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Implementation of *Work-Based Learning* at Teaching Factory in Vocational Education

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Abstract. Vocational education aims to prepare graduates to be work-ready. Vocational education institutions, as preparer and providers of skilled labor candidate, must be able to utilize their resources and network partnerships resources with outsiders effectively. One way to meet the objectives of vocational education is to apply work-based learning in teaching factories. Work-based learning is a Contextual teaching-learning (CTL) approach where the business world or industrial world provides a set of structured work-based learning experiences. While teaching factory is the development of the production unit, namely the implementation of industrial partnership systems in the existing production units at SMK. The implementation of work-based learning in teaching factories in vocational education is expected to be able to increase the competitiveness of graduates.

Keywords: work-based learning, teaching factory, vocational education

INTRODUCTION

The current condition of Vocational Education receives special attention from the government, especially related to a number of issues that can hinder the government's efforts in increasing the number of graduates of high competence and character in vocational high schools to prepare workers who are ready to compete in the era of the ASEAN Economic Community (AEC). Indonesia holds the title as one of the world's largest countries, with a population of more than 250 people. Indonesia has a complex education system. The vocational education system in this country is faced with various major challenges that require special attention and effort from various parties involved directly or indirectly in the implementation of vocational education (Indriarturahmi & Sudianto, 2016; Yoto, 2016).

The growth of Vocational High Schools (VHS) in Indonesia is growing rapidly in terms of numbers and interests. The existence of VHSs is considered important in creating skilled workers who are ready to work in industry. Along with the changing times, the need for human resources has also increased in quality. This is a challenge for VHSs to continuously improve their quality. Zazin (2011) stated that the quality of education is an issue which is used as the main agenda to be addressed in the development of education policy, because only with a quality education will be acquired quality graduates who are able to establish themselves, family, community, and nation.

VHS Revitalization Program is expected to be a problem solving in improving the quality of education and training services in professional VHSs so that it can in the future expectations, including making VHSs the school of choice by the community because of the vast opportunities to be working in the business world and industrial world, creating high quality vocational graduates who have high competence and character so that they become a workforce that is ready to compete in the global era and produces vocational graduates who have the courage and entrepreneurial ability (Inpres, 2016)

According to (Kemendikbud, 2017) in the VHS Revitalization Implementation Strategy. There are 10 steps of VHS revitalization, revitalization of human resources, building a management administration system (MAS) based on management information systems (MIS), link and match with industry, industry-based curriculum, teaching factory, use of video tutorial media and video-based e-report skills portfolios, professional certification testing, fulfillment of facilities and infrastructure,

developing local wisdom, and the role of VHSs as drivers of the local economy. Teaching factory is one of the most important parts in improving the quality of vocational schools.

Teaching factory is an industrial activity in schools to provide services to the general public around the school environment, with teaching factories the community will be closer to vocational schools because they feel that vocational schools are part of the community that can be together and integrated with community life. In other words teaching factory is a school company that provides services to the needs of the community.

The existence of a Teaching factory in VHS, students can do practical work as they work in the industry. Teaching factory teachers provide direct field experience to teachers to be able to be creative in doing technology products and customer demand. The school will be proud and become a favorite with a teaching factory that runs effectively.

Work based learning in teaching factories becomes the concept of learning in real conditions to bridge the competency gap between the knowledge provided by schools and industry needs so that it is expected to improve the quality of vocational education (Kuswantoro, 2014).

Teaching factory (Tefa) provides benefits for various parties, namely: for students, for teachers, for SMKs, and for industrial partners. For students, they can do Industrial Practices (IP) in their own school which is in Tefa. Tefa is basically an industry in schools that can be used for learning. Tefa also contributes to increase student's readiness to work (Komaruddin, et. al,2018).

Tefa is basically an industry in schools that can be used for the learning process by students. For teachers Tefa provides benefits to provide opportunities for teachers to create and innovate new products in serving customers. In addition, teachers can practice production management, production processes and learning entrepreneurship. The existence of Tefa, the school will get recognition from the community that the school is able to produce skilled workers and provide real work experience for students. Tefa is also an embodiment of the link and match policy that has been continuously conveyed in various opportunities for the development and improvement of the quality of education in vocational schools

VOCATIONAL EDUCATION

Act Number 20 the Year 2003 Article 15 concerning the National Education System explains that "Vocational education is secondary education which prepares students especially to work in certain fields". Work in a particular field as intended, i.e. meet the needs of available jobs in accordance with the types of jobs required by the industrial world. Therefore, the application of the diversification principle in developing a vocational curriculum must be realized by orienting to the type of field or expertise that is dynamic in accordance with the needs of the industrial world. Vocational schools in their development must be able to follow the development of science and technology and the pace of industrial development. This means that managers of vocational education must not remain silent, but must always be creative to follow the pace of development in the industrial era 4.0. In this era, the industry must be developed including the teaching factory in the vocational school.

This was made clear by Pavlova (2009:8) who revealed that, "Change is associated with innovations in science and technology and the requirements to prepare knowledge workers, together with the demands imposes by changing the nature of the working world, posed challenges to vocational education ". This issue emphasizes that, with the development of science and technology it becomes a challenge for vocational education to prepare skilled workers who have the work experience needed by the industry in accordance with developments in the working world.

Vocational High School (VHS) aims to prepare students to work either independently or to fill existing job openings as skilled mid-level skilled workers in accordance with their competencies (Wagiran, 2010). Such an objective brings the consequence that VHSs are required to be able to equip

their graduates with a set of competencies that are in accordance with the demands of employment needs. Therefore, vocational education programs are more focused on developing the student's ability to carry out certain types of work. To be able to meet the needs of the work demands, vocational schools must be able to provide sufficient facilities in the form of space and practical equipment for students according to the expertise program in the school. Practical activities are a characteristic of vocational schools and a necessity for vocational schools This is in line with the basic concept of vocational education, namely preparing middle-level technicians to work in the industry and fill new job opportunities that are open in line with the development of the industrial world.

In order to improve the standard of living of a person through vocational high school, vocational graduates must be able to meet the qualifications of expertise needed by industry. According to Muliati (2008) these skills include: (1) self-management ability; (2) conceptual skills; (3) creative problem solving; (4) holistic thinking; (5) self-directed learning skills; (6) information management; (7) team work and group learning; (8) communication skills; and (9) fault diagnosis and rectification. These abilities are interrelated with one another, the ability of one another can not stand alone, but is a solid unity that enables someone to succeed in working in the industry

WORK BASED LEARNING IMPLEMENTATION IN TEACHING FACTORY

Little (2006) states that work-based learning is learning that occurs as a result of activities in the workplace. Work based learning is used as terminology in various countries for programs in vocational education in order to gain experience from the world of work. Work based learning has a function so that students are ready in the transition from school to work to learn the reality of the world of work and be ready to make the right choices at work (Paris & Mason, 1995).

Teaching factory in vocational schools really helps students in learning real life as they learn in industry, in other terms commonly called work-based learning. This learning model is suitable for vocational education as a way of learning work concepts, work training, work culture, work motivation, work discipline, and learning responsibilities in dealing with various situations at work.

Examples of the implementation of work-based learning in teaching factories such as requests for the manufacture of products from the industry carried out by students in schools. Here, the students have learned to help activities at the teaching factory to make products ordered from industry with guidance from the teaching factory supervisor in the school. Teaching factory in vocational schools must be adjusted to the potential of existing resources in schools which include: the ability of the supervising teacher, the infrastructure available in schools, the potential and ability of students to take part in activities in the Teaching factory, the managerial ability of the principal, the supporting capacity of the community, and a superior expertise program to be developed into a Teaching factory. The teaching factory implementation in vocational schools has integrated the concepts of business and vocational education in accordance with relevant expertise competencies. According to Paidi (2013), in the implementation of work-based learning in teaching factories, the things that must be considered are (1) competency standards used in teaching factory implementation, namely the competencies needed in the industrial world, with competency-based teaching in industry, it is expected that students are ready to face the demands of the industrial world; (2) Classification of students in the teaching factory process is based on academic quality and talent/interest, students with a balanced quality between academics and talent/interest skills get a large percentage to enter the program, students who lack these two things it is recommended to take the easiest part; (3) The learning media used in the teaching factory process uses production work as a medium for the learning process. Production work can be in the form of industrial orders or standard products. This product must be understood first by the instructor as a medium for competency development through product function, dimensions, tolerance, and completion time; (4) Equipment and tools (toolkits); (5) Instructors who have academic qualifications and also have industry experience. Thus, they are able to transform

knowledge and "know how" as well as "supervise" the process to be able to present "finished products on time"; (6) Assessment of learning achievement; and (7) Competency recognition, that is assessing students' competencies using the National Competency Assessment, where certified assessors make observations on the ability of students to complete work assignments under the national competency standards organization.

In accordance with PP No. 41/2015 article 6 paragraph 1 states that the implementation of competency-based industrial vocational education must be equipped with LSP, teaching factory and TUK, thus each Vocational School must be able to apply the teaching factory learning model. This shows how important the Teaching factory must be in vocational schools. Specifically, at the 2015-2019 Ministry of Education and Culture Strategic Plan it has been targeted that up to 2019 the teaching factory will be implemented with more than 1,000 vocational schools. Through the teaching factory learning model, students are expected to gain learning experience in accordance with the real situation in the industry (workplace) as a whole so that students will master the competencies and characters that are in accordance with the needs of the industrial world (Directorate of PSMK, 2018)

STAGES OF TEACHING FACTORY IMPLEMENTATION IN VOCATIONAL SCHOOLS

Preparation Stage

The preparation phase consists of socialization, the formation of a teaching factory implementation team, preparation of plans and scope, and preparation of learning tool documents. First, socialization, the implementation of the teaching factory learning model requires strong support and commitment from management and all stakeholders, because this model requires changes in the learning paradigm. Teaching factory applies to all subjects and not only to productive subjects. The socialization was carried out with the aim to garner commitment and involvement from all stakeholders as well as strong management and leadership support so that the application could run well. Second, the formation of a teaching factory implementation team. The Implementation Team is at the institutional level and consists of people who have an understanding of the vocational education objectives as well as understanding the stages and mechanisms of implementing teaching factory learning models. The working period of the implementing team is determined as needed. Third, the preparation of plans and scope. The work plan and scope of the teaching factory implementation are prepared by considering the readiness of the available resources at the institution. Fourth, Compilation of Learning Tools Documents. Learning Tools documents are prepared by referring to the applicable terms, including product types, job sheets, and block schedules and other documents.

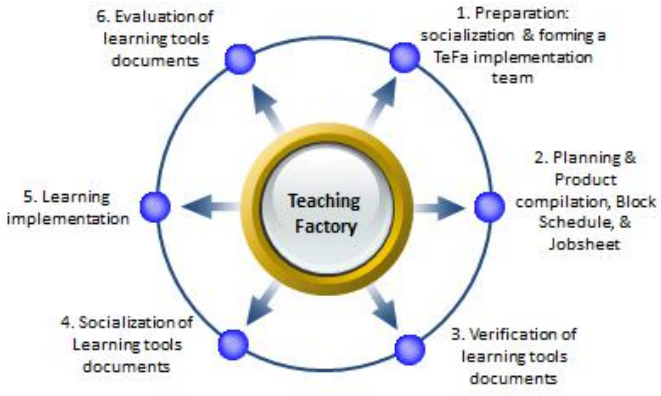

Figure. 1 Teaching factory Implementation Stages

Implementation Stage

The Implementation stage of teaching factory consists of (1) Implementation of teaching factory model by referring to the learning media documents; (2) Assistance and strengthening stakeholder understanding to minimize resistance to something that is considered new, Coordination between subject teachers must be done from the beginning of the preparation process; and (3) Monitoring and controlling activities are carried out to determine the strengthening efforts that must be done. Then, teaching factory implementation stages can be seen in Figure 1.

Evaluation Stage

The evaluation stage aims to see whether the implementation of the teaching factory learning model can have the impact as expected and to provide recommendations for strengthen and improvement efforts needed in the implementation of teaching factory in the next school year.

CONCLUSION

Vocational education has the aim to prepare graduates to be work-ready. Vocational education institutions, as preparer and labor candidate providers, must be able to utilize their resources and network resources in partnership with outsiders effectively. One way to meet the objectives of vocational education is to apply work-based learning in teaching factories, work-based learning is a Contextual teaching-learning (CTL) approach where the business/industrial world provides a set of structured work-based learning experiences. While teaching factory is a development of the production unit, namely the application of industrial partner systems in the existing production units at VHS. The implementation of work-based learning in a teaching factory in vocational education is expected to be able to improve the student's competitiveness.

REFERENCES

Direktorat PSMK. (2017). Panduan *Teknis Teaching Factory.* Jakarta: Direktorat PSMK

Indriaturrahmi & Sudiyatno. (2016). Peran Dunia Usaha dan Dunia Industri dalam Penyelenggaraan SMK Berbasis Kearifan Lokal di Kota Mataram*. Jurnal Pendidikan Vokasi, 6*(2): 162-172.

Instruksi Presiden Nomor 9 Tahun 2016 tentang Revitalisasi SMK.

Kemendikbud. (2017). *10 Langkah Revitalisasi SMK Revisi*. Jakarta: Kemendikbud.

Komaruddin, et. al. (2018). Contribution of Teaching Factory, Basic Knowledge, And Self Efficacy to Vocational Competence and it's Impact to Work Readiness. *International Journal of Novel Research in Education and Learning, 5*(1), 1-7.

Kuswantoro, A. (2014). *Teaching Factory*. Yogyakarta: Graha Ilmu.

Little, B. et al. (2006). *Employability and Work-Based Learning*. London: HEA.

Muliati, A. (2008). *Evaluasi Program Pendidikan Sistem Ganda (PSG) (Suatu Penelitian Evaluatif Berdasarkan Stake's Countenance Model Mengenai Program Pendidikan Sistem Ganda pada Sebuah SMK di Sulawesi Selatan)*. Disertasi tidak diterbitkan. Jakarta: PPs UNJ.

Paidi. (2013). *Teaching Factory Sebagai Pendekatan Belajar di SMK*. Admin Diknas Kota.

Paris, K.A., & Mason, S.A. (1995). *Planning and implementing youth apprenticeship and work-based learning*. Wisconsin: Center on Education and Work, University of Wisconsin.

Pavlova, M. (2009). *Technology and Vocational Education for Sustainable Development: Empowering Individuals for the Future (Volume 10) (R. Maclean, Ed).* New York: Springer.

Peraturan Pemerintah No. 41/2015, tentang: Peraturan Presiden (PERPRES) tentang Kementerian Badan Usaha Milik Negara

Undang-Undang Republik Indonesia No. 20 tahun 2003 Tentang Sistim Pendidikan Nasional. 2003. Jakarta: Departemen Pendidikan Nasional Republik Indonesia

Wagiran, (2010). *Pengembangan Pendidikan Kejuruan Berbasis Potensi Daerah dan Sumber Daya Alam Dalam Mendukung Continuing Vocational Education*. Yogyakarta: Universitas Negeri Yogyakarta.

Yoto. (2016). Vocational education development strategy to improve quality of human resources in dealing with Asean Economic Community. AIP Conference Proceedings 1778.

Zazin, N. (2011). *Gerakan menata Mutu Pendidikan, Teori dan Aplikasi*. Jakarta: Ar- Ruzz Media.