Vol 13 No 1 : January 2025

JDPP

Jurnal Dimensi Pendidikan dan Pembelajaran

ISSN 2303-3800 (Online), ISSN 2527-7049 (Print)

https://journal.umpo.ac.id/index.php/dimensi/index

Teaching Factory Management at Vocational High Schools Center of Excellence in Temanggung Regency

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Article Information

Article History:

Received December 2024

Accepted January 2025

Published January 2025

Keywords:

Teaching Factory; Management; Vocational High School; Center of Excellence;

How to Cite:

Hastuti, E., *et al.* (2025). Teaching Factory Management at Vocational High Schools Center of Excellence in Temanggung Regency. *Jurnal Dimensi Pendidikan dan Pembelajaran Universitas Muhammadiyah Ponorogo*, 13(1), pp 48-64.

Abstract

The research aims to analyze and describe the management of the Teaching Factory at the Center of Excellence Vocational School, especially in Temanggung Regency. The research was conducted at State Vocational High School 2 Temanggung, Central Java, focusing on planning, organizing, actuating, and controlling. This qualitative descriptive study employed observation, interviews, and documentation with subjects including the school principal, deputy head of curriculum, teaching factory manager, head of skills concentration, and vocational teachers. Data were validated using triangulation techniques and analyzed using the Miles and Huberman model. Findings revealed that: 1) Planning involved a strategic partnership with the industry through the Link and Match 8+i strategy, product determination based on competency achievement and market interest, development of learning tools with industry, preparation of competent teachers, environmental arrangement and facilities according to industry standards, governance as an independent business;2) Organizing involved preparation of an organizational structure integrated into the school organizational structure, division of tasks through the Teacher Task Distribution Decree; 3) Execution involved utilized block schedules, real project-based products, delivery of products after passing quality control, after-sales service; 4) Control involved management, practice settings and industrial culture, integrated learning, marketing/promotion through direct and digital marketing, quality, continuity product and innovation, continuous HR competency development, relevant industrial relations. Schools are advised to improve the Link and Match 8+i partnership, optimize digital marketing, and innovate products using local resources.

INTRODUCTION

Teaching Factory (TEFA) is a learning model widely applied in Vocational High Schools. This is done as an effort to synergize the competencies of vocational education graduates with the competencies needed by the Industrial World because the industry has certain criteria for

assessing the competence of a worker (Suwarno & Ismanto, 2020). Teaching Factory has provided vocational education that suits the needs of students (Rohmah et al., 2021). Teaching Factory can positively contribute to improving the competence of vocational students and their preparation for the World of Work (Wahjusaputri et al., 2021); (Sari et al., 2022); (Putra et al., 2022); (Ngusman et al., 2023); (Dwijayanthi & Rijanto, 2022); (Agus, 2023); (Muhitasari & Purnami, 2018). Vocational schools are expected to produce competent Human Resources (HR), therefore, the quality of education at vocational schools need to be continuously improved.

The government strongly supports this. The Directorate General of Vocational Education of the Ministry of Education and Culture includes Teaching Factory as a strategic target in its 2020-2024 Strategic Plan (Direktorat Jenderal Pendidikan Vokasi Kemendikbud RI, 2020). Another support is launching the Vocational High School Centre of Excellence Program. This program brings vocational schools closer to the industry and is expected to boost productivity in Vocational High School through Teaching Factory activities (Direktorat SMK Kemendikbud Ristekdikti RI, 2023). The Teaching Factory concept introduces students to the production process, industrial culture, and industrial quality standards. This means that the profile of graduates will be equipped with hard skills and soft skills needed by the industry. Therefore, Vocational High School need to partner with industry. Currently, the partnership between Vocational High School and industry is formulated with the 8+i *Link and Match* strategy (Direktorat Jenderal Pendidikan Vokasi Kemendikbud RI, 2020). Its manifestations include 1) curriculum development with industry; 2) project work with industry; 3) teachers from industry at least 50 Learning Hours per semester; 4) industrial internships; 5) competency certification; 6) technology updates; 7) applied research supporting Teaching Factory; 8) commitment to graduate absorption; and 9) other forms of cooperation (Fahmayani, 2021). Therefore, the *Teaching Factory* is applied by many vocational schools as a learning model.

State Vocational High School 2 Temanggung, is a vocational school in Temanggung Regency that is included in the Vocational High School Center of Excellence program, Regular Scheme Year 2023 for the Culinary Expertise Concentration. The products produced are a variety of breads, snacks, and pastries under the Bread Love trademark. As an implementer of the Vocational High School Center of Excellence Regular Scheme Program, it automatically receives strengthening of the Teaching Factory implementation, namely through a World of Work-based learning program and the fulfillment of production infrastructure. The Management Team acknowledges that the impact of the Center of Excellence program on the sustainability of the Teaching Factory, especially in Vocational High Schools that implement the Center of Excellence program, especially in Temanggung Regency, has not been documented. This reason makes implementing Teaching Factory management at State Vocational High School 2 Temanggung an interesting study to analyze.

The purpose of this study is to analyze and describe the *Teaching Factory* management implemented in the Vocational High School Center of Excellence, especially in Temanggung Regency, in terms of management functions (planning, organizing, implementing, and controlling). This research is expected to provide a deeper understanding of how Teaching Factory management, especially at the Vocational High School Center of Excellence, is carried out so that it can provide information or recommendations for the implementation of production-based learning in similar educational institutions.

LITERATURE REVIEW

Management is generally often associated with planning, organizing, implementing, and controlling. Management is a process of structuring and optimizing the use of organizational

resources involving cooperation between members to achieve organizational goals effectively and efficiently (Juhji et al., 2020). In management, there is a process of planning, organizing, directing, and controlling (Hanafi, 2019). Management has a scope including human elements, goods, machines, methods, money, and markets, and these six elements have functions and influence each other (Juhji et al., 2020). Based on these explanations, it is concluded that management is the process of planning, organizing, implementing, and controlling existing resources to achieve organizational goals effectively and efficiently.

Teaching Factory is an industrialized learning model through the synergy of vocational schools with the business/industry world (Peraturan Mendikbud, 2022). Teaching Factory is a learning concept in Vocational High School that focuses on production and refers to industrial standards and procedures with an atmosphere resembling industry (Khurniawan, 2016). Teaching Factory is a learning model that maximizes the curriculum and resources available in schools to align with industry standards and procedures (Nugroho, 2023). The three main components of Teaching Factory are products, *Job Sheets,* and block schedules (Direktorat Pembinaan SMK Kemdikbud RI, 2019). Based on these opinions, it is concluded that Teaching Factory is a learning model that integrates the industrial environment with the school curriculum, with the main components of the product, *Job Sheet,* and block schedule to produce competent graduates according to the needs of the World of Work. Based on the concept of management and associated with the Teaching Factory concept, it is concluded that Teaching Factory management is the concept of managing resources (people, goods, machines, methods, money, markets) owned by the Teaching Factory through management functions (planning, organizing, implementing, controlling) to produce competent graduates in the World of Work.

Planning directs the organization in using resources to achieve goals (Hanafi, 2019). In the context of Teaching Factory, planning includes preparation of a) strategic partnerships; b) product determination; c) preparation of learning tools; d) experienced industrial teachers; e) supporting environment and facilities; f) governance (Direktorat Pembinaan SMK Kemdikbud RI, 2019). The strategic partnership of vocational education with the world of work is carried out through the 8+i *Link and Match* strategy (Direktorat Jenderal Pendidikan Vokasi Kemendikbud RI, 2020). The school curriculum needs to be contextually adjusted to the demands of the industry (Purba et al., 2024). *Teaching Factory* needs to establish close partnerships with local industries so that students are involved in real projects (Irsyad & Effendi, 2023). Partnerships with industry are a must for Vocational High Schools that will improve the quality and competitiveness of their graduates (Islami et al., 2021).

Organizing is an important step in determining, classifying, and organizing organizational activities (Yusuf et al., 2023). Schools need to form a Teaching Factory team as the person in charge and the driving force of the elements involved (Nugroho, 2023). Implementation in management is the process of mobilizing subordinates to work (Bunyamin, 2022). Implementation emphasizes the involvement of individuals in organizational activities (Utomo, 2018). Things that must be considered in Teaching Factory planning are: a) schedule; b) product workmanship; c) product delivery; and d) after-sales service (Nugroho, 2023).

Controlling is an activity that aims to control the course of implementation and ensure the achievement of organizational goals (Utomo, 2018). In order not to deviate from the indicators and objectives, it is necessary to organize and supervise (Wahyuni et al., 2022). Teaching Factory controlling is carried out in the aspects of a) management; b) practice sites; c) learning patterns; d) marketing/promotion; d) products; e) human resources; f) industrial relations (Direktorat Pembinaan SMK Kemdikbud RI, 2019). Management supervision is formally conducted by the education unit to monitor the implementation of management in schools (Muhitasari, 2019). Controlling products/services are produced to ensure that they are marketable to generate added

value (Sari et al., 2022). Workspace supervision to ensure tidiness and adjust to the production flow (Pasa & Suhartini, 2022). Based on the above opinions, it can be concluded that the Teaching Factory planning function emphasizes more on determining goals and designing ways to achieve these goals effectively and efficiently. The Teaching Factory organizing function focuses on the placement of personnel who will carry out the main tasks and functions of management. The implementation function relates to the activity of working on the product by mobilizing members of the organization. The monitoring function will assess the performance of the organization, compare it with certain standards, and determine corrective steps if there is a discrepancy.

Previous research by (Wahyuni et al., 2022); (Dewi et al., 2023); (Triyanto et al., 2022); (Sari et al., 2022); (Ngusman et al., 2023) discussed *Teaching Factory* management applied to Vocational High School. The focus of the five studies is on Teaching Factory management applied to Vocational High School and does not specifically discuss the implementation at the Vocational High School Center of Excellence. Therefore, the novelty of this research is to capture how Teaching Factory management in Vocational High School is included in the Center of Excellence program.

METHODS

The approach used in this research is a descriptive qualitative approach. The research was conducted at State Vocational High School 2 Temanggung, Central Java. This research design goes through three stages, namely the Pre-Field Stage, Field Work Stage, and Data Analysis Stage. Data collection techniques were observation, interview, and documentation. The informants in this study consisted of the Principal, Deputy Head of Curriculum, *Teaching Factory* Manager, Head of Expertise Concentration, and Teachers/Practice Instructors. Validation techniques with triangulation techniques combine interviews, observations, and documentation studies so that the accuracy and credibility of the data obtained can be verified. The data analysis used is the Miles and Huberman Model with steps, namely 1) Data collection; 2) Data condensation; 3) Presentation of data; and 4) Conclusion drawing and verification.

RESULTS AND DISCUSSION

Result

This research uses general management theory (planning, organizing, implementing, and controlling) and collaborates with the technical guidelines in the 2019 *Teaching Factory* Development Guide from the Directorate of Vocational Development of Kemdikbud and the 2023 *Teaching Factory* Guide from the Directorate of Vocational Development of Kemdikbud Ristekdikti. The results are as follows:

Teaching Factory Planning

Strategic partnership: The school's strategic partnership with industry refers to the *Link and Match* 8+i cooperation. This shows that the school is committed to aligning its education with industry. The Principal said: The form of school strategic partnership with industry refers to Link and Match 8 + i, namely: 1) curriculum development with industry; 2) real project-based learning; 3) guest teachers from the industry at least 50 JP per semester; 4) internships for teachers and students; 5) competency certification; 6) technology updates; 7) applied research supporting TEFA; 8) commitment to graduate absorption; and 9) other forms of cooperation...in the future, it still needs to be improved. The results of observations of industrial cooperation show that a strategic partnership has been built by the school with Vioci *Bakery* covering 8+i *Link and Match* aspects. The specified products are *pastry* and *bakery*. The cooperation document is outlined in the MoU.

Figure 1. a. Curriculum Alignment Workshop; **b.** Activities of Guest Teachers from the industry

Product: Products are designed in collaboration with industry. Things that are considered are the results of the analysis of Learning Outcomes (CP), product use value, and market interest. The Deputy Head of Curriculum said: The products chosen are pastry and bakery, based on the CP analysis, of course....the products are also in great demand. The observation shows that the Elements and CP are of concern in the analysis of product determination. *Pastry* and *bakery* were chosen as the main products.

Learning tools: The learning tools developed refer to the Merdeka Curriculum, including Learning Outcomes, ATP, TP, Teaching Modules, and *Job Sheets*. Device development begins with curriculum synchronization with industry. The Head of Culinary Expertise Competence said: Device development is carried out after curriculum synchronization...including CP, ATP, TP, MA and Job Sheet. The results of observations and document studies show that the tools prepared are adjusted to the applicable curriculum. The preparation of tools involves industry, beginning with curriculum synchronization.

Teachers are experienced in the industry: Teachers are involved in industrial internships, *upskilling-reskilling,* and competency certification. The following is an interview with a vocational teacher: .... in order to gain experience in the ever-growing industry we do industrial internships, upskilling- reskilling in turn. The results of observations and documentation studies show that the industrial culture obtained during internships has been applied by teachers in learning, such as Occupational Safety and Health (OSH), 5R culture, obeying SOP, and the obligation to use Personal Protective Equipment (PPE) during production.

Figure 2. Industrial Intern Teacher Activities

Environment and supporting facilities: The arrangement of the environment and supporting facilities is based on consultation with industry Industry-standard equipment is obtained from the Center of Excellence program. The Head of Culinary Expertise Competence said: The concept of arranging space and equipment to meet industrial standards, the school uses a consultant from Vioci Bakery... industry-standard equipment comes from the Center of Excellence program. The results of observations and documentation studies show that the environment and practical equipment are arranged following the provisions of industry.

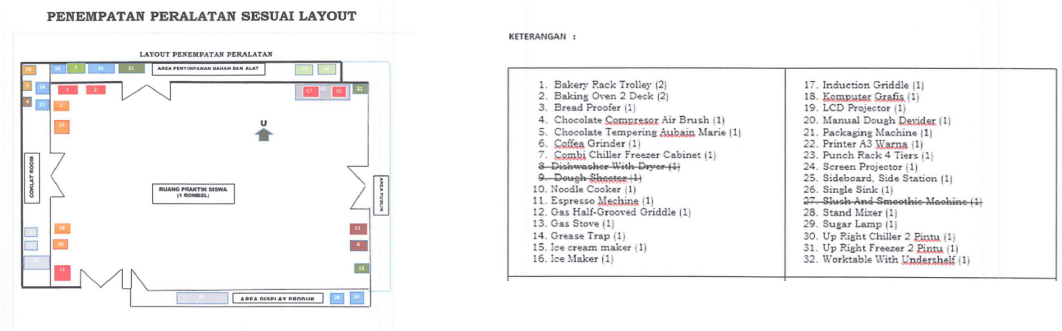

Figure 3. *Production room layout*

Governance: As a manifestation of transparent and accountable governance, daily and monthly cash reports are used as internal reports, and Independent Business/USMAN/BLUD reports as external reports. Reporting involves daily managers and is carried out periodically and in stages. The Head of Culinary Expertise Competence said: Internal management at TEFA uses a daily cash book, every month an administration is prepared for reporting to the USMAN Team, then the report is forwarded to the Central Java Provincial Education Office. The results of observations and documentation studies show the existence of daily and monthly cash books and USMAN reports.

***Teaching Factory* Organisation**

Organisation structure: The Culinary *Teaching Factory* team has been formed. Competence is taken into consideration in the selection of personnel. All teachers in the Culinary Department are involved in the team. The Head of Expertise Competence informed: The appointment of personnel is done in a coordination meeting, taking into account the competence of teachers. Observation and documentation show the formation of the *Teaching Factory* management team and organisational structure. Formally, it is integrated into the Decree on the Division of Teacher Duties.

Division of tasks: A description of the main tasks and functions of each management team personnel is also attached to the SK Division of Tasks. Regarding this, the Deputy Head of Curriculum explained: The description of the main tasks and functions of each personnel is included in the attachment to the Decree on Division of Duties. The results of observations and documentation studies show that the main tasks and functions carried out by each personnel are based on the Decree on the Division of Tasks.

Implementation of *Teaching Factory*

Schedule: A daily block schedule and a picket system are used by the *Teaching Factory* to maintain production continuity. The Deputy Head of Curriculum informed: The current schedule still uses a daily block schedule, considering the results of the analysis of the number of learning spaces with the number of students, this arrangement is most effective for our TEFA at this time. The results of observations and documentation studies show that production is carried out according to the production schedule.

Product execution: Learning is real project-based, based on incoming orders. Product work integrates learning and production. The Deputy Head of Curriculum stated: The flow of product work begins with receiving the order, preparing, and working on the order with control from the teacher. At the end of the activity, there is an evaluation. ...supervision is more often done internally in the school, industry only occasionally. Observations of product work show that the process begins with receiving orders, designing, working on orders, packaging, and delivering products. Documentation studies show that there is a *Job Sheet* to guide practical activities.

Figure 4. Product working process

Product delivery: Products are delivered to customers on time and according to specifications. Delivery service is also provided. The vocational teacher said: Product pick-up is usually at school or through a delivery service. The results of the observation and documentation study show that the delivered products have passed QC and are distributed according to the order.

Figure 5. Packing product delivery

After-sales service: The Culinary Teaching Factory is willing to accept customer complaints in person or via Whatsapp. The Vocational Teacher said: there is an after-sales service. If there is a complaint, it will be followed up immediately. The results of the observation and documentation study show that there is a WhatsApp number for customer complaint services, complaint records, and settlement reports.

Teaching Factory Supervision

Management: Oversight covers financial administration, team performance, SOP, product quality, the impact of *Teaching Factory* on student *skills*, and support received. The *Teaching Factory* Manager said: Internal supervision is carried out by the department itself...the scope of supervision includes management performance, SOP, the impact of Teaching Factory on students...support from schools is only in the form of BOS funds...external support is in the form of knowledge transfer.The results of observations and documentation studies show that financial administration has been recorded in daily, monthly, and USMAN administration cash books. The SOP also tries to be implemented according to the provisions. Each personnel works by their main duties and functions. The impact of implementation on improving student *skills* has been evaluated.

Place of practice: Supervision of the practice site not only involves industry in its design, but also emphasizes MRC activities, compliance with SOPs, implementation of OHS, and use of PPE. The Vocational Teacher informs: Supervision is carried out by the Head of the Expertise Program assisted by technicians and laboratory assistants...MRC is more often carried out as needed...borrowing and using equipment follows the SOP...during practice, students are required to apply OHS and use PPE. The practice room is also designed to be more comfortable, with fire extinguishers and exhaust fans to maintain air circulation. The results of observations and documentation studies show the existence of data on the type and amount of equipment. There is also an SOP for equipment management, a *layout of the* production room, and a maintenance schedule.

Learning pattern: Culinary*Teaching Factory learning* is an integration of theory and practice. The availability of practical materials is a concern. The Deputy Head of Curriculum is as follows: The availability of raw materials is always checked...measuring the achievement of objectives using assessment instruments contained in the Job Sheet. The results of observations and documentation studies show that the availability of raw materials is always controlled. Production is part of the learning process that refers to learning objectives.

Marketing/Promotion: This activity is carried out directly and online to reach all market segments. The Principal said: The marketing target is all circles. Media used such as IG, WA, testimonials, participating in CFD events, Temanggung Fest, and UMKM Exhibitions. Human resources are not yet ready so there is a plan for digital marketing training. Observations show that marketing is done with direct marketing and digital marketing. Direct marketing activities through Skadamart/store and exhibition stands. The results of the documentation study found promotional media in the form of Whatsapp and IG @skadabakery.

Figure 6. Marketing/Promotional Activities

Product goods/services: Sales data, consumer testimonials, market surveys, and innovations are utilized by the Culinary *Teaching Factory* to maintain the quality and sustainability of production. *Teaching Factory* Manager's information: to maintain production continuity, we have a picket team that will work on orders outside of the bok schedule. We also conduct mock studies of neighboring bakeries to obtain pricing information, as well as new product variants...Our latest product is red bean egg rolls. We also continue to develop recipes. The results of observations and documentation studies show that the school tries to maintain the quality and continuity of production. The market response is seen from the volume of sales so that it is known which products are more in demand. Innovations continue to be made, for example, *coffee bread* and red bean *egg rolls* are produced by utilizing the potential of local

Figure 7. TEFA Culinary Product Catalog

Human Resources: HR competence continues to be improved through internships, *upskilling-reskilling,* and competency certification. The *Teaching Factory* Manager said: every teacher is given the opportunity for internships, upskilling, and reskilling, followed by competency certification. The results are implemented in the classroom. The results of observations and documentation studies show that teachers are included in these activities in turn. The school tries to ensure that the human resources managing the *Teaching Factory* have relevant competencies.

Industry relations: Relevance to the development needs of the *Teaching Factory* makes cooperation possible. The *Teaching Factory* manager said: Supervision of industrial relations is seen from its relevance to the development of TEFA. The results of the observation and documentation study show that industrial relations have been built using the *Link and Match* 8+i strategy.

Discussion

Teaching Factory Planning

The initial planning for the establishment of the Culinary Teaching Factory carried out by the School Management Team is by identifying the competencies needed by the industry, especially culinary, and inventorying the resources owned by schools including human resources and production infrastructure. Furthermore, a SWOT analysis of the establishment of the Teaching Factory was carried out. As a further study, a comparative study was conducted to other schools that have run the same program. The results of the comparative study were then used to finalize the planning. The following is the planning practice:

Strategic Partnership, Teaching Factory needs to establish close partnerships with local industries so that students are involved in real projects (Irsyad & Effendi, 2023). Partnerships with industry are a must for Vocational High School that will improve the quality and competitiveness of their graduates (Islami et al., 2021). The policy direction for the revitalization of vocational education focuses on the integration of vocational education with the world of work through the 8+i Link and Match strategy (Direktorat Jenderal Pendidikan Vokasi Kemendikbud RI, 2020). In line with the above opinion, strategic school partnerships with industry have been established. The Link and Match 8+i strategy is used in the partnership. This partnership is sought to be continuously improved.Thus, this finding shows the alignment between the practices carried out by State Vocational High School 2 Temanggung and the theory that underlines the importance of strategic partnerships between vocational schools and industry. The implementation of the Link and Match strategy is also in line with the vocational revitalization policy launched by Kemdikbud. Aspects of the strategy have been implemented. However, it still needs to be improved and strengthened in the future.

Product, Aspects that must be considered in determining products in the form of goods or services in the Teaching Factory are the number of competencies that can be delivered by the product, quality standards, and use value (BizdecTeam, 2017). It was found that the Teaching Factory Culinary products have been designed with industry. CP, product use value, and market interest are taken into consideration. This shows that the Teaching Factory wants to ensure that the products produced to deliver student competencies are according to industry standards and have commercial value.

Learning tools, Learning tools are prepared according to applicable regulations (BizdecTeam, 2017). The learning tools used by Teaching Factory are developed by the school or instructional media from industry (Direktorat Pembinaan SMK Kemdikbud RI, 2019). The school curriculum needs to be contextually adjusted to the demands of the industry (Purba et al., 2024). The results showed that the development of learning tools followed the provisions of the Merdeka Curriculum. Starting with curriculum synchronization with industry. Trust the principles of the theory have been applied. The learning tools that are prepared are not only aligned with the demands of the industry but also adjusted to the applicable education regulations.

Industry experienced teachers, Planning Teaching Factory schools need to prepare experienced human resources and certified competencies from the industry or have a portfolio that is relevant and accountable (Nugroho, 2023). The results show that as an effort to ensure teachers have industrial experience, teachers are included in industrial internships, upskilling-reskilling, and competency certification activities. Thus, from the results of this study, it is known

that teachers with industry experience in managing the Teaching Factory have been prepared. This shows consistency with opinions that emphasize the importance of preparing industrially experienced human resources.

Environment and supporting facilities, Learning facilities in schools need to be organized and conditioned to adopt the order in the industry, including regulations and production materials (Nugroho, 2023). The practice room must be conditioned according to industry standards, room management uses industry-standard SOP and the equipment used for practice has industrial types and specifications (Direktorat Pembinaan SMK Kemdikbud RI, 2019). It is known from the research results that the school has consulted with industry to organize the production environment, including trying to obtain industry-standard equipment facilities through the Vocational High School Center of Excellence program. Thus, setting the learning environment according to industry standards has been pursued by the Teaching Factory.

Governance,The implementation of Teaching Factory learning is a process of building learner competencies funded by state finances, so its use and management must follow regulations (Nugroho, 2023). Schools need internal and external governance with a legal umbrella as stipulated in the provisions of the Regional Public Service Agency (Direktorat Pembinaan SMK Kemdikbud RI, 2019). Therefore, the Teaching Factory needs to apply accountable management principles. In this case, it is found that internal reporting is realized in the form of daily and monthly cash books. External reporting is in the form of Independent Business/UMAN reports. The utilization of Teaching Factory products by users/communities has led to activities like business entities/industries such as transaction activities, provision of materials, and product purchases. Thus it can be concluded that accountable reports as a result of business activities, both internally and externally have been implemented.

Organizing the Teaching Factory

Organizing is an important stage in the implementation of the Teaching Factory. This is done to ensure that the Teaching Factory can run according to plan. The following is an explanation of the organizing function that is carried out:

Organizational Structure, Schools need to form a Teaching Factory team as the person in charge and the driving force of the elements involved (Nugroho, 2023). The Teaching Factory team can be integrated with the school's organizational structure with additional duties and authorities (Direktorat Pembinaan SMK Kemdikbud RI, 2019). It is known that the Teaching Factory organizational structure has been established. The team formed is adjusted to the needs of the organization and integrated into the school's organizational structure. A Decree on the Division of Teacher's Duties was issued as a formal basis for providing additional duties for related personnel. Team members are personnel selected by school management with competence as a consideration. This is in line with BizdecTeam's opinion that the Teaching Factory organization at the school level is filled by personnel who have an understanding and mechanism of Teaching Factory (BizdecTeam, 2017). Thus a structured organizational structure has been owned by the Teaching Factory, containing personnel who are considered to have competence in its management.

Division of tasks, It is known that each personnel appointed in the management of Teaching Factory has its role required by the organization. There is a job description in the attachment to the Division of Tasks Decree. This is in line with Utomo's opinion that the organization needs details of the work carried out to achieve organizational goals, logical division of workloads, and integrated and harmonious coordination (Utomo, 2018). Thus it has been ensured that each selected personnel understands their duties and responsibilities in the organization.

Implementation of the Teaching Factory

The implementation stage is characterized by the start of the real operational activities of the Teaching Factory. This process involves a variety of continuous activities. Starting from production preparation, product work, and product delivery to consumers. The following implementation functions are carried out:

Schedule, The block schedule is an effort to organize learning process in achieving competence (BizdecTeam, 2017). This study found the use of daily block schedules and a picket system to maintain production continuity. This is important because it avoids delays, ensures production continuity, and ensures products reach consumers on time. This finding is also in line with Nugroho's opinion that product work schedules need to allocate time until the product is completed (Nugroho, 2023). Thus, time management that allows the completion of orders on time and maintains production continuity has been pursued by the Teaching Factory.

Product workmanship**,** Product work is carried out in stages: 1) working on the product until it is completed; 2) strengthening understanding through reflection; 3) measuring competency achievements; 4) supervision by industrial teachers/instructors to ensure process quality; 5) evaluation by teachers/instructors to measure the success of the process and product (Nugroho, 2023). It was found that the work on Teaching Factory products is based on orders. Product work is an integration between learning and production so that it still follows the flow of learning. Starting from planning, implementation, and reflection to evaluation/assessment. Supervision is done internally and occasionally by external parties (industry) to get guidance and suggestions to maintain product quality. Thus, real project-based learning is used by Teaching Factory in working on its products, as well as teaching students to learn to be active, and optimistic, have high commitment and initiative, and collaborate in solving challenges (Novitasari et al., 2024).

Submission of product results, In the Culinary Teaching Factory, products that have been produced are tried to reach consumers on time and according to specifications. Delivery service is also available. This convenience for customers is an effort to increase customer satisfaction. Before the product is delivered, it first goes through a quality control process. This is done to ensure that the products delivered to consumers meet quality standards and are suitable for sale. This finding is in line with a previous study by Faizah (2022) that the product is handed over to the orderer if it has passed the quality control process and is declared saleable, product delivery to consumers needs to be done with excellent service. It can be concluded that the certainty of product quality and ease of product delivery is a form of excellent service provided by the Teaching Factory for consumers.

After-sales service, A good response to consumer complaints will help maintain consumer satisfaction and trust (Nugroho, 2023). In this aspect, the Culinary Teaching Factory is willing to accept customer complaints either directly or through the WA channel. The principle of resolving complaints is to improve as effectively as possible. The results of this study indicate that responding to consumer complaints is a Teaching Factory Culinary commitment to maintaining consumer satisfaction and trust. This is also in line with the findings of previous studies by Verawaty et al., (2021) that the increasing response to customer complaints quickly and accurately, as well as providing fair solutions, will have an impact on increasing customer satisfaction. Thus the Culinary Teaching Factory tries to maintain satisfaction and trust with responsive after-sales service.

Teaching Factory Controlling

Controlling is an important thing to do. Through controlling, it can be assessed whether the Teaching Factory is running by the objectives, and areas that require attention can be identified. The following is the explanation:

Management, Teaching Factory management control includes aspects of financial administration, organizational structure, standard work procedures, implementation, impact on the institution, and support from internal and external parties (Direktorat Pembinaan SMK Kemdikbud RI, 2019). The results revealed that management control includes several elements, namely financial administration, team performance, SOP, product quality, the impact of the Teaching Factory on improving student skills, and the support obtained. Controlling is carried out by the school through the Head of Culinary Expertise Competency who acts as a liaison between School Management and Teaching Factory. This is also in line with Muhitasari's opinion that formal management control is carried out by the education unit itself (Muhitasari, 2019). Thus, supervision of Teaching Factory management is trying to be thorough and structured.

Place of practice, Controlling the place of practice includes aspects of data collection on the type and amount of equipment, equipment management, layout, maintenance schedule, and implementation of OSH (Direktorat Pembinaan SMK Kemdikbud RI, 2019). In guiding student work, teachers/instructors must also pay attention to the application of SOP and OSH by students (Faizah, 2022). Controlling the workspace to ensure tidiness and adjust to the production flow (Pasa & Suhartini, 2022). The findings in this case, the supervision function in the Culinary Teaching Factory practice room is directly carried out by the Head of Expertise Competency assisted, technicians and laboratory assistants. Controlling the place of practice not only involves indusrty in its design but also emphasizes the layout of equipment following the production flow, industrial culture applied such as MRC activities, compliance with SOP, implementation of OSH, and use of PPE. Thus the supervision of the place of practice is not only emphasized on the aspect of the place but also on the application of the industrial culture that is run.

Learning pattern, Teaching Factory learning emphasizes the importance of monitoring the availability of production raw materials, the implementation of learning that is integrated with the production process, and learning objectives (Direktorat Pembinaan SMK Kemdikbud RI, 2019). The results of this study show that the Culinary Teaching Factory cycle starts from production planning so that the availability of raw materials becomes an important part of planning, the production process becomes part of the core of learning, and assessment is based on the process and production results. Thus, the Teaching Factory Culinary learning pattern is an integration of theory and practice as the expert opinion above.

Marketing/Promotion, Controlling of promotional activities is carried out on aspects of clarity of targets, segments, market reach, methods, and actors of promotional activities (Direktorat Pembinaan SMK Kemdikbud RI, 2019). Marketing is carried out by Teaching Factory directly and online. This is done to reach a wider market segment. Direct marketing through stores and exhibition stands and online marketing through social media platforms such as Whatsapp and Instagram. Social media plays a positive and significant role in encouraging entrepreneurial intentions (Ad'hiah et al., 2024). In this digital era, teachers are required to have the characteristics of teacher skills in the 21st century, namely being able to adapt learning through the development of digital technology (Andriani, 2022). The digital competence of vocational teachers and school readiness in facing digitalization must be improved (Masnah et al., 2024). Digital competence is a competency that must be possessed by teachers in the face of current developments (Silvester et al., 2012). However, due to the capacity of human resources who are not fully ready to run digital marketing, product marketing is still carried out through a combination of direct marketing and digital marketing.

Product goods/services, Product control is carried out on quality, market acceptance, and production innovation (Direktorat Pembinaan SMK Kemdikbud RI, 2019). Controlling products/services produced to ensure that they are worth selling to generate added value (Sari et al., 2022). The Culinary Teaching Factory uses sales volume data and consumer testimonials as

input to improve quality, production sustainability, and product acceptance in the market. Market surveys are also conducted to determine market trends and changes in consumer preferences, encouraging innovation to continue. One of them is by utilizing local resources. Thus product supervision is focused on quality, continuity, and product innovation.

Human Resources, The industrial world continues to develop along with technological advances. In order to remain relevant, the human resources of the Teaching Factory managers need to improve their competence. Various self-development pathways are utilized, such as industrial internships, upskilling-reskilling, and competency certification. Increasing HR competence is important to continue to do. The findings are in line with the opinion of Irsyad & Effendi (2023) that technological changes and developments require technological investment and continuous training for teachers. The continuous self-development of human resources is an effort so that teachers are able to adjust to changes in the industrial world, which in turn allows the Teaching Factory to adapt to these technological changes and developments.

Industrial Relations, The industrial relations established between the Teaching Factory and the industry use the 8+i Link and Match strategy. This is in line with the opinion of Irsyad & Effendi (2023) that the Teaching Factory needs to establish close partnerships with local industries so that students are involved in real projects. Although the implementation of the link and match has not been perfectly realized, the relevance to the needs of the Teaching Factory development makes the cooperation relationship still maintained and strived to be continuously improved.

Based on the explanation above, an overview of how the Teaching Factory Culinary management practices are carried out is obtained. The Teaching Factory planning function emphasizes more on determining goals and designing ways to achieve these goals effectively and efficiently, as Hanafi (2019) stated that planning directs the organization in using resources to achieve goals. In this case, the Culinary Teaching Factory of Statae Vocational High School 2 Temanggung has tried to do overall planning, including establishing strategic partnerships through Link and Match 8+i, designing products based on CP analysis, and starting with Curriculum synchronization, preparing experienced human resources for industry, structuring a learning environment that resembles industry, preparing governance internally and externally as USMAN. Although optimization of strategic partnerships is still needed. The Teaching Factory organizing function focuses on the placement of personnel who will carry out the main tasks and functions of management, as stated by Yusuf et al. (2023) organizing is an important step in determining, classifying, and organizing organizational activities. The Teaching Factory Management Team is integrated into the school's organizational structure along with clear main tasks and functions. The implementation function relates to the activity of working on the product by mobilizing members of the organization. In line with the opinion of Bunyamin (2022) that implementation is the process of mobilizing subordinates to work. Implementation emphasizes the involvement of individuals in organizational activities (Utomo, 2018). In practice, the implementation of the Culinary Teaching Factory collaborates between the block schedule and the picket schedule. Products are produced through real projects go through a quality control process and are equipped with after-sales service. This real product-based learning not only equips students with technical skills but also provides a better understanding of the importance of product quality, timeliness, and excellent service for consumers. The controlling function is an activity that aims to control the course of implementation and ensure the achievement of goals (Utomo, 2018). In order not to deviate from the indicators and objectives, it is necessary to organize and control (Wahyuni et al., 2022). Controlling of the Culinary Teaching Factory is carried out starting from management, production space settings, learning patterns, marketing/promotion, products, human resources managers, and industrial relations. Supervision of management includes

financial administration reports, team performance, SOP, product quality, the impact of Teaching Factory on improving student skills, and support obtained. Supervision of the practice site includes site standards, equipment, and industrial culture. Supervision of learning patterns that integrate theory and practice by ensuring the availability of production raw materials. Supervision of marketing/promotion to reach a wider segment by utilizing direct marketing and digital marketing, although digital marketing is not yet optimal. Product supervision is focused on quality, continuity, and product innovation. HR competence continues to be improved through a variety of sustainable self-development. Controlling industrial relations is focused on activities relevant to the development of the Teaching Factory. Thus, supervision has been pursued thoroughly on the supporting aspects of the Teaching Factory, so it is known that digital marketing and product innovation by utilizing the potential of local resources need to be optimized.

Based on the research findings, the management of the Culinary Teaching Factory at State Vocational Higah School 2 Temanggung, which is included in the Vocational High School Center of Excellence, has carried out planning, organizing, implementing, and supervising the Teaching Factory with full attention and commitment. However, several aspects require further attention, including increasing Link and Match 8+i cooperation with industry, expanding industrial cooperation, optimizing digital marketing, applied research, and local resource-based product innovation.

CONCLUSION

This research has described and analyzed the steps of Teaching Factory management at State Vocational High School 2 Temanggung which is included in the Vocational High School Center of Excellence program. The management practices carried out are as follows: 1) Planning involved a strategic partnership with the industry through the Link and Match 8+i strategy, product determination based on competency achievement and market interest, development of learning tools with industry, preparation of competent teachers, environmental arrangement and facilities according to industry standards, governance as an independent business;2) Organizing involved preparation of an organizational structure integrated into the school organizational structure, division of tasks through the Teacher Task Distribution Decree; 3) Execution involved utilized block schedules, real project-based products, delivery of products after passing quality control, after-sales service; 4) Control involved management, practice settings and industrial culture, integrated learning, marketing/promotion through direct and digital marketing, quality, continuity product and innovation, continuous HR competency development, relevant industrial relations. Schools are advised to improve the Link and Match 8+i partnership, optimize digital marketing, and innovate products using local resources.

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