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Teaching Factory Model Development in Vocational High Schools

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ABSTRACT

This study aims to find a conceptual model of teaching factory in the field of air conditioning and air conditioning engineering in vocational high schools (VHS). The teaching factory development model is expected to have a solid legal foundation and be able to carry out independent financial management so that they are able to carry out sound business practices. This study uses a type of development research, namely research and development (R & D), with a 4-D (Four-D) approach. The stages in this research are define, design, development, and disseminate. The conceptual model of the teaching factory was tested for feasibility by the validator of material experts (expert judgment) and the model user, namely by the executor of the teaching factory in the field of refrigeration and air conditioning engineering at VHS 1 Magelang. The results of the study indicate that the teaching factory conceptual model consists of components, namely 1) information technology; 2) PPK-BLUD; 3) HR; 4) block schedule; 5) worksheets; 6) products/services; 7) workshops; 8) industry partnerships; and 9) system management. Based on the results of expert validation and model user responses, the teaching factory conceptual model was declared feasible to be applied in VHS. The teaching factory conceptual model has a solid legal foundation, allows for independent financial management patterns, and can carry out healthy business practices on an ongoing basis (sustainability).

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1. INTRODUCTION

In recent years, the use of the teaching factory learning and training model has been widely used in various countries to produce graduates who are skilled and ready to enter the world of work. In Indonesia, the Directorate of Vocational High Schools (DVHS) collaborated with the German government in 2011 in the Technical and Vocational Education and Training (TVET) program to improve the competence of VHS graduates by introducing learning models and teaching factory training (GIZ 2017). In Indonesia, the implementation of vocational-based secondary education, called Vocational High School (VHS), is a formal secondary level education that plays an important role in producing graduates who are competent and ready to meet the needs of employment in supporting national development. This purpose is in accordance with the objectives of the Vocational School as conveyed by Widiatna, namely that the Vocational School aims to produce graduates who are ready to enter the workforce and master the expertise in their field (A. D. Widiatna 2019)

However, ironically, based on data from the Central Statistics Agency (CSA) published in February 2019, it shows the open unemployment rate (TPT) is 5.01%. The size of the workforce in 2019 was 136.18 million people, and has increased by 2.24 million compared to 2018. Although the number of unemployed has decreased by 50 thousand people in the last year, when viewed from the level of education, vocational school graduates are currently It also still has the highest unemployment rate of 8.63% (BPS 2019)

Therefore, responding to these problems, the government, in this case, the president of the Republic of Indonesia, has instructed to revitalize VHSs. The aim of revitalizing VHS is to develop production-based learning in an effort to improve student competence. Production-based learning, or factory teaching, can integrally improve the quality of human resources in Indonesia so that graduates are absorbed into the world of work. This has been initiated by the government and has been stipulated in Presidential Instruction (Inpres) Number 9 of 2016 (Inpres 2016)

Then, to improve the quality of learning and respond to the Presidential Instruction, vocational schools began to implement learning that met the link and match criteria with the business world or the industrial world. This is in line with the ministerial regulations which suggest that competency-based vocational training and development must meet the link and match criteria with the business world or the industrial world, and in this case, the government has stipulated in Ministerial Regulation (Permen) Industry Number 3 of 2017 (Permen 2017)

Therefore, one of the best options to respond to the implementation of learning that is linked and matched with industry is to apply the concept of the teaching factory model in VHS. The concept of the teaching factory model is learning and training that combines types of competency and production-based learning models. This model allows students to carry out production and service-based practical activities that are carried out in actual and according to standard procedures for the world of work and industry. (Wahjusaputri, Marlina, and Latifah 2020)

Currently, there are many vocational schools that have implemented teaching factory programs in various regions, with different achievements and with different areas of expertise, such as the implementation of the teaching factory model at VHS 3 Malang in the field of fashion (Cahyaningrum and Agus 2020) Implementation of the teaching factory model at VHS 2 Surakarta in the field of mechanical engineering expertise (Rohmah, Efita Sari, and Wulansari 2019) Implementation of the teaching factory model in automotive expertise at VHS Muhammadiyah 2 Borobudur Magelang (Siswanto 2015b)

Furthermore, the implementation of the teaching factory model at VHS Depok Yogyakarta in the area of Patiseri expertise (Kurniawan 2018) Implementation of the teaching factory model at VHS 1 Simpang Ulim Aceh in the field of computer assembly (Abdullah 2020) Implementation of the teaching factory model in the field of fisheries product processing technology expertise at SUPM Tegal State (Fuadi 2016) Implementation of the teaching factory model for the textile craft department at VHS 6 Pontianak (Asriati et al. 2018)

However, the implementation of teaching factories or production units in general has obstacles as stated by Siswanto, namely the production unit in the form of a simple concept from the teaching factory (Siswanto 2011), several obstacles in the implementation of the production unit, namely how to ensure the legality of the school business unit, difficulties in carrying out promotion, and public perception of the quality of production carried out by school business units (Fajaryati 2013; Siswanto 2015a).

The management of the teaching factory will determine the success of the school in the future because, with the teaching factory program, teachers and students are continuously required to improve their abilities related to systematic thinking methods, self-control, mental development, vision building, and team learning so that they become teachers and students. Professional students with organizational learning media (Wiyono 2017) The teaching factory management model is a learning organization that is currently being implemented in vocational schools and is expected to be able to continue to be developed so that teachers and students have a place to increase knowledge and contextual learning experiences and insights in entrepreneurship.

The success of implementing the teaching factory in VHS can be seen from the continuity of continuous learning in carrying out production activities and providing services to customers or consumers. Likewise, schools that are still not running well in the implementation of teaching factories, production activities, or services will stop as implementation management or inhibiting factors in implementation cannot be eliminated and solutions are sought.

There are several relevant studies related to the development of the teaching factory model, as follows:

The research was conducted by (Martawijaya 2012) with the title "Development of teaching factory (TF-6M model) to improve student competence in productive subjects of vocational high schools". The research uses research and development (R & D) adopted by Borg & Gall. The results of the research on the TF-6M learning model can be used in productive subjects in VHS, and students prefer this learning model to the conventional model, namely the learning model that is usually used by tutors. The TF-6M learning model is effective in improving soft and hard skills, as well as increasing students' motivation, work ethic, and responsibility in a job. The TF-6M model is carried out in the form of a certain time block that can be used as a student competency test model or can also be used as a substitute student learning medium for industrial work practice.

The research was conducted by (Siswandi and Sukoco 2016) Development of a Teaching Factory at the Automotive Workshop of Karsa Mulya Vocational School, Palangka Raya. This study uses the Research and Development (R&D) method with an approach adopted from Plomp. The results of Siswandi's research conclude that (1) the criteria or requirements for implementing the teaching factory are having a practice room, production unit, facilities and infrastructure, supporting the environment, human resources, cooperation with the industry, commitment, and students are fully involved in the teaching factory. (2) The teaching factory can be developed and implemented in the VHS Karsa Mulya Palangka Raya automotive workshop.

The research was conducted by (Alexius Dwi Widiatna, Madhakomala, and Rugaiyah 2019) entitled "Four Pillar Teaching Factory: Teaching and Learning Management Model in Vocational and Technical High Schools. This study was conducted using qualitative research. This study describes that the teaching factory has four (4) pillars or main components, namely, block schedules, products/services, job sheets, and company work culture. Some of these components are managed by the principal and his staff by carrying out management functions, namely, planning, organizing, directing, and controlling. Relevance to researchers is that researchers try to adopt block schedules, job sheets, and company work culture into the teaching factory.

The research was conducted by (Diwangkoro and Soenarto 2020), entitled "Development of Teaching in Vocational Schools." The researcher uses the type of literature review. According to research results, a teaching factory is an industry-based learning model that utilizes the production unit as a place to run a business or production process. The construction of the teaching factory begins with the establishment of operational management, production processes, marketing processes, and evaluation processes and is integrated with the production unit as a work environment or a place to run a production and service business. Relevance to the researcher is that the researcher tries to adopt the formulation of the formation of the teaching factory by following the criteria, namely, the establishment of operational management, production, marketing, and the use of production units for production activities.

The research was conducted by (Siswanto 2020), entitled "Development of a Teaching Factory in Vocational High Schools". This study is a development research (R & D) project to create a teaching factory in practical learning in vocational high schools as part of the Light Vehicle Engineering Expertise Program. This research was conducted through five stages, namely: initial investigation; design; relocation/construction; testing; evaluation and revision; and field testing/implementation. The results of this study are the teaching factory developed at VHS ITABA Gedangan Sidoarjo following the following criteria, namely: available practice space, has a production unit, facilities and infrastructure, utilizes the environment, human resources, collaboration with industry, commitment to running a teaching factory, and students are involved fully in the teaching factory.

The research was conducted by (Haris 2017) "Management of a Learning System Based on a Teaching Factory in Indonesia." This study aims to explain the characteristics of the teaching factory at VHS Muhammadiyah 1 Klaten and the participation of teachers and students in teaching factory learning. This type of research is qualitative and uses an ethnographic design. The results of this study explain that the management of the teaching factory at VHS Muhammadiyah 1 Klaten so that it gives birth to graduates with better results is influenced by internal factors, namely: the availability of practice space; teacher competence and student competence; external factors, namely: government, industrial cooperation, and society; and the availability of production units.

The study was conducted by (Nurtanto, Ramdani, and Nurhaji 2017) and is entitled "Development of Teaching in Vocational High Schools". This study uses a type of literature review (a literature review). The results of the discussion explained that the development of the teaching factory was integrated with the production unit and managed through management functions, namely planning, organizing, implementing, and evaluating.

Based on the relevant research presented above, this research on the development of the teaching factory model was carried out by combining several existing teaching factory concepts to find a teaching factory model that fits. The current teaching factory model is still constrained by legal legality,

so it cannot be carried out continuously (sustainability). Therefore, this study tries to integrate BLUD into the teaching factory model so that it becomes a fit model to be applied in VHS.

Based on the explanation above, this study aims to find a teaching factory conceptual model that is fit to be applied in SMK. This research was conducted to determine the validity of the teaching factory conceptual model so that it can be carried out continuously. In addition, this paper will present a study of needs analysis, design of teaching factory models, development of teaching factory models, and effective teaching factory conceptual models in vocational schools so that they can be implemented in a sustainable and health-oriented manner. business practice.

2. METHODS

This study uses a type of development research, namely research & development (R & D), with a 4-D (Four-D) approach. The stages in this research are define, design, develop, and disseminate (Thiagarajan, Sivasailam, and Others 1974). The teaching factory conceptual model was developed only up to the development stage. The steps in the research begin with the definition stage, namely early-late needs analysis, student analysis, and concept analysis. The second step is to design a model based on the needs of the definition stage. The next step is development. At this stage, the validity test is carried out by 2 material experts (expert judgment) and testing by 5 users of the teaching factory model at VHS 1 Magelang.

This study was analyzed using descriptive and qualitative analysis, using data obtained through material expert validation sheets and users of the teaching factory model. Instrument validation was carried out to meet content validity and empirical validity. The coefficient of content validity, which is presented below, was determined using the Aiken's V formula to determine the coefficient of content validity.

Table 1.

Criteria for instrument validity level

V value	Validity Level
0.80 –1.00	Very high
0.60 –0.80	High
0.40 –0.60	Currently
0.20 –0.40	Low
0.00 –0.20	Very low

Source: (Suharsimi 2011)

The estimated reliability of the instrument was calculated based on the Cronbach alpha index. The classification of instrument reliability levels is presented below.

Table 2.

The level of reliability based on the value of alpha

Alpha	Reliability Level
0.00 -0.20	Not reliable
> 0.20 –0.40	Less Reliable
> 0.40 –0.60	Quite Reliable
> 0.60 –0.80	Reliable
> 0.80 –1.00	Very Reliable

3. FINDINGS AND DISCUSSION

3.1. Define

a. Front-end analysis

Based on the results of interviews with teaching factory implementers at VHS 1 Magelang in the field of refrigeration and air conditioning engineering. The teaching factory implementation is based on productive subjects, namely refrigeration systems and installations, air conditioning systems and installations, automatic control systems, refrigeration and air conditioning controls, creative products and entrepreneurship. Then, mapping of basic competencies (KD) 3 and 4 related to the material and practice of repairing and maintaining air conditioners was carried out to be used as the basis for developing the worksheet.

Preparation of facilities and infrastructure such as production workshops and work equipment has been fulfilled. In addition, human resources for the implementation of the teaching factory consist of competent teachers. Maintenance services include: (1) split air conditioning; (2) refrigerators; (3) freezers; and (4) car air conditioning. The implementation of the teaching factory has been carried out well by providing AC (air conditioner) repair and maintenance services.

The implementation of the teaching factory has been carried out within the internal scope of the school only, but the implementation of the teaching factory at this time cannot run continuously (sustainability) because it is constrained by the licensing administration. In this case, it does not yet have a SIUP (Trade Business Permit), so it does not have the power law that can legalize administrative matters between the service provider VHS and the service user (customer).

b. Learner analysis

The ability of students, especially students of classes XI and XII, already has sufficient competence to take part in the teaching factory program, while students of class X are still not competent. The current class X students are not yet competent because they are new students and have not received enough material, so they need intensive assistance from teachers and instructors.

c. Concept analysis

According to Kasman, the ideal condition of a teaching factory includes several aspects, namely: (1) learning; (2) human resources; (3) facilities; (4) practical activities; (5) industry support; (6) products/services; and (7) financial transparency. as well as (8) legality Based on this, the development of teaching factories needs to be integrated with BLUDs so that they have transparent financial management and a legal basis to improve public services.

In addition, according to (Rentzos, Mavrikios, and Chryssolouris 2015), the teaching factory program provides services with relevant educational approaches and the use of ICT to facilitate communication between academia and industry. Based on this, ICT can be integrated into the teaching factory program to facilitate teaching factory operational activities such as website media that can be used as promotional media and telecommunication for active communication between schools and industry.

3.2. Design

Based on the results of the definition stage, the proposed model construction for the teaching factory model is as follows:

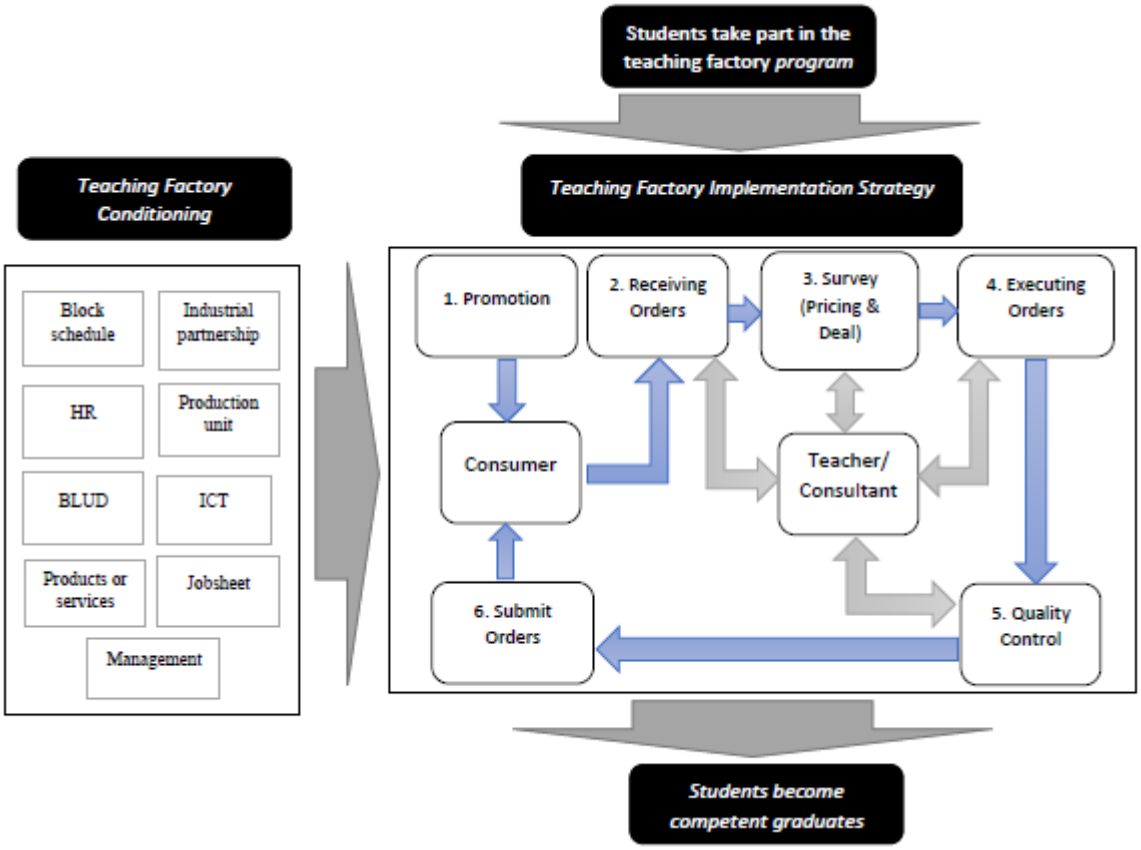

Figure 1. The Teaching Factory Conceptual Model

Based on the picture above, the teaching factory conceptual model consists of several important components, which are explained in detail as follows:

1. Information technology

The integration of information and communication technology into the teaching factory model in the era of the industrial revolution and the development of science and technology has its own urgency. Utilization of information and communication technology can be realized in the exchange of information between schools and the business or industrial world through teleconferences or electronic-based meetings and in product or service promotion activities as well as pre-order activities.

2. BLUD

The pattern of financial management is based on the Regional Business Service Agency (PPK-BLUD). BLUD is a work unit that is permitted by the regional government to provide services in the region legally, transparently, and with independent financial management so that it can carry out healthy business practices without prioritizing looking for a profit. Financial management or management patterns (PPK-BLUD) can report financial accountability to local governments according to the rules of the provincial government's regional public service agency.

3. Human Resources

Fulfillment of Human Resources (HR) in the teaching factory program in the field of TPTU expertise, such as productive teachers and additional instructors from the external sector, namely DUDI, are ready to state their readiness and commitment to run and make the teaching factory program

a success. Human resources at VHS 1 Magelang must direct students to produce quality goods or services (a sense of quality) so that they are worthy of being commercialized and able to compete in the market.

Furthermore, instructors in teaching factory activities also pay attention to the duration of production time and the use of raw materials as well as the use of effective and efficient tools (a sense of efficiency) in the production of goods or services. Teaching factory instructors are able to direct students to continue to develop innovative products or services (a sense of innovation) along with teaching factory activities in order to be able to compete in the marketing world. Each job order received by the team in charge will be guided by a sufficient number of instructors in carrying out production activities or services.

4. Block schedule

The teaching factory program can be followed by all students in grades X, XI, and XII to provide opportunities for all students by meeting the ratio of instructors and tools (1 tool for 1 student). Then students are grouped into scheduled groups called Block Schedules.

Teaching factory is learning in a working atmosphere like the industrial world, so that it has implications for the fulfillment of student competencies consisting of soft skills, hard skills, entrepreneurial skills, problem solving and teamwork like in the industrial world.

Therefore, a block schedule is needed to provide flexibility in using tools and completing job orders by each student by following the provisions of the ratio of 1 tool for 1 student, and this opportunity can be rotated to all students so that they get a learning experience similar to the industrial world.

5. Worksheet

The production process or service is equipped with a job sheet document for teaching factory performance activities. Worksheet documents describe production activities or service procedures in the performance process to help students achieve maximum results and desired competencies.

The worksheet presents material descriptions related to the products produced or services provided to consumers and presents workflows or procedures that are in accordance with actual work standards so as to provide quality production results or services.

In detail, the worksheet document presents information on knowledge, objectives, tools and materials, aspects of occupational safety and health (K3), work steps, product materials produced, and assessment sheets for testing production results, as well as validation from the instructor.

6. Products or services

The process in the teaching factory program ultimately produces a product or provides services to customers or service users. The product or service that is carried out is a means for delivering student competencies so that the more products or the more frequent service activities are carried out by students, the more their skills and expertise will be

Products or services offered by the school teaching factory, in this case, must pay attention to the sense of quality, sense of efficiency, and sense of innovation, namely products with market or industrial quality, while time and workmanship are carried out efficiently and prioritize innovation to compete in the world market. effort.

In determining the product or service to be promoted to customers, it is necessary to pay attention to the number of competencies that can be conveyed in the form of products or services, so that the more competencies that are actualized in the form of products or services, the more effective the factory

teaching program will be applied as a learning pattern that can improve the spirit of work and entrepreneurship.

7. Workshop

A workshop or production unit is a place for teaching factory production activities. The design of the work structure arrangement (layout workshop) for a teaching factory production unit must resemble the working atmosphere in industry (corporate culture), and pay attention to neat, clean, spacious conditions, as well as lighting and air circulation. The good one.

The teaching factory production unit is equipped with adequate facilities and infrastructure such as hand tools (tools), machines for production, materials, and others related to all production needs or services, and most importantly, the volume is sufficient for use by students.

Furthermore, in the laboratory, there is also good equipment management by implementing maintenance and repair and calibration (MRC) to keep the equipment ready for use by the team implementing the next project as scheduled in the block schedule.

In addition, production units or workshops that are in accordance with industrial standards also need to be equipped with work safety equipment. In other words, they also need to implement occupational health and safety (K3) management by providing K3 symbols on equipment and production unit space.

8. Industry partnership

One of the supporting and very important points in the teaching factory model is the support from the industrial world in developing the teaching factory program. The involvement of the industry in the teaching factory program can take the form of skill transfers, namely, professional personnel are sent to schools to conduct training for teaching factory human resources so that they can improve production or service capabilities and produce quality products.

In addition, the industry can also transfer technology or assist with facilities and infrastructure so that the teaching factory can update new technology in accordance with existing tools and technology in the industry. The industry can place a job order with the teaching factory from the VHS so as to increase the synergy between the VHS and the industrial world, and VHS graduates can adapt immediately or quickly in the real world of work. This is where the benefits will be obtained by the industry.

9. Teaching factory management

The teaching factory is under the supervision of the principal and is coordinated directly by the vice chairman of the curriculum (waka curriculum) in developing teaching factory activities. Meanwhile, the head of the department (kajur), the head of the workshop (kabeng), and all department staff actively participate in planning, organizing, leading, and controlling students in teaching factory activities.

In designing the product or service of the teaching factory program, the Curriculum Waka coordinates with the Head of the Department in determining the products or services to be produced in the teaching factory program, while the Deputy Head of Public Relations (Waka Humas) plans cooperation and seeks industrial support in teaching factory activities. PR also coordinates with the head of the department in making decisions on the job orders that will be accepted to run the teaching factory.

Furthermore, the vice chairman for the field of facilities and infrastructure coordinates with the Kajur as well as the head of the branch office in planning and providing infrastructure for production and service activities. The process of teaching factory activities will not run without a good managerial

system. Therefore, the jobs division needs to be described in an organizational structure so that it can be carried out properly.

3.3. Develop

The results of the validity and reliability tests by material experts and users of the teaching factory model in the TPTU area of expertise are as follows:

Table 3.

The results of the expert's assessment of the teaching factory model

Component	Average Index (V)	Category
Content quality	0,92	Very high
Instructional quality	0,91	Very high
Language	0,91	Very high
Overall average	0,91	Very high

Based on the validation data from material experts and users of the TPTU teaching factory model of expertise, it shows that the average value of the content validation coefficient (V) for all indicators of the TPTU teaching factory model guidebook is 0.91 or 0,91 ≥ 0,80. very high category. These results indicate that the TPTU teaching factory model manual is feasible to use.

Table 4.

Reliability Statistics

Cronbach's Alpha	N of Items
.627	24

Based on the results of the estimation of the reliability of the instrument, it is calculated based on the Cronbach alpha index. The classification of the instrument's reliability level is 0,627 or 0,627 ≥ 0,60with a reliable or consistent category carried out in research.

Discussion

The development of the teaching factory model in the field of refrigeration and air conditioning engineering expertise (TPTU) was developed based on the Thiagarajan development model called 4-D, namely define, design, and develop. The results of this study resulted in a conceptual model of teaching factory competence of TPTU expertise and were equipped with a description or steps for using the teaching factory model of TPTU expertise competence in VHS.

The conceptual model of the TPTU teaching factory was developed based on data obtained at VHS 1 Magelang in the field of TPTU expertise and the results of the identification of problems related to the implementation of the TPTU teaching factory, namely the absence of legal protection to improve teaching factory services in order to carry out healthy business practices and carry out an independent financial management pattern.

Therefore, this research produces a conceptual model of a teaching factory that is relevant to being implemented in VHS. The description of the model determined based on research at VHS 1 Magelang and literature review is the teaching factory model consisting of: 1) BLUD; 2) Information technology;

3) Human resources; 4) Block schedule; 5) worksheet; 6) Products/services; 7) Partnership Industry; 8) Workshops; 9) Management.

In addition, (Joyce and Weil 1980) suggest that the learning model consists of syntax, reaction principles, social system, support system, instructional impact, and accompaniment impact. The syntax of the teaching factory model is arranged systematically in the scheme, namely promotion, receiving orders, surveys (pricing and deals), working on orders, quality control, and submitting orders.

The data from the validation of material experts and users of the TPTU teaching factory model of expertise shows that the average value of the content validation coefficient (V) for the overall indicators of the TPTU teaching factory model manual of expertise is 0,91 or 0,91 ≥ 0,80 with very high category. In addition, the reliability value of the instrument testing is 0.627 with a reliable or consistent category carried out in the study. These results indicate that the conceptual model of the teaching factory in the field of TPTU expertise is very feasible to be implemented in VHS and has responded to problems related to the sustainability of the continuous implementation of the teaching factory and independent financial management.

The results of this study are supported by (Siswanto 2020) that the development of the teaching factory model in vocational schools must pay attention to certain criteria, namely: available practice space; having production units, facilities and infrastructure; utilizing the environment; human resources; collaboration with industry; commitment to running a teaching factory; and students are fully involved in the teaching factory process.

In addition, (Kasman 2017) suggested that the ideal conditions for the teaching factory include several aspects, namely: (1) learning, which consists of learning flow and teaching materials, assessment system, and block learning system; (2) human resources, who fulfill the competence of expertise in certain areas of expertise, are quality-conscious and are also effective and innovative, paying attention to the ratio of teachers and students; (3) Facilities, having complete facilities and infrastructure, implementation of repairs and maintenance calibration (MRC); (4) practical activities, meeting conditions resembling the industrial world; (5) network, having cooperation with industry; (6) products or services, being able to produce products or services in accordance with industry standards; (7) transparency, having records of financial transactions in accordance with standard accounting procedures; and (8) legality, being able to produce products or services in accordance with industry standards.

The integration of BLUDs can support the implementation of teaching factories, as (Astuti and Soenarto 2018) stated that it is time for vocational high schools to carry out independent financial management. BLUDs can be used as legal protection for VHSs in carrying out public service activities in the form of teaching factory programs or production units. Therefore, BLUD can be the main solution in independent financial management so that the teaching factory process can be more optimal, safe, and accountable.

In addition, according to (Khurniawan et al. 2021), VHS-BLUD can facilitate financial management by making income a source of funds to meet the needs of facilities and infrastructure. VHS-BLUD with easy financial management can facilitate teaching factory operational activities so as to improve teaching factory services or production. Meanwhile, (Hariyanto 2021) also emphasized that the existence of a BLUD can strengthen teaching, factory learning, and have a pattern of financial management so as to facilitate and improve public service.

The same thing was also conveyed by (Auliya and Firmanto 2020): the integration of BLUDs can clarify the teaching factory administration system, including planning, budgeting, reporting, and being

in charge. Thus, the teaching factory competence of TPTU expertise can increase transparency in administrative management so as to improve operational activities in teaching factory services.

The integration of information and communication technology into the teaching factory is the right step to improve the operational activities of the teaching factory. They (Rentzos, Mavrikios, and Chryssolouris 2015), emphasized that the teaching factory provides services with relevant educational approaches and the use of ICT to facilitate communication between academia and industry. ICT is integrated into the teaching factory program to facilitate teaching factory operational activities such as website media, which can be used as promotional media and teleconference for active communication between schools and industry.

The same thing was also conveyed by (Bikas et al. 2021) that collaboration between schools and industry requires communication tools that can facilitate the exchange of information between the two parties. In this case, devices such as PCs, tablets, and smartphones are some of the communication tools that can be used to conduct teleconference. Therefore, in the implementation of the teaching factory, the competence of TPTU skills also requires communication tools so that they can facilitate the exchange of information between schools and industry. In addition, the use of these communication tools can also be used to conduct marketing through a website that can be accessed via PC, tablet, and smartphone.

4. CONCLUSION

The implementation of teaching factories in vocational schools cannot be carried out continuously due to the absence of legal protection and an independent financial management system. Which means that the implementation of teaching factories cannot carry out good and healthy business practices. However, the integration of regional public service agencies (BLUD) and information and communication technology has been able to answer and enable healthy business practices and carry out independent financial management in the teaching factory program. The teaching factory development model consists of several components, namely (1) information technology; (2) PPK-BLUD; (3) HR; (4) Block schedule; (5) Worksheets; (6) Products/services; (7) Workshop; (8) Industry partnership; and (9) management.

The results of the validity test with expert judgment show that the conceptual model of teaching factory expertise is very feasible to be applied in VHS and has answered problems related to the sustainability of teaching factory implementation in a sustainable manner and independent financial management. In addition, this development research is limited to the validity test stage. Therefore, further research is expected to be able to test the effectiveness and practicality of the model in order to obtain a teaching factory model that is feasible to be applied in vocational schools and meets the requirements for the effectiveness and practicality of the model.

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