International Journal of Innovation, Creativity and Change. www.ijicc.net
Volume 8, Issue 1, Special Edition, ICOVET, 2019

Readiness Level of Vocational High Schools in Teaching Factory Implementation

Ratna Suhartini[1,*], Luthfiyah Nurlaela[1], Muchlas Samani[1], Ari Wardono[1], Asto Buditjahjanto[1], Munoto[1].
[1] Postgraduate Program, Universitas Negeri Surabaya. Surabaya, Indonesia
[*]Corresponding author :ratnasuhartini@unesa.ac.id

This study aims to determine the level of readiness for the application of teaching factory in the learning process of a Vocational High School Fashion Skills program. It further aims to identify weak factors that require readiness and the strong factors that support the application of teaching factory in the industry-based learning process. This research is descriptive qualitative. This research method is a survey method. The survey was conducted at schools that carry out the teaching factory learning process of five Vocational High Schools in the Fashion Design expertise program in East Java. The research instrument refers to seven parameters of the teaching factory. The results showed that the strong factors in implementing teaching factories were HR, workshop/practice room, products, and services. While the factors that are still weak are management, training learning patterns, and industrial relations.

Keywords: *Implementation, Level of Readiness, Teaching Factory, Vocational High School*

1. Introduction

The 2018 Central Bureau of Statistics (BPS) Labor Force Survey noted that from 6.8 million unemployed, 20.7% or 1.4 million of them came from graduates of Vocational High Schools (SMK). This number is quite large considering that SMK graduates are prepared to be able to go directly into the industrial world. One of the causes of the high unemployment rate is the mismatch between the quality of Vocational School graduates and industrial needs. The government's target for 2020, about Vocational graduates, namely, 80 percent of graduate's work in their fields, 14 percent are entrepreneurial, 8 percent go to Vocational higher education.

To overcome the above conditions, the government has issued Presidential Instruction (Inpres) Number 9 of 2016, which emphasises the need to revitalise SMKs to improve competency, productivity, and competitiveness of the nation. Revitalisation is needed in addition to the above conditions. There are four developments in global trends related to HR in the industrial era 4.0, which must be considered by Vocational education institutions, especially SMKs. The first trend, is the emergence of digital technology, that allows people to work anywhere. With digital advancement, learning can not only be done in formal schools and allow access to education throughout Indonesia. Facing the issue of economic inequality and global trends, the overall revitalisation of SMK is urgent.

Following up on Presidential Instruction No. 9 of 2016, the Minister of Education and Culture was instructed to perfect and harmonise the Vocational curriculum in accordance with the competencies of graduates' 'users' needs so that graduates have competitive insight or attitudes, such as work ethic, motivational achievement (achievement motivation), mastery (mastery), competitiveness, understanding the meaning of money (money beliefs), and a saving attitude (attitudes to saving). In addition, the goal to be achieved by the revitalisation of SMK is to change the paradigm. Previously it only encouraged graduate completion without paying attention to the changing labour market needs. The new paradigm is looking for everything related to the job market starting from the work culture and competencies needed in the job market changing learning from supply-driven to demand-driven, preparing Vocational graduates who are adaptable to changes in the world to become graduates who can work, continue and be entrepreneurial (Hendarman et al., 2016: 33).

Vocational High School (SMK) is education that connects and matches between schools and industries (dual / dual system education) by providing lessons in schools and training students in industry with sufficient time to have work habits (competencies) to can enter and develop in the Business World and Industrial World (DUDI), so that it can be used to increase labour absorption.

The current condition is still a miss-match between what is learned in school and the business and industry. Existing facts: (1) the curriculum does not study 100% of the Vocational course students choose. The curriculum in Indonesia averages 41% of study time to spend 58% basic Vocational lessons; (2) the tendency to open Vocational Schools with inadequate facilities; (3) the absence of information regarding the profile and needs of each industry, as a result, students do not have a picture of industry needs, job opportunities, salary levels, and careers; (4) most industries are not specific in seeking Vocational graduates, so Vocational graduates are unable to compete with a diploma or undergraduate graduates (Julius: 33). The government prepares a policy to improve the quality of Vocational education (SMK), by applying the Teaching Factory. Lamancusa, Zayas, Soyster, Morell, and Jorgensen (2008:7), revealed that the concept of teaching factory was found because of three things, namely: (1) ordinary learning is not enough; (2) students' advantage is gained from practical experience directly; and, (3) team-based learning experiences involving students, teaching staff and industry participation enrich the educational process and provide tangible benefits to all parties. Teaching Factory is learning based on modern practices and facilities for the realisation of industrial products. The implementation of factory teaching in Vocational Schools can bridge the gap in competencies needed by industry and the competencies produced by schools. The teaching factory program is a concept in production/service based in Vocational Schools that refers to the standards and procedures that apply in industry and is implemented in an atmosphere like in the industry.

The concept of learning the factory was established and successfully launched in 2012, through investment in the "mini-factory" lab at the Faculty of Science and Technology in the Free University of Bolzano. The first applications in teaching great success was due to the close connection between theory and practice (Dominik et al, 2014). Teaching factory is a learning

approach that enables the development of competencies that are effective in dealing with problems of intuitively designed learning systems. Through teaching factory these requirements are met: (1) the configuration of entire learning factory environments; (2) the course design; and, (3) the arrangement of single teaching-learning situations (M.Tisch, et al, 2016).

This research describes the development and explains the Virtual Factory Teaching System (VFTS). The VFTS provides a tool for university instructors to describe management concepts and plant design as applied in realistic settings. The focus of this paper is to present a pedagogical approach to VFTS, prototype development and its use in senior-level industrial engineering classes. The prototype developed limits the hybrid flow model. Modeling is done only at the operational level (Maged M. Dessouky, 2013).

Study of the concept of teaching factory and its application to real-life plots

The Teaching Factory paradigm consists of industrial projects, relevant educational approaches and ICT configurations needed to facilitate interactions between industry and academia. The status paradigm is currently being tested on real-life pilots, between universities and construction equipment factories. The conclusion of the pilot shows the promising nature of the Teaching Plant and the many benefits gained, both for academics and industry (Rentzos.et al., 2014).

The purpose of this study is to develop a learning model that can provide Vocational senior High School students with an authentic industrial working experience in the manufacturing and production sector in the very same school that they are enrolled. An appropriate in-school industrial experience is expected to improve students' competences and skills. A four-stage research and development method was used, involving preliminary study, development, testing and model validation. The study uses both qualitative and quantitative analysis techniques to produce a six-step teaching factory learning model (TF-6M Model). Data was gathered from teachers (n= 8) of a school in Indonesia and students of class XI (n=132) who formed the experimental and control groups in the model validation stage. Students of class XII formed the preliminary study (n=35) and development test (n=98). The focus group discussion (FGD)

revealed that the production teacher believes that the TF-6M model can be used to improve students' competences. Data from students shows that the TF-6M Model increases students' competences, is preferred by students, increases their time spent at work, and improves their soft and hard skills, motivation, sense of responsibility and work ethic (Dadang, 2012).

Teaching factory has many different models with one common goal. The aim is to improve technical education. Research has shown that learning by doing leads to greater retention and faster mastery of subjects. The second function that is very important from the incubator centre is the learning factory. In the US, this approach is used in engineering courses. Where they are manifested in incubators, they can be more effective in many practical fields. Students at the incubator centre can conduct live experiments and gain practical industry experience. This is very important in the process of engineering education (Radoslaw, 2018).

Material flow simulation is a powerful tool to identify improvements in factory operation. For conducting simulation projects, experts are required who know how to prepare, execute and evaluate simulation studies. To date, training mostly focusses on textual case studies, whereby learners perform simulation studies based on a problem and data given in a description. However, this hardly reflects the way engineers learn. They mostly are used to conducting physical experiments based on their experience (Bastian C. Muller 2017).

The next research described how to implement factory teaching in a Vocational High School. The government launched a revitalisation program through the teaching factory. The program implementation started in 2017, 2018, and 2019. To revitalise the Vocational School is to get direct guidance and assistance with materials such as making work plans. The teaching factory creates good goals, objectives and implementation of costs. Making worksheets that are tailored to the basic competencies that exist in the curriculum to the procedures for assessment, discussion of problems and solutions to problem-solving, record the pair of students from each skill competency.

The current problem is that not all SMKs get revitalisation to implement the teaching factory programmed by the government. However, some Vocational Schools implement the teaching

factory by the conditions and understanding of each school. How is the teaching factory implemented in Vocational Schools? In factory teaching, some parameters must be met, namely: management, workshop/practice room, training learning patterns, marketing promotion, products, HR and industry relations. The importance of research is to provide input to the government regarding the implementation of non-revitalising teaching factories in Vocational Schools, therefore providing information to other Vocational Schools to implement the tech factory following existing conditions. How is the implementation of the teaching factory in SMK, seen from the seven parameters of teaching factory? What are the supporting factors and obstacles to the implementation of the teaching factory?

2. Literature Review

Teaching Factory

Teaching factory is industry-based learning that aims to provide real experience and product realisation. The concept of a teaching factory is a factory to the classroom, which aims to transfer the production environment into a real practice room. The factory, in this case, is not in the actual industrial sense, but the form of learning that is carried out directly in the workplace, not in the classroom, the practice carried out is oriented towards the real industry. The basic principles of Vocational Teaching Factories in implementing teaching factory programs are: (1) The integration of work experience into the Vocational Curriculum; (2) All equipment and materials as well as educational actors are prepared and designed to carry out the production process with the aim of producing products (goods or services); (3) There is a combination of production-based learning and competency learning; (4) In production-based learning, Vocational students must be directly involved in the production process, so that their competencies are built based on production needs (Sanggam: 8).

Learning factories have been developed to teach participants methods about process improvement. The knowledge of learning is of very different topics. Abele has defined five content groups so far: production processes, logistics processes, energy efficiency, design processes, virtual/digital/organisational change (Abele & Metternich, 2015). The new learning factory content group combines different teaching methods such as lectures, role-plays and simulations as well as technical, non-technical and interdisciplinary contents. Representing the

comprehensive view includes four different simulations at learning factories: two simulations focusing on organisational problems (e.g. customer dissatisfaction, bottlenecks inside production, etc.), while the other two focus on the labour-oriented point of view (change management and co-determination rights) (Wagner et al. 2015).

There are seven teaching factory parameters, namely: management, lab workshops, training learning patterns, Marketing, HR, and industry relations (Sanggam et al, 2017).

2.1. Management

Management acts as a driver of performance. Management includes: (1) the implementation of the curriculum is sought to exceed learning needs; (2) business implementation is operational, leads to welfare and reinvestment; and, (3) school development programs that must include school capacity, range of development, and school improvement. Management deals with operational regulations, engineering, and rationalisation and is self-financed. Management includes explaining the evaluation of the availability of standard transaction recording reports, organising organisational structures and performance, standard procedures and implementing adjusting what has been determined, showing the impact of teaching factory implementation both on facilities and infrastructure and institutional welfare, internal and external support in teaching factory implementation. Management in the implementation of the teaching factory includes financial administration, organisational structure, performance and workflow SOPs, leadership, the impact of TF on institutions and the environment.

The objective of general purpose financial statements is to provide information to meet the need of those users of financial statements who are not in a position to demand reporting update to their need. The four principal qualitative characteristics are understandability, relevance, reliability, and comparability (Ijeoma, N. B, 2014).

The organisational structure defines how work tasks are formally divided, grouped and coordinated (Aquinas, 2008). Standard operating procedures are the nature of the general commands issued in writing to provide direction for situations that are usually faced to enable a person to fulfil the intentions of department or state regulations or policies (Windisch and

Crosby, 2007). Leadership is the process by which one influences others to follow one's direction or to accomplish a goal. Production planning is the preparation for all the steps required to execute the production and post-production of a project. Cartwright, S. R. (2012)

2.2. Lab Workshop

Lab workshops include data collection on the number and type of equipment, implementation of standard usage standards, the suitability of workshop layouts with industry standards, periodic schedules for MRC, and availability of K3 devices. Lab workshops include: equipment, governance of the use of tools, space, maintenance management, repair and calibration (MRC), layout workshops and application of K3. In establishing the K3 program several references can be used, one of which is OHSAS 18001: 2007 clause 4.8.3 on objective and K3 programs "Organisations must establish, maintain and maintain an OHS objective document on appropriate functions and levels in the organisation" (Ramli 2009).

2.3. Training Learning Patterns

Patterns of learning - training, including evaluating the availability of raw materials for the production process, implementing educational and training activities that are integrated into the production process, and learning objectives oriented to industrial behavior. Learning patterns include RPS and LKS (Job sheet), practice material, practice basics, training implementation, entrepreneurship, teacher/instructor activities, a corporate culture based.

The teaching factory learning process produces goods and services that have added value with qualities that can be absorbed and accepted by the community. According to Moerdiyanto (2009), the needs to be considered in the production of goods and services, among others are: (1) what products are needed in the market; (2) why the product is purchased; (3) who is the buyer; (4) how to purchase; (5) how is the quality and appearance of the product; (6) how is the model; and, (7) how is the brand, how is the service and the warranty. Production evaluation is carried out within the scope of production time (continuous or incidental), the level of product bargaining value, market quality and acceptability, and product development needs. Products or services include products for internal needs, market acceptance, delivery, quality, quality control, product innovation/diversification. Raining defined as a systematised tailor-

made program to suit the needs of a particular organisation for developing certain attitudes, actions, skills, and abilities in employees irrespective of their functional level. Clardy, A. B. (2014).

Entrepreneurship is a source of innovation, job creation and economic growth, as such it is pivotal to attract the young and the educated to become entrepreneurs. Looi, K. H., and Khoo-Lattimore, C. (2015), Organisational culture is the set of artifacts, values, and assumptions that emerge from the interactions of organisational members. The training platform aims to impart those competencies to industrial customers and students which are necessary for increasing the resource efficiency in manufacturing. This comprises of the knowledge about typical exemplary efficiency measures but more importantly methodical knowledge of how to identify and assess new resource efficiency measures.

2.4. Product and service

The implementation of teaching factories needs to be seen in the clarity of targets and market segments, market reach and to adjust the methods and actors of promotional activities. Promotional marketing includes marketing and promotion plans, communication media for teaching factories, brochures/leaflets/ other facilities (websites, CDs, etc.), mock up / sample products/models, market reach and responsible people.

Quality control usually has the effect of slowing the progress of inventory while the necessary checks are carried out (Wild, 2011). Quality is about satisfying applicable specifications. Quality is a simple matter of producing a product or delivering services whose measurable characteristics satisfy a fixed set of specifications that usually are numerically defined (Nanda, V 2016). Quality improvement teams are set up with senior representatives from each department to demonstrate high-level commitment. Quality awareness entails raising the quality awareness and personal concern of every employee. Cost of quality requires the evaluation of the cost of quality, and explaining its use as a management tool. Quality measurement is a measurement process to determine where current and potential quality problems lie.

2.5. Industrial Relations

To achieve TF implementation goals, institutions need to regularly evaluate and develop the scope of cooperation with industry in fields specifically related to TF implementation requirements in institutions. Industrial relations must also have an impact on the transfer of technology between industry and institutions and estimate the possibility of investment from the industry, forms of cooperation, project work, technology transfer, industry investment.

2.6. Competence

Competence is the capability of a person to use a system of rules such as the one of a language to perform well in the most different contexts. (Nickolas 2008). Competencies are complex abilities for self-organisation, which make it possible to respond to constantly changing complex environments with new behavioral strategies (Heyse and Erpenbeck 2009). Competencies can be built only through creative interaction when confronted with real, open and novel problem situations (Kuhlmann and Sauter 2008). According to Dehnbostel, the field of work-related learning, and thus competency development, can be divided into work-based, work-connected and work-bound learning (Dehnbostel 2007).

3. Method

This research is descriptive qualitative. The research subjects were 5 Vocational High Schools in the Fashion Design expertise program which obtained a revitalisation program. This research is a case study. Research procedures are: (1) case selection; (2) data collection is observation, interviews, and documentation analysis; (3) data analysis after data is collected is where researchers can begin to aggregate, organise, and classify data into manageable units. Data analysis is performed since the researcher is in the field, during data collection, and after all data is collected or after completion and field; (4) improvement (refinement) and enhancement (reinforcement); and, (5) report writing. The data collection procedure is done by: (1) structured interview, a) determine the informant, namely the head of the Clothing and Study Program in charge of the manufacturing factory; b) prepare the subject matter; c) start the flow, carry out and confirm the interview; d) write the results of the interview; e) identification and provisional analysis; (2) Observation and documentation. Observation of laboratory conditions, documentation of product results. Data analysis consists of three activities simultaneously: (1)

data reduction; (2) data presentation; and, (3) conclusion/verification (miles and Huberman 1992: 15-21).

4. Results

4.1. Human Resource Readiness

HR readiness is the teacher's competency seen from the qualifications and competence of teachers related to the industry. 1) Competency: teachers have 20% industry experience, teachers get workshops about 60% teaching factory and 20% of teachers to have no industry experience and have never attended a teaching factory workshop. 2) Suitability of the number and suitability of HR to run: The ratio of students and teachers is quite 60%, 40% ratio of students and teachers is lacking. 3) Readiness from the point of motivation and innovation: having very high motivation and innovation. Activities took place relatively smoothly. Constraints (funds, time, resources, etc.) that arise can be overcome properly. 4) Readiness from an innovation point of view (benefit for the user): quite high. Challenges and problems that occur can be overcome with small innovations and have an impact on the progress of the teaching factory, although still limited. 5) Readiness for teamwork: high enough teamwork is very good and they work mutually to help and strengthen each other so that the work takes place effectively and efficiently.

4.2. Industrial Relations Readiness

Readiness from cooperation: industry still provides cooperation in fieldwork practices and industry visits. Readiness from the point of project work: The practice of the product is determined by the instructor. Readiness from the point of technology transfer; there has been no transfer of technology in the form of orders from industry, experts from industry.

4.3. Product and Service Readiness

Readiness from the point of product for internal needs. Practical products have not been standardised but are still suitable for use/sale. The competency content in the production process is following the students' competency. Readiness from market acceptance: the product/service is acceptable to the market, but has not been able to display the advantages that can provide added value from the product/service. Readiness from the point of delivery:

delivery time is always right on the customer's request; customer complaints are relatively low. Readiness from a quality standpoint: The number of orders entering is close to production capacity, the price of the product is on the same level as the same product from the industry/community. Review of readiness from the perspective of quality control: product/service results have not been consistent in terms of quality

4.4. Marketing and Promotion Readiness

Readiness from the perspective of a marketing promotion plan: marketing and promotion plan already exists, but is not supported by sufficient funds, so that its implementation is still constrained.

Readiness from the point of communication media for Tefa; There is already a job order from the industry, but it has not fulfilled the potential/capacity of the institution. Cooperation with industry in the field is still very much needed. Readiness for brochures and leaflets: the use of brochures/leaflets/other means is not optimal and there is no effort to promote it, although it should still be needed. Readiness from market reach: job orders are still limited to local industries. Readiness from the person responsible for Tefa; SK issued, Job Description is not clear, marketing is just from the road and not optimal.

4.5. Readiness Training Learning Patterns

Review of readiness from the perspective of RPS and job sheets: models are used for practice and to achieve competent curriculum demands. The model is only for internal purposes and still has no sale value. Practical material is designed based on products/services and detailed into SK / KD. Readiness from the point of practice material: Practical material uses raw materials for the production process to produce products according to consumer demand. Readiness from an entrepreneurial angle; students experience learning entrepreneurship cumulatively integrated with activities limited to the production process and without interacting directly with customers Readiness from the point of view of training: production/service activities are still partial (production-oriented) and sometimes are integrated for student learning practices: Readiness from the standpoint of practice : the results of student practice are products/services that are ready to sell in their own circles Readiness from the point

of view of teaching/instructor activities: teachers, also carry out production/service work from customers that cannot be completed by students due to time constraints (still bound by educational schedules). Corporate based culture: students practice in a thick atmosphere of education, and there is still a lot of tolerance.

4.6. Management Pattern Readiness

Readiness from financial administration: there is a recording of transactions according to accounting procedures that are not managed by experts. Readiness from organisational structures: formal through the Principal's Decree, but does not refer to industry standards. Readiness from the standpoint of SOP performance and workflow; there is an SOP concept but it has not been standardised as an SOP. Readiness from the perspective of Leadership: leaders and management still have very varied concept perceptions. Readiness from the perspective of the impact of IT on the industry: complete and standard Sarpras, improving the quality of the training process. Readiness from an environmental standpoint.

5. Discussion

5.1. Management Readiness

Recording financial transactions do not comply with accounting standards. Financial recording into one with the school, the financial recording process is accompanied by evidence of transactions that have been made. Financial transactions carried out are internal financial transactions. The teaching factory organisational structure has a job description, but there is no SOP for work. The organisational structure is an arrangement of teaching work units. The organisational structure shows that there is a division of labour and how different functions or activities are coordinated. A Standard Operating Procedure (SOP) is a guide used to ensure the operational activities of an organisation or company run smoothly (Sailendra, 2015: 11). The function of a SOP is as follows. Facilitate the task of the team/work unit, know clearly the obstacles and easily tracked, directing to be equally disciplined in work, as a guide in carrying out routine work. Performance SOPs and Workflows already exist but do not refer to industry SOPs. School leaders and those in charge understand the policies correctly and are reflected in school documents. The impact on the institution does not directly impact but has a direct impact on education. Support from the internal environment is still minimal.

5.2 Workshop Readiness

Amount and type of firefighting equipment, but have not met the standards as in Industry. Students work with a block system, using available equipment. The use and lending tool management is managed with a clear SOP, Inventory of equipment is carried out consistently. This supports the smooth use of tools. Tools ready to use. The size of the practice room is inadequate and there are no layouts. The room used for teaching factory is the same as the practice room used for other subjects. The arrangement adjusts to the available space. The practice room is also used for learning theory. So the arrangement is in the form of classrooms, which are equipped with equipment. Maintenance, Repair & Calibration already exists, but it has not been run consistently. Not done regularly because of controlled maintenance costs. Layout workshop is not suitable for industry. The production process in schools is different from in the industry. In the industry the process of combining each panel into a product that conforms to specifications, but in school, one garment is sewn by one person. Industrial culture does not appear so that the atmosphere of the work environment is less felt by students.

5.3 Readiness Training Pattern Training

The practice material is designed based on products or competency standard product parts, the results of practice are products that are worth selling. The competency standard in the learning implementation plan is following the syllabus, there is no change because it has not yet received training related to a learning plan with a teaching factory. By using the 2013 curriculum and syllabus learning plan the learning process runs smoothly. In the teaching factory implementation, it is expected that students will learn entrepreneurship related to the products produced. However, students experience simulative entrepreneurial learning that is integrated with activities limited to the production process and without interacting directly with customers. Production/service activities are still partial, sometimes integrated with student practice learning. The results of student practice are products that are ready to sell among themselves. The reason is a lack of promotion and lack of trust from the public because there is no support from the industry. In the learning process using the BLOK schedule with level 3. Practical activities applying industrial culture, using time targets and production efficiency. The practice is packaged in learning for the achievement of Hard skill competencies by considering work ethics.

5.4 Product and Service Readiness

The products and services produced have not been realised and are following the delivery times. The product can be accepted in the market but has not been able to display advantages that can provide added value to the product, the bargaining value is still low to moderate, there is still a delay in delivery time and there are still complaints. Less standardised products, prices are cheaper than products on the market. Quality control rejects less than 5%. The product produced is what the market needs. Production can meet the needs of the community and Vocational Schools. The revenue generated can cover operational financing and as an investment meeting internal needs, specifications, product excellence is accepted by the market.

5.5 The readiness of Human Resources / Teacher Teachers

The instructor is the teacher himself and teaches other subjects. The teacher has internship experience in the industry. The number of teaching factory HR managers is 1 to 2, but the distribution is for all teachers. The activity took place relatively smoothly. Constraints (funds, time, resources) that arise can be overcome properly. Problems that arise in implementation can be overcome, but have not been able to innovate. Innovation has not yet led to the use of a product or service. There is good teamwork but it has not been optimal to support the progress of implementing teaching factory.

5.6 Industrial Relations Readiness.

Project work is based on practical assignments following the syllabus and is determined by the teacher. There is cooperation from industry, however only in the practice of fieldwork.

5.7 Promotional Marketing Readiness

There are promotional activities, the implementation is carried out sporadically. Promotion is also carried out through social media by students and teaching teachers, a limited market segment of the school environment. More professional marketing is still needed to introduce institutional capabilities. There is an official responsibility but the job description is unclear. Marketing promotion is done through leaflets and social media. Market reach is the school and

community environment. The person in charge of marketing is the teaching teacher. Schools also make samples of finished products, to ensure order.

6. Conclusion

Management readiness is lacking readiness in financial record and SOPs of work units in the workshop. The leadership provides a policy to carry out a teaching factory so that the teaching factory is ready to be implemented, the obstacles encountered during the teaching factory process can be overcome. The results have a direct impact on education. The practice room needs to be prepared, that is, adjusting the area and layout to industry standards. The equipment and practice room lending system is well-inventoried. Practice materials are available at school, provided after receiving an order. MRC is not done regularly. MRC is done when there is damage. Teacher readiness is to have high motivation. Teacher competence is still limited to workshops in the industry. Product readiness needs to be improved. The product is worth selling but still has a low bargaining value. Customer trust in institutions is also low. Products meet local needs. Therefore, marketing and promotions are needed that are supported by schools and industries. The readiness of industry support is very low. Required in terms of training, internships and mentoring during the production process.

References

1. Moerdiyanto. (2015) 'Pengaruh Tingkat Pendidikan Manajer Terhadap Kinerja Perusahaan Go-Public', Jurnal Cakrawala Pendidikan. Doi: 10.21831/Cp.V1i1.4195.
2. Abele, E. Et Al. (2015) 'Learning Factories For Research, Education, And Training', In Procedia Cirp. Doi: 10.1016/J.Procir.2015.02.187.
3. Ijeoma, N. B. (2014) 'The Impact Of International Public Sector Accounting Standard (Ipsas) On Reliability, Credibility And Integrity Of Financial Reporting In State Government Administration In Nigeria', International Journal Of Technology Enhancements And Emerging Engineering Research.
4. Looi, K. H. And Lattimore, C. K. (2015) 'Undergraduate Students' Entrepreneurial Intention: Born Or Made?', International Journal Of Entrepreneurship And Small Business, 26(1), P. 1. Doi: 10.1504/Ijesb.2015.071317.
5. Moerdiyanto (2009) 'Teknik Monitoring Dan Evaluasi (Monev) Dalam Rangka Memperoleh Informasi Untuk Pengambilan Keputusan Manajemen', Economic Journal.
6. Rentzos, L. Et Al. (2014) 'Integrating Manufacturing Education With Industrial Practice Using Teaching Factory Paradigm: A Construction Equipment Application', In Procedia Cirp. Doi: 10.1016/J.Procir.2014.01.126.
7. Tisch, M. Et Al. (2016) 'Learning Factory Design: A Competency-Oriented Approach Integrating Three Design Levels', International Journal Of Computer Integrated Manufacturing. Doi: 10.1080/0951192x.2015.1033017.
8. Wagner, P. Et Al. (2015) 'Learning Factory For Management, Organisation And Workers' Participation', In Procedia Cirp. Doi: 10.1016/J.Procir.2015.02.118.
9. Cartwright, S. R., 2012. Pre-Production Planning For Video, Film, And Multimedia. Usa: Taylor & Francis.
10. Clardy, A. B., 2014. Managing Human Resources: Exercises, Experiments, And Applications. New York: Psychology Press.
11. Dehnbostel, P., 2007. Lernen Im Arbeitsprozess. In: Studienreihe Bildung Und Wissenschaftsmanagement. S.L.:Waxmann Munster.
12. Hendraman, Suharti, Nizam & Fathurrahman, 2016. Revitalisasi Pendidikan Vokasi. Jakarta: Dit Psmk.

13. Heyse, V. & Erpenbeck, J., 2009. Kompetenztraining.. S.L.:Schäffer-Pöschel.
14. Keyton, J., 2010. Communication And Organisational Culture. California: Sage Publication, Inc.
15. Kuhlmann, A. M. & Sauter, W., 2008. Innovative Lernsysteme. Berlin: Springer.
16. Muller, T. & Berger, M., 2012. Ipsas Explained: A Summary Of International Public Sector Accounting Standards, 2nd Edition. S.L.:John Wiley & Sons.
17. Wild, T., 2011. Best Practice In Inventory Management. New York: Routledge.
18. Windisch, F. C., Crossby, F. C. & Crosby, F. C., 2007. A Leadership Guide For Combination Fire Departments. Canada: Jones & Bartlett Learning.
19. Yulius, M. I., Mardhianda, W. P. & Anugerah, B., 2017. Kebijakan Pengembangan Vokasi Di Indonesia 2017-2025. S.L.:Kementerian Koordinator Bidang Perekonomian Republik Indonesia.