

## IMPLEMENTATION OF TEACHING FACTORY TO IMPROVE THE SKILLS OF VOCATIONAL SCHOOL TEACHERS IN VISUAL TECHNOLOGY-BASED INTERACTIVE LEARNING DESIGN AT SMK KEBANGSAAN PONDOK AREN

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### ABSTRACT

This Community Service activity aims to socialize the concept of *Teaching Factory* to teachers at SMK Kebangsaan Pondok Aren, South Tangerang, with the aim of improving their understanding and skills in implementing learning models that are in accordance with industry needs. This activity involves training on the use of visual design technologies such as *Canva* to help teachers create more interactive and relevant learning materials. The methods used include concept presentations, hands-on training, and evaluation through pre- and post-test questionnaires to measure the effectiveness of the program. The results of the activity showed an increase in teachers' understanding and skills in implementing the *Teaching Factory* and utilizing visual technology. However, infrastructure constraints and limited resources are the main challenges faced. This activity concluded that more intensive collaboration with the industry and infrastructure support from the government is needed to ensure the implementation of the *Teaching Factory* runs optimally. Further development is recommended through further training and facility upgrades to produce a broader and sustainable impact.

**Keywords:** teaching factory, visual technology, learning design, vocational school, competency development

### INTRODUCTION

In today's digital era, the integration of technology in education and graphic communication has fundamentally changed the way design is learned and interacted with. Technology has made it possible to create a more interactive, dynamic, and inclusive learning environment for different groups of students, including those with special needs. One of the web-based tools that is growing in popularity among educators is Canva, which is used to improve the effectiveness of teaching through graphic design projects. Using Canva not only makes it easier for students to develop their visual design skills, but it also gives them the opportunity to express their creative ideas in an accessible way. This has proven to be very beneficial, especially for students with speech impairments, where graphic design projects can help them express ideas visually when verbal expression becomes limited (Alsuwaida, 2023). Furthermore, adequate digital literacy has become an essential skill in this era. The ability to understand and utilize technology is no longer an option, but a necessity. According to (Eshet-Alkalai, 2004), digital literacy is not only related to technical abilities, but also involves cognitive and emotional skills to navigate information effectively in cyberspace. The use of tools like Canva allows students to not only learn about design, but also develop relevant critical thinking, problem-solving, and visual communication skills in a variety of academic and professional contexts.

However, the importance of accessibility in graphic design is often overlooked, which can lead to misunderstandings between designers and clients or end-users. According to research conducted by (Cornish et al., 2015), failure in communication between designers and clients regarding visual and accessibility aspects can lead to design products that are not inclusive or difficult for users to understand. This emphasizes the need for designers and educators to understand the visual elements that can be accessed and designed with various user needs in mind. Canva as a platform allows designers, including teachers and students, to focus on creating more inclusive content by providing templates and visual aids that are accessible to different groups of users. As such, using Canva not only broadens the horizons of classroom learning, but also allows educators and students to participate in creating designs that are more inclusive, effective, and relevant to the evolving needs of industry and society.

The use of mobile apps in various aspects of life also increases user engagement and sharing behaviour on social media, which is influenced by various interactive factors that continue to evolve (Seeun Kim, Tae Hyun Baek, Youn Kyung Kim, 2016). In the context of education, the use of information technology such as AI and Canva has been proven effective in improving students' computing skills and critical thinking (Novianti & Dewi, 2023). Artificial intelligence (AI) has also begun to play an important role in improving the level of expertise of teachers in using presentation and design tools such as MS PowerPoint and Canva (Olatunde-Aiyedun & Hamma, 2023).

Additionally, the need for effective and accessible visual communication is increasingly becoming a focus in graphic design in various fields, including education, marketing, and media. Effective visual communication is not only about conveying information clearly, but it also involves aesthetic aspects that can grab the user's attention and increase their engagement. In this case, elements such as infographics are important keys in conveying complex messages in a simpler and more engaging way. Infographics, with well-designed data visualizations, allow users to understand information more quickly and efficiently. As technology evolves, various design platforms now provide tools to create more dynamic and interactive data visualizations, which can be accessed by a wide range of audiences, including those with certain limitations (Mohamed, E. A. S., Ali, M. A. O., & Mohamed, n.d.). Furthermore, according to (Gao, 2022), feature extraction technology in design-based visual communication can guide a more contextual and directed design creation process. This technology allows the incorporation of elements of local culture into the design, such as in visual communication that focuses on traditional arts such as paper-cutting. This not only enhances the aesthetic value of the design, but also enriches visual communication with relevant cultural contexts. By utilizing technology like this, designers and educators can create works that are not only aesthetically pleasing, but also culturally and contextually meaningful.

Therefore, the mastery of various design platforms and interactive applications by teachers and designers is crucial in this digital era. This mastery not only expands the horizons of learning and artistic creation, but also optimizes user interaction and increases engagement in the continuous learning process. Platforms like Canva, which allow for the easy creation of infographics and other visual elements, can help educators deliver learning materials in a more engaging and relevant way, while also increasing students' receptivity to the information presented.

## METHOD

The method used in this socialization activity adopts a participatory approach involving vocational school teachers in order to understand the importance of Teaching Factory as a strategy to improve students' skills and job readiness. The socialization process was carried out through a series of presentations, focused group discussions, and simulations of the use of the Teaching Factory in practice-based learning. The initial presentation focused on the introduction of the Teaching Factory concept, followed by an interactive session where teachers were given the opportunity to ask questions and share their experiences in implementing industry-based learning in schools (Lin et al., 2020).

Furthermore, participants were given training on the use of visual aids such as Canva to design learning modules that are more interactive and engaging for students (Wijayanti, 2022). This technology-based approach is considered to increase student involvement in the learning process, as well as make it easier for teachers to deliver materials relevant to the industry (Alsuwaida, 2023). All of these activities were facilitated directly at SMK Kebangsaan Pondok Aren, South Tangerang, involving around 30 teachers from various departments who actively participated in each activity session.

This approach aims to ensure that teachers not only understand the concept of the Teaching Factory, but also have the necessary technical and pedagogical skills to implement this learning model in their classrooms, in accordance with the development of digital technology and the current needs of the industry (Olatunde-Aiyedun & Hamma, 2023).

## RESULTS AND DISCUSSION

The socialization activity carried out at SMK Kebangsaan Pondok Aren, South Tangerang, produced several important findings related to the understanding and readiness of teachers in implementing the *Teaching Factory* concept. The results of this activity show that most teachers are familiar with the basic concept of Teaching Factory, but do not fully understand its application in the context of practice-based learning in schools. Based on the focus group discussion, the teachers stated that the main challenges in implementing the Teaching Factory are the lack of infrastructure support and limited resources to connect learning materials with real industry needs (Lin et al., 2020).

### Teacher's Understanding of the Teaching Factory Concept

Presentations and in-depth discussion sessions on the Teaching Factory concept brought a new understanding to teachers about how important this learning model is in bridging the gap between education and industry. Teachers who previously had only a theoretical understanding of the Teaching Factory are beginning to realize that this model is not just a learning method, but a comprehensive approach that actively engages students in real-life situations, linking the skills they learn in school to the needs and practices of the industrial world. Through the Teaching Factory simulation, teachers can see first-hand how this model can be implemented to train students in a learning environment that resembles real working conditions, which is indispensable in a competitive industrial world.

Industry-based learning models like Teaching Factory are able to improve students' technical skills, but also instill important values such as discipline, responsibility, and the ability to work in a team, all of which are in-demand skills in the job market. This understanding deepened after the teachers engaged in focus group discussion sessions, where they shared their experiences, challenges, and solutions in implementing this model. They finally saw that the Teaching Factory not only aims to teach technical skills, but also plays an important role in shaping students into a workforce that is ready to compete globally.

According to (Lin et al., 2020), teachers' active involvement in industry-based learning can significantly affect students' readiness to enter the workforce. The teachers involved in these discussions began to understand the importance of their role in facilitating a learning environment that was close to the actual industry situation. Thus, the Teaching Factory not only provides students with relevant skills, but also forms a work mentality that suits the demands of modern industry, especially in an era where technology and innovation are constantly evolving rapidly.



Figure 6. Discussion

### Use of visual aids like Canva

In the training session on the use of visual aids, especially Canva, the enthusiasm of the teachers showed a very positive response to the use of this platform. Most teachers are not only interested but also feel helped in designing more dynamic and interactive learning modules. This is especially important in the modern world of education, where visual appeal and interactivity can significantly affect a student's level of comprehension. Canva, as a web-based graphic design platform, makes it easy for teachers to create visually appealing learning materials without requiring in-depth design skills, making the content creation process more efficient and effective.

The use of Canva in the context of industry-based learning, such as in the Teaching Factory concept, allows teachers to create materials that are more relevant to the real world. Teachers can design materials that illustrate actual industry scenarios, such as work process diagrams, infographics related to production flows, or visual presentations that illustrate the latest technologies used in the industry. This allows students to see a more concrete picture of the skills and knowledge they are learning in class, which in turn increases their engagement in the learning process.

In addition, Canva also makes it easier for teachers to turn complex information into simple and easy-to-understand visuals. This kind of information visualization not only helps in the comprehension process, but also makes students more interested and motivated to learn the material presented. Some teachers who participated in this training reported that they were able to create content that was more creative and relevant to industry practices, reinforcing the implementation of the Teaching Factory. In the long term, teachers' ability to utilize technology such as Canva is expected to create a more innovative and relevant learning environment, as well as more in line with the needs and challenges faced by students in the real world of work (Wijayanti, 2022).

This experience also emphasizes the importance of teachers' ability to adapt to new technologies and utilize digital tools to support learning. As the industry evolves and the need for tech skills increases, the use of tools like Canva provides a practical solution to strengthen technology-based teaching in vocational schools. By combining graphic design and technology in learning modules, teachers can create a more holistic learning experience, increase student engagement, and ultimately help them better prepare for the increasingly competitive workforce. The activities can be seen in Figure 1.

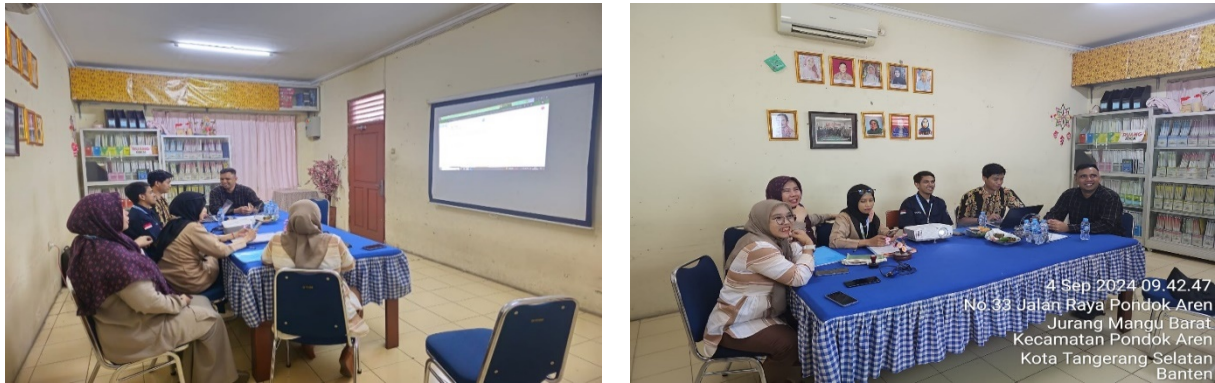


Figure 7. Mentoring

### Implementation of Technology-Based Learning

The simulations conducted during the socialization provided a real picture of how technology, such as Canva, can have a significant impact on improving teachers' ability to design learning modules and media that are more in line with industry needs. Through this simulation, teachers not only gained a conceptual understanding of how to use Canva, but also experienced first-hand how this tool can be applied in industry-based learning, such as in the context of the Teaching Factory. With this practice-based simulation, teachers are given the opportunity to design a variety of materials, ranging from infographics of industrial work processes, data visualizations related to the latest technology, to interactive presentations relevant to the world of work.

Using Canva facilitates the creation of more visually appealing content, as well as allowing teachers to easily turn technical and complex information into something more understandable for students. As a result, learning becomes more dynamic and engages students, which in turn increases their motivation and engagement. This is in line with previous findings that show that the integration of technology into learning not only enriches teaching methods, but also provides a more interactive and contextual learning experience for students (Alsuwaida, 2023). The use of technology-based tools also supports practice-based teaching, where students can more easily understand and apply the technical skills needed in the industrial world.

Furthermore, teachers at SMK Kebangsaan showed a significant increase in ability to develop technology-based learning materials after participating in the training. Not only are they more proficient at using Canva to create learning modules, but they also feel more confident in adopting the Teaching Factory approach in their classrooms. This is very important because in industry-based learning, the ability of teachers to present materials that are relevant to the needs of the world of work is the key to the success of this learning model. Teachers who are more confident and competent in using technology will be able to provide more effective learning, preparing students to face the challenges of an ever-evolving industry.

Teachers' increased confidence is also driven by the understanding that technology like Canva is not only a tool, but also a medium that allows them to deliver material in a more innovative and relevant way. This gives them the flexibility to adapt teaching materials to the latest industry trends, while making the learning process more adaptive to technological developments and job market needs. The positive experience of this simulation shows that technology-based training can be a strong catalyst to improve the quality of vocational education, as well as making the Teaching Factory a more effective approach in preparing students for success in an increasingly competitive and technology-based workforce.

### Challenges and Obstacles

Although this socialization activity has a positive impact on teachers' understanding and skills in implementing the Teaching Factory concept, several main obstacles are still faced in efforts to optimize the implementation of this learning model. One of the most significant challenges is the limited facilities and infrastructure that support industry-based learning in vocational schools, which is a major obstacle in the implementation process. Many teachers stated that the existing facilities do not fully support ideal practice-based learning, especially those that require advanced technology and industrial equipment that are in line with the standards of today's world of work.

The teachers emphasized that support from the school, as well as collaboration with the government and industry, is very necessary to ensure the availability of adequate equipment, such as industrial machinery, design software, and the latest technology relevant to the needs of the job market. Without supporting facilities, Teaching Factory learning risks becoming just a theory without real application, which can ultimately reduce the effectiveness of this program in preparing students for the challenges of the world of work.

In addition, there is also a need for further training and technical support for teachers to ensure they are able to use the equipment and technology provided properly. Research shows that the success of implementing innovative learning models such as the Teaching Factory is greatly influenced by the availability of adequate infrastructure, as well as teachers' skills in using the technology (Olatunde-Aiyedun & Hamma, 2023). Teachers who are skilled in technology and have access to relevant facilities will be better able to provide effective learning, which in turn will improve student competence.

Furthermore, close cooperation between schools and the industrial world is crucial to ensure that the infrastructure provided in schools is in line with actual needs in the field. For example, hardware and software used in manufacturing, information technology, or graphic design industries should be available in schools so that students can learn in an environment that is close to the actual industry conditions. It also includes the development of industrial laboratories in schools equipped with the latest technology, allowing students to learn and work with the same equipment that they would encounter in the workforce.

Therefore, while the results of these activities have shown an increase in teacher competence in the use of visual aids such as Canva and the implementation of industry-based learning models, future efforts should be focused on developing stronger infrastructure and resource support. Without adequate infrastructure support, the Teaching Factory will only be a difficult concept to implement effectively. More intensive collaboration between government, schools, and industry is expected to be a solution to overcome these barriers, as well as ensure that students receive a quality education that is relevant to the needs of the industry today and in the future.

Overall, this socialization activity succeeded in improving the understanding and technical skills of teachers in designing industry-based learning. However, further efforts are still needed to improve resource and infrastructure support to ensure that the implementation of the Teaching Factory runs effectively and provides optimal benefits for students.

## CONCLUSION

The socialization activity regarding the implementation of the Teaching Factory at SMK Kebangsaan Pondok Aren, South Tangerang had a significant impact on improving the understanding and skills of teachers in designing and implementing industry-based learning. This increase in understanding is evident from how teachers, who previously did not understand the implementation of the Teaching Factory, have become more aware of the importance of this model in bridging the world of education with the needs of the industrial world. This learning model not only provides students with technical skills, but also equips them with practical experience relevant to current job market conditions. Teachers now see the Teaching Factory as an approach that can bring students closer to real situations in the industrial world, which will ultimately significantly improve their job readiness.

During the event, the use of visual aids such as Canva also proved to be an important innovation in the process of delivering more engaging and interactive material. By utilizing Canva, teachers can create learning modules that are not only informative but also aesthetically pleasing and easy for students to understand. This is especially important in the context of learning related to the creative and manufacturing industries, where visualization is one of the keys in explaining complex processes. Teachers involved in this training stated that with a platform like Canva, it is easier for them to visualize abstract concepts to be more concrete and relevant for students, especially in the context of learning related to the industrial world (Wijayanti, 2022).

The support of this visual design-based technology not only increases the appeal of learning materials, but also creates a more collaborative and participatory learning experience. Teachers are realizing that the use of technology like Canva can encourage more active student engagement, where students can participate in the process of designing and creating learning materials related to industry projects. This increased involvement is crucial in preparing students to be involved in the real production process in the world of work, as well as improving their skills in using technology commonly used in the industry.

In addition, this activity also highlights the importance of the Teaching Factory as a strategic tool to prepare students to be more competitive in the job market. With the improvement of teachers' skills in using technology and designing industry-based learning modules, the learning process in schools can be more integrated with the world of work. This will accelerate the creation of graduates who are not only ready for work, but also have skills relevant to today's industry needs. According to the teachers involved, improving their understanding and skills in the implementation of the Teaching Factory will facilitate the process of transitioning students from the educational environment to the actual work environment, as students are already familiar with the relevant and industry-practice-based learning approach.

Thus, this socialization activity not only improves teachers' skills in designing more interactive learning, but also paves the way for stronger integration between education and the industrial world. However, as previously identified, challenges related to infrastructure and technical support are still obstacles that need to be overcome so that the implementation of the Teaching Factory can run optimally in all schools, including at SMK Kebangsaan Pondok Aren. However, this activity also found some weaknesses, especially related to the limited infrastructure and resources that support the implementation of *the Teaching Factory*. This obstacle emphasizes the need for further support from schools and the government to provide adequate facilities. In addition, while technologies like *Canva* have been successful in improving teachers' design skills, further training is still needed to ensure that the integration of these technologies can run optimally in all aspects of learning.

As a step forward in development, the Teaching Factory program can be expanded by involving more industry parties directly, so that students can get a learning experience that is more applicable and relevant to the needs of the job market. Closer collaboration between the school and industry will also provide opportunities for students to engage in real-life projects that are in line with the latest technological developments and industry trends. In addition, there needs to be an effort to build a sustainable partnership between the world of education and the business world so that students not only gain technical skills, but also a deep understanding of the dynamics of the world of work. With more comprehensive support from the industry sector, the relevance of the Teaching Factory will be even stronger, and its impact in preparing competent and work-ready graduates will be greater.

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