful integration of these two approaches requires synergy between various parties, including schools, government and industry. Thus, vocational education is not only a place to produce a workforce that is ready to work but also to build a generation of innovative and highly competitive young entrepreneurs.

5 Conclusion

The integration of Teaching Factory and Competency-Based Training in vocational education, particularly in Visual Communication Design, plays a crucial role in enhancing students' creative entrepreneurial skills. Teaching Factory provides students with authentic industrial experiences, enabling them to refine their technical competencies and grasp production dynamics firsthand, while Competency-Based Training ensures that the skills imparted align with industry standards, equipping graduates to navigate both the competitive job market and the entrepreneurial landscape. Despite its advantages, the implementation of these approaches faces challenges, including limited infrastructure, insufficient industry collaboration, and the need for curriculum alignment that fosters creativity and innovation. Addressing these issues requires a more systematic strategy to optimize the learning model and maximize its impact on students' readiness for the creative industry. As recommendations, several steps can be implemented to improve the effectiveness of Teaching Factory and Competency-Based Training integration:

1. Increased Collaboration with Industry - Vocational schools need to build strategic partnerships with creative industry companies to support production facilities and industry-based projects.
2. Flexible Curriculum Development - The curriculum needs to be adaptively designed to suit the development of creative industries, with an emphasis on entrepreneurship and innovation aspects.
3. Improved Teacher Competence - Training for educators should be strengthened so that they can optimally implement production and competency-based learning methods.
4. Utilization of Digital Technology - Integration of technology in learning can expand students' access to industry resources, improve training effectiveness, and develop a digital-based entrepreneurial ecosystem.
5. Social Value-Based Entrepreneurship Approach - Entrepreneurial education needs to instill awareness of the sustainability and social impact of the businesses that students develop, so that they focus not only on profit but also on contributing to society.

By implementing these recommendations, the integration of Teaching Factory and Competency-Based Training has great potential in creating graduates who are not only job-ready, but also have innovative and highly competitive entrepreneurial skills. This also supports vocational education as a forum for human resource development that is able to create sustainable welfare for students and society at large.

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