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Supporting Factors for Implementing Project-Based Teaching Factory Learning in Wood and Rattan Craft Workshops

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Abstract

This study aims to determine and analyze the implementation of the Teaching Factory learning program and analyze the implementation of the Teaching Factory learning based on the production unit of the Creative Wood and Rattan Craft Expertise Program at SMK Negeri 9 Surakarta. The research method used a qualitative descriptive approach with a case study research design. This method is suitable for the issue we investigated regarding the implementation of project-based Teaching Factory learning in wood and rattan craft workshops. In the planning phase of Teaching Factory learning, the research results are explained related to the implementation process as the basis for implementing Teaching Factory learning implementation in schools, namely supporting policies divided into central policies, and school policies. The implementation of Teaching Factory learning is conducted through document studies and interviews. The determination of the produced products aligns with the stages of developing the Teaching Factory model 4, which are products/services that are correct, neat, have marketability, meet societal demands, and can be mass-produced by teams. Implementation aspects ranging from planning, implementation and evaluation are highly dependent on learning implementation activities in which there are main elements of students who are active, creative and can work together.

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INTRODUCTION

Education is a process of learning about knowledge and skills that can be conducted anywhere and anytime. Education is accessible to everyone, starting from children to the elderly. Education is highly essential for individuals aiming to enlighten and develop their potential.

Education can be pursued through various means such as formal education, which is conducted in schools, or structured education. Additionally, there is non-formal education, which takes place outside formal education institutions, such as tutoring centers (private courses), training institutions (extracurricular activities), study groups, and others. There is also informal education, acquired within the family or the surrounding environment.

Formal education, conducted within the school system, particularly vocational education, plays a crucial role in supporting a country's economic growth by producing a workforce ready to enter the industry. Close involvement with the requirements of the work system and the job market is key to ensuring the relevance and effectiveness of vocational education programs.

Vocational education is oriented closely towards the requirements of the work system and the job market, aligned with industrial needs. This is based on the understanding that technological advancements can significantly contribute to a country's development. (Siswandi & Sukoco, 2016).

To accommodate various demands from the business and industrial sectors, so that vocational high schools (SMKs) produce competent graduates not only in terms of "link and match" but also "plug and play", the Teaching Factory learning approach was developed. The Teaching Factory (TEFA) is a learning method that simulates real industrial environments and activities through collaboration with industries, based on product-oriented learning, to produce competent graduates with work ethics and entrepreneurial spirit through production activities, whether in goods or services, meeting industrial planning, procedural, and quality control standards, and marketable to consumers/society (Fitrihana, 2018).

The Teaching Factory is a learning model that replicates real industry settings, combining skill learning processes designed and executed based on the procedures and working standards of companies in order to produce goods or services that meet consumer demands (Putra, 2022).

One of the vocational high schools implementing the Teaching Factory approach is SMK Negeri 9 Surakarta, which offers several majors including Creative Wood and Rattan Crafts, Creative Metal and Jewelry Crafts, Creative Batik and Textiles, Fine Arts, Fashion Design, Visual Communication Design (DKV), Animation, Multimedia, Computer Network, and Telecommunication Techniques. SMK Negeri 9 Surakarta, located at Jl. Tarumanegara I, Banyuanyar, Banjarsari, Surakarta City, Central Java, under the Ministry of Education and Culture (Mendikbud), is a tourism group of vocational schools in Surakarta, expected to produce graduates ready for work and entrepreneurship, with high productivity and creativity according to the fields and expertise of each program.

To support the Teaching Factory at SMK Negeri 9 Surakarta, collaborations are established with several furniture companies, both local and international. This collaboration is manifested through On-The-Job Training (OJT) and job training. OJT exposes students to the real industrial world, such as the equipment used in the wood and rattan craft, metal and jewelry craft, and fashion design industries.

A Teaching Factory learning model oriented towards the company's working standards can be achieved when students are actively engaged in productive learning. Based on this, SMK Negeri 9 Surakarta must enhance connectivity with the industry in terms of learning processes, resources, products, and collaborations. These aspects are believed to play a crucial role in productive learning. Thus, the expected outcome is the creation of graduates from SMK Negeri 9 Surakarta oriented towards production that keeps pace with the times.

By addressing root problems, indirectly, improvements in other aspects such as student

production capabilities can be achieved. Therefore, it is essential to understand how the implementation of the Teaching Factory is carried out in teaching at SMK Negeri 9 Surakarta.

Based on the existing phenomena and previous research showing differences in outcomes, which constitute a research gap in this study, the researcher finds it interesting and important to conduct research on Teaching Factory learning that can enhance student participation through project-based learning. Hence, the title "Supporting Factors for Implementing Project-Based Teaching Factory Learning in Wood and Rattan Craft Workshops".

METHOD

1. Research Approach

This research adopts a qualitative descriptive approach with a case study research design. Qualitative approach aims to uncover facts about an event, object, activity, process, and human beings as they are without manipulation of the research object in the present or within a time frame that is still feasible within respondents' memory (Sugiyono, 2018). From the examination of these definitions, it can be concluded that qualitative research is intended to understand phenomena such as behaviors, perceptions, motivations, actions, and others, holistically and descriptively through words and language, within a specific natural context and utilizing various scientific methods. A case study cannot be generalized to other locations. This method is suitable for the issue we investigate concerning the implementation of project-based Teaching Factory learning in the wood and rattan craft workshops at SMK 9 Surakarta.

2. Research Focus

The research focus is divided into three aspects. Firstly, the implementation of Teaching Factory learning, which is subdivided into several sub-indicators including the concept of Teaching Factory, the process of applying Teaching Factory, and the elements of Teaching Factory. Secondly, the production unit, which is divided into several sub-indicators including the benefits of the production unit, the objectives of the production unit, and the principles of the production unit.

3. Data and Data Sources

The data and sources of this research are categorized into two sources. Firstly, primary data, and secondly, secondary data. Primary data is obtained from interviews with key informants such as the vice principal of the curriculum regarding the supportive policies and implementation of Teaching Factory learning at the school. Furthermore, it serves as the basis for the implementation of project-based Teaching Factory learning in the wood and rattan craft workshops, covering planning, execution, and evaluation. Secondary data consists of documents and observations related to the research focus. The subjects in this research are the vice principal of the curriculum, productive educators, and the Teaching Factory coordinator at SMK Negeri 9 Surakarta.

4. Data Collection Techniques

Data collection used three mechanisms or procedures, namely: 1) interviews with key informants; 2) observation of resource persons during Teaching Factory project-based learning activities at SMK Negeri 9 Surakarta, and; 3) document studies related to the research focus. Within these three data collection techniques (document studies, observation, and interviews), four dimensions will be examined in this research: supporting policy dimension, implementation dimension, challenges and efforts dimension, and the sustainability of Teaching Factory learning programs at SMK Negeri 9 Surakarta.

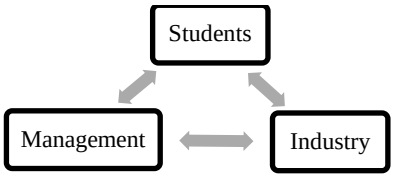
5. Data Collection Instruments

Aspect	Dimension	Technique or Data Source
School Policies	Organizational structure and Job Desk, Teaching Factory SOP, Cooperation with partner industries	Document Study/Interview Deputy head of curriculum
Curriculum	Project-based lesson plans, block schedules, job sheets and product determination	Document study / Observation / Interview with the deputy head of curriculum and productive educators
Learning Implementation	Conformity with lesson plans, job sheets, and block schedules. Materials and practice base, training, entrepreneurship industrial practice / Internship	Document Study/ Observation/ Interview. Deputy head of curriculum and productive educators
Facilities and Infrastucture	Workshop/Lab Quantity of practical tools Quantity of practical materials	Document study/ interview Teaching Factory Coordinator
Educator Role	Educator's role in learning Educator's role in Competency Test/internship production	Document study/ observation/ interview Productive educator

6. Data Validity Technique

The data validity technique used is credibility. The technique employed is triangulation. Triangulation of sources is conducted among the management, consisting of the vice principal of the curriculum, productive educators, and the Teaching Factory coordinator, as well as students and industry representatives, to obtain consistent data.

Triangulation of sources



Source: processed by the researcher, 2023

7. Data Analysis Technique

Data analysis is conducted by collecting field notes through non-test methods, such as direct observation at SMK Negeri 9 Surakarta and interviews with the vice principal of the curriculum, productive educators, and the Teaching Factory coordinator.

Data analysis is carried out using the field analysis technique by Miles and Huberman (in Sugiyono, 2021), employing three methods: 1) Data reduction, which involves categorizing data on the implementation of project-based Teaching Factory learning in the wood and rattan craft workshops at SMK Negeri 9 Surakarta and discarding unnecessary data; 2) Data display, presenting Teaching Factory learning models tailored to the development conditions at the school and drawing conclusions from the data presented according to the research focus, as well as making conclusions/verifications. Finally, the final stage of data analysis addresses the formulated research questions.

The researcher conducts more detailed, diligent, and careful observations of Teaching Factory learning in the Wood Craft Department at SMK Negeri 9 Surakarta, focusing on the learning process and the concept of Teaching Factory to obtain accurate and detailed data. In this research, the obtained data is analyzed until conclusions are drawn or descriptions are made based on the realities or phenomena observed in the field.

RESULTS AND DISCUSSION

Results

In the planning phase of Teaching Factory learning, the research results related to the implementation process are explained as the basis for the implementation of Teaching Factory learning at the school, which includes supportive policies divided into two main categories: 1) central policies, and 2) school policies. School policy includes 4 dimensions, namely the principal's policy, organizational structure and job description, SOP Teaching Factory

performance and workflow, and school cooperation with TeFa partner industries.

The school principal's decree regarding the Teaching Factory management team is presented in the organizational structure within the Teaching Factory workshop, in accordance with the quality control, logistics, and marketing standards of partner industries, accompanied by job descriptions. The established Teaching Factory management team develops a work program which includes both short-term and long-term objectives.

Performance SOPs and workflows in the form of flowcharts are contained in the Teaching Factory work program document but have not been announced and posted in the Teaching Factory workshop or strategic places. The Teaching Factory curriculum includes block schedules, lesson plans, job sheets, and assessment instruments. Curriculum preparation is carried out with industry, curriculum vice-secretary, program head, productive educators, supervisors and curriculum division of the education office branch of the Semarang Regency / City area and approved by the Central Java Provincial Education Office. There are block schedules, project-based lesson plans and job sheets as well as assessment instruments prepared by productive subject educators.

The implementation of Teaching Factory learning is carried out through document studies and interviews. The determination of products aligns with the development stages of the Teaching Factory model 4, which ensures that products/services are produced correctly, neatly, have marketability, meet societal demands, and can be mass-produced by teams. This process involves the school principal, infrastructure vice principal, Teaching Factory coordinator, program heads, and productive educators. The product determination process (identification form, product, product matrix, and product quality) is organized according to class levels to enable sustained implementation.

This aligns with an interview with the curriculum vice principal on October 17, 2023, in the principal's office. "Teaching Factory products are determined through department meetings. Productive subject educators are required to: 1) adjust to the curriculum content, learning outcomes, objectives, and product/service determination in the Teaching Factory, ensuring marketability; 2) liaise with Industry Partners. Industry partners will share their experiences and technologies directly with educators and students, 3) involve the students themselves in the production of products/services in the Teaching Factory, working in teams on a mass scale."

Educator activities in the training learning pattern play roles in both educational and production contexts. In the educational context, educators deliver materials according to the competency standards and lesson plans designed as references for implementing a Curriculum Freedom with Teaching Factory model 4. In the production context, educators provide good examples for students, teach discipline and high work ethics, provide guidance, assistance, demonstrate work steps before practical sessions, and assess student performance and the suitability of their work results.

The available equipment is ready for use but not proportionate to the number of students, although the types of equipment are considered complete and functional. There are clear SOPs for equipment use and borrowing. Equipment inventory is consistently managed by the Teaching Factory coordinator and workshop staff. The Teaching Factory coordinator, as the responsible party for the Teaching Factory, has clear tasks and functions. The workshop layout is neatly arranged with safety symbols.

Information on obstacles in implementing project-based Teaching Factory learning at SMK Negeri 9 Surakarta includes: 1) lack of consumer confidence in the competency of SMK students, 2) students in the Teaching Factory learning in class XI are currently undergoing apprenticeships, and XII students are in partner industries, resulting in uneven competencies, 3) limited facility space resulting in inability to accommodate all students, 4) educators' internship opportunities to update their knowledge are subject to industry schedules, 5) limited spare part stocks due to lack of storage, 6) expensive practice materials leading to inability to maintain large stockpiles.

Discussion

The implementation of project-based Teaching Factory learning in the wood and rattan craft workshop of SMK Negeri 9 Surakarta, reviewed from the aspect of supportive policies, is very good. Both central and school policies serve as the foundation for Teaching Factory implementation. These policies are documented in the school's official documents in accordance with GIZ (2017) guidelines.

This is consistent with the findings from document studies and interviews, indicating that the school has official policies regarding Teaching Factory implementation, organizational structure and job descriptions, and SOPs. Interviews also confirmed that the school policy documents are comprehensive and meet the needs for Teaching Factory implementation (GIZ, 2017).

The implementation of Teaching Factory learning begins with planning, particularly in curriculum development involving block scheduling, lesson plans, job sheets, and assessment instruments. The curriculum needs to be updated annually to align with changes and technological advancements, especially those occurring in industries. The block scheduling is very well executed.

According to Sudiyono (2020), the ideal condition for implementing Teaching Factory learning involves block scheduling, making Teaching Factory learning effective and efficient. Similarly, Putra (2020) suggests that an industrial culture approach is applied in Teaching Factory learning through the use of block scheduling and job sheets tailored to consumer needs (GIZ, 2017).

The creation of appropriate assessment instruments for Teaching Factory learning, with detailed assessment covering quality, standards, time, cost, efficient execution, innovation, and creativity is crucial (PSMK, 2016). Pohan (2017) also emphasizes that good assessment instruments should measure cognitive, affective, and psychomotor dimensions at each stage of learning.

According to Hikmah (2020), educators should utilize project-based learning models to enhance student participation and learning outcomes. Similarly, Redhana (2019) suggests that critical thinking, problem-solving, creativity and innovation, collaboration, and communication can encourage students to work together in teams during learning.

Despite project-based Teaching Factory learning being quite effective and serving as an alternative learning model, some students are still less active in learning activities, and classroom time is longer than workshop time, leading to a lack of student competence (Noviyanti et al., 2023). It is not only the substance and generic competencies that students must master, but also life skills which are crucial and impactful on self-development (Direktorat PSMK, 2016).

Furthermore, adequate facilities and infrastructure are crucial factors that determine the success of Teaching Factory learning implementation. Supported by Putra (2020), workshops that meet facility and industry standards play a significant role in enhancing student competence. Therefore, practical workshops must accommodate the number of students engaged in practical activities. Efforts by the school to address workshops that cannot accommodate all students include implementing block scheduling and team teaching, where some students work on job sheets while others engage in practical activities in the workshop.

CONCLUSION

Based on the results of the research that has been conducted, it can be concluded that the implementation of project-based Teaching Factory learning in the wood and rattan craft workshop of SMK Negeri 9 Semarang that success depends on several aspects: The aspect of school policy as the basis for implementation must be well structured to support the implementation of Teaching Factory in SMK, The implementation aspect starting from planning, implementation and evaluation is highly dependent on learning implementation activities in which there are main elements of students who are active, creative and can work together.

Educators who always update the latest technology to improve their competence through internships from industry, supporting factors

include; 1) the competence of educators who always learn the latest technology / update knowledge in accordance with industry demands through industrial internships or independent internships and take competency tests and take competency certification, 2) support from partner industries for technology transfer, module assistance and practical tools according to the industry, 3) the leadership role of school principals who have an entrepreneurial spirit and enthusiasm for making efforts to sustain Teaching Factory learning, inhibiting factors are consumer confidence in the competence of students, while government support in the form of assistance in the form of quality assurance and workshops still does not exist.

Based on the above results, it is recommended that school principals provide ample opportunities for further research into Teaching Factory management. Considering the limitations of this study, future research is encouraged to fill the remaining gaps and contribute more broadly to the development of quality vocational education, such as conducting a comprehensive study on the effectiveness of Teaching Factory learning methods in enhancing practical skills and student understanding.

REFERENCES

Fitrihana, N. (2018). Rancangan Pembelajaran Teaching Factory. *HEJ (Jurnal Economic Journal)*, *2*(2), 56–64. https://journal.uny.ac.id/index.php/hej/article/view/23293/11688

GIZ. (2017). *Panduan Teknis Teaching Factory*. Kementrian Pendidikan dan Kebudayaan. https://repositori.kemdikbud.go.id/4973/1/l2T6YhfmJdfx9omMxkIznZN0wUhQ3gI7hcfayTlE.pdf

Hikmah, M. (2020). Penerapan Model Project Based Learning Untuk Meningkatkan Partisipasi Dan Hasil Belajar Pemrograman Dasar Siswa. *Jurnal Teknodik*, 27–38. https://doi.org/10.32550/teknodik.v0i2.376

Noviyanti, E., Sudirtha, I. G., & Widiartini, N. K. (2023). Pengaruh Pembelajaran Teaching Factory (TEFA) Berbasis Model Project Based Learning (PjBL) untuk Meningkatkan Inovasi Produk Cake dan Kue Indonesia (PCKI) Melalui Kreativitas Peserta Didik Program Studi Penelitian dan Evaluasi Pendidikan. *Penelitian Dan Evaluasi Pendidikan Indonesia*, *13*(1), 77–89.

Pohan, N. (2017). Pelaksanaan Proses Belajar Melalui Bimbingan Aspek Afektif, Kognitif Dan Psikomotorik Siswa Di Madrasah Ibtidaiyah Swasta Amal Shaleh Medan. *Pascasarjana Universitas Islam Negeri Sumatera Utara Medan*, 141. http://repository.uinsu.ac.id/3457/1/TESIS NURBIAH POHAN.pdf

PSMK, D. (2016). *Petunjuk Teknis (Juknis) Bantuan Pemerintah untuk pembinaan SMK tahun 2016*. Direktorat Pembinaan SMK.

Putra, N. M. (2022). Implementasi Teaching Factory Kompetensi Keahlian Teknik Dan Bisnis Sepeda Motor Di Smk Ma'Arif 1 Wates. *Jurnal Pendidikan Vokasi Otomotif*, *4*(1), 57–68. https://doi.org/10.21831/jpvo.v4i1.46153

Redhana, I. W. (2019). Mengembangkan Keterampilan Abad Ke-21 Dalam Pembelajaran Kimia. *Jurnal Inovasi Pendidikan Kimia*, *13*(1). https://journal.unnes.ac.id/nju/index.php/JIPK/article/view/17824.

Siswandi, G., & Sukoco, S. (2016). Pengembangan Model Teaching Factory di Bengkel Otomotif SMK Karsa Mulya Palangka Raya. *Jurnal Pendidikan Teknologi Dan Kejuruan*, *22*(4), 467. https://doi.org/10.21831/jptk.v22i4.7844

Sudiyono, S. S. (2020). Teaching Factory Sebagai Upaya Peningkatan Mutu Lulusan Di Smk. *Jurnal Penelitian Kebijakan Pendidikan*, *12*(2), 159–181. https://doi.org/10.24832/jpkp.v12i2.271

Sugiyono. (2018). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Alfabeta.

Sugiyono. (2021). *Metode Penelitian Kuantitatif Kualitatif dan R&D*. Alfabeta. https://opac.perpusnas.go.id/DetailOpac.aspx?id=1543971