



Using Teaching Factory Model for Improving Student Employability Skills in Vocational High School

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Abstract. The purpose of this study is to describe the implementation and the role of the Teaching Factory as an effort to improve the employability skills. The study was conducted in 8 vocational schools majoring in Accounting in Surakarta. Research using ethnographic design. The data collection technique used in-depth interview, observation, and documentation. The research informants were 40 people consisting of the principal, vice principal for curriculum, and 3 students each per school. The data validity technique used prologue engagement, participant observation, and triangulation. The steps of data analysis were conducted through data reduction, data presentation, conclusion drawing and verification. The results of the research (1) teaching factory activities carried out at SMK majoring in Accounting, namely practice in mini banks, Field Work Practices, practice in computer laboratories and practices in accounting manual laboratories (2) schools cooperate with DUDI in implementing Factory teaching, namely in the implementation of work practices fieldwork, curriculum preparation, preparation of learning materials, and classroom learning. The results of the study provide recommendations for the need for SMK to create a planned teaching factory program with DUDI and involve more project-based student activities to increase student employability.

Keywords: teaching factory · employability skill · SMKs majoring in accounting · quality of graduates · work readiness

1 Introduction

The changing world is currently entering the era of the industrial revolution 4.0 and the era of society 5.0 where information technology has become the basis for human activities. With the development of digital technology and the internet, everything is borderless with unlimited use of computing power and data. This era will also disrupt various human

activities, including the field of education [1]. With these changes, they will affect the need for workers with abilities in accordance with the existing developments. Schools that have a role in preparing human resources, of course, must follow the needs of the labor market share [2].

In Indonesia, secondary schools are divided into two criteria, namely Senior High School (SMA) and Vocational High School (SMK). These two schools have different directions of educational goals, education in high school is more strengthened in general learning so that it is expected to have good academic abilities to be projected to continue to college. Meanwhile, vocational education is more strengthened for soft skills and hard skills which are expected to create graduates who are ready to work [3].

Data from the Ministry of Education and Culture shows the number of Senior High Schools (SLTA) in the 2017/2018 Academic Year reached 27,205 schools. This figure consists of 13,495 Senior High Schools (SMA) and 13,710 Vocational High Schools (SMKs). With the number of high school students as many as 9.69 million students consisting of 4.78 million high school students and 4.9 million vocational students [5]. The data shows that the burden of SMK in educating graduates who are ready to work has a fairly high number of students. Students' interest in continuing to Vocational High School did not fully provide the expected results, in early 2018 the SMK open unemployment rate was the highest percentage compared to the one of other education levels [6]. The open unemployment rate for SMK graduates is influenced by many factors, including the availability of a number of job vacancies that are not in accordance with the competencies possessed by students and the quality of graduates that does not meet the industry standards [7].

Efforts to improve the quality of Vocational High Schools must continue to be carried out, the new paradigm of vocational secondary learning is learning that pays attention to demand driven, referring to competency standards that apply in the work or industry world (SKKNI), implemented with a dual system in schools and in industry or the business world, in the form of real activity [8]. Production/service-based learning that refers to the standards and procedures applicable in the industry and carried out in an industry-like atmosphere is known as *teaching factory* [9]. The implementation of the teaching factory requires the absolute involvement of the industry as the relevant party in assessing the quality of educational outcomes in SMK. [10]. The basic conception of the teaching factory aims to transfer the production environment in the industry into the practice room in the classroom. [11]. The real life of production is needed to improve the competence of real activities-based learning from the daily industrial practice [12–14].

Factory teaching learning is a learning model in production/service-based vocational high school that refers to standards and procedures applicable in the industry and is carried out in an atmosphere like what happens in the industry. Teaching Factory (TEFA) is a learning concept in a real situation to bridge the competency gap between the knowledge provided by the school and the needs of the industry [15]. TEFA is the development of the production unit, namely the application of the partner industrial system to the existing production units in SMK. The production unit is the development of the school's business sector in addition to increasing school income which can be used in efforts to maintain equipment, increase human resources, and other school activities, as well as to provide students with real work experience [16, 17]. The application of the

production unit itself has a legal basis, namely Government Regulation No. 29 of 1990 article 29 paragraph 2, namely "To prepare vocational high school students to become workers, in vocational high schools a production unit that operates professionally can be established."

Learning through the teaching factory aims to develop the character and work ethic (discipline, responsibility, honesty, cooperation, leadership, etc.) needed by the business and industrial world (DUDI) and to improve the quality of learning outcomes from just equipping competence (competency-based training) toward learning which equips the ability to produce goods/services (production-based training). Related to this, it is necessary to study how the effectiveness of the implementation of the teaching factory model in SMK as an effort to improve the quality of graduates. This study aims to obtain material for the formulation of the teaching factory model policy in SMK as an effort to improve the quality of graduates in SMK, with a focus on the study of the accounting field. The discussion includes the implementation of the teaching factory, the impacts, and the obstacles faced, then drawing conclusions as recommendations for policy making.

2 Research Method

This type of research is qualitative with an ethnographic design. The research was conducted in all SMKs majoring in Accounting in Surakarta City. Of the 8 vocational high schools, the researchers focused on 4 vocational high school that carried out the teaching factory program, namely SMK N 1 Surakarta, SMK N 3 Surakarta, SMK N 6 Surakarta, and SMK Muhammadiyah 2 Surakarta. The focus of the research site is based on the implementation of the teaching factory program at the schools. The data collection technique used in-depth interview, observation, and documentation. Interviews were conducted with 40 people who were directly involved in the implementation of teaching factory learning including the principal, vice principal of the curriculum section, and students. Interviews were conducted directly and in depth related to the teaching factory-based subject curriculum, the implementation of teaching factory-based learning, the impacts and constraints of the teaching factory implementation and others.

While the observation method is carried out to observe school facilities, facilities provided by industrial partners, and teaching factory-based learning activities. The documentation method was used to collect data related to learning designs, student activity documents, curriculum documents, and other documents that will later strengthen the research data. The data validity techniques used included prolonged engagement, participant observation, and triangulation. Data analysis techniques include data reduction, data presentation, and drawing conclusions.

3 Research Results and Discussion

Teaching Factory in SMK majoring in accounting in Surakarta City has a goal to improve the skills of students. Teaching factory is a learning model that is oriented to business and production. With the implementation of the teaching factory, students can learn directly in real activities through the guidance of teachers or expert technicians from

the companies or industrial world involved. Factors that come from the teacher are the strategies or learning methods used and the readiness of the teacher to master the learning material (Firdausy, Setyaningsih, & Waluyo, 2019). The Teaching Factory program is a combination of existing learning, namely, Competence-Based Training (CBT), and Production-Based Training (PBT), that a process of expertise or skill (life skill) is designed and implemented based on actual work procedures and standards. One of the teaching factories established in SMKs majoring in accounting in Surakarta is a mini bank. Learning is not only done in class but can also be done anytime and anywhere (Sukmawati et al., 2020).

Teaching factory through the effective use of students' production units can improve students' production, cognitive, and vocational competencies. One of the uses of the production unit in question is the use of mini banks in SMKs. Mini-banks in SMKs are business activities that aim to obtain added value/profits from business activities [15]. Banking activities in schools are not only based on improving the quality of graduates from accounting expertise programs, but also to increase students' awareness of the importance of saving.

The students on duty in the activities in the mini bank laboratory are the students from class X to XII who are practicing the mini bank but are still accompanied by the teachers in charge. Services in the mini bank are handled using computers, this is aimed at practicing MYOB and Microsoft excel, although there is still manual bookkeeping. This is what will later hone the students' skills in understanding, identifying, analyzing, recording transactions, to making financial statements so that they can help students in accounting skill competency test.

The mini bank is part of the teaching factory programs as a production unit for accounting students at the school. In the world of education, there are many limitations on teaching materials, learning experiences, and teaching approaches (Baring & Berame, 2022). Mini-bank also includes practical subjects to increase students' skills. By optimally utilizing mini-bank, it is expected to develop and improve the competence of accounting expertise. With direct practice, students can more easily remember how to apply theoretical productive subjects for the provision of skill competency test later. All accounting majors in Surakarta apply this mini bank which serves the finances of teachers and students at the school.

Besides mini-banks, all schools implement Field Work Practices (PKL). SMK cooperates with the Business and Industrial World of (DUDI) for PKL activities. Such as SMK N 1 Surakarta in collaboration with Vave Hotel, APTASI, and CV Ada Jaya, SMK N 3 in collaboration with CV Salsa Central Subur, SMK N 6 Surakarta in collaboration with various companies including Lima Daun and Hotel Dana, while SMK Batik 2 Surakarta which is in cooperation with various garment companies and Bank Dana Mulia.

In addition, DUDI is also a part of preparing the school curriculum. These activities with DUDI are felt by students to be able to develop their employability abilities. With practical field activities in the world of work, students will be able to easily adapt when they enter the world of work later. Students have increased knowledge, skills, and attitudes which are the main factors in working at DUDI.

The cooperative relationship between SMK and DUDI in the teaching factory learning pattern has a positive impact on building a systematic and planned partnership mechanism. The application of the Teaching Factory learning pattern is an interface between the world of vocational education and the industrial world, so that there is a check and balance in the educational process at Vocational high school to maintain link and match to the needs of the labor market [16].

The laboratory at the school is also prepared to suit the needs and the developments based on DUDI. All schools have 2 main laboratories, namely a computer laboratory and a manual accounting laboratory. The computer laboratory is used for computer-based accounting work training such as MYOB and Spreadsheet. While the manual laboratory is used to work on accounting cases manually or in writing. With a lot of hands-on practice in schools, it is hoped that they will be able to provide experiences like working in the industrial world. Practical activity is considered as a supporting factor in the implementation of the teaching factory. This is because the practice work is based on cases and activities similar to the world of work.

Other teaching factory-based activities held by the schools include: DUDI practitioners teaching in schools, opening sales stands (training tents) for the students' products. While the products produced from teaching factory-based activities include savings and loan services from Mini Bank, food and beverage products, student creativity books through the training tent activities, electricity and credit payment services, typing services, tax notification filling services, and services of preparing financial statements from DUDI. The products produced by schools are dominantly internal in nature, that is, they only serve the interests of students and teachers, and have not yet been extended to the community.

The obstacles that are felt by schools in implementing the teaching factory include (1) the rapid change in the world of work so that it is difficult for schools to follow, (2) the difficulty of getting DUDI partners who can be invited to cooperate because they feel that the school side is taken more benefits (3) The implementation of activities is not optimal. With DUDI because the main factor was DUDI was unable to facilitate all existing students (4) The high need for funding in completing facilities and conducting activities (5) The Covid-19 pandemic condition that did not allow the implementation of practice in schools and at DUDI. These obstacles are overcome by schools by implementing learning with the teaching factory model in the classroom. Curriculum and learning materials are prepared like documents and work in the world of work. Students are given exercises and casuistic questions taken from real or similar cases in the industrial world so that it is hoped that students really know and understand knowledge related to the world of work and have the skills expected like the world of work.

With the teaching factory program, students and schools feel the benefits. The technical factory program can bridge the competency gap between the knowledge provided by the school and the needs of the world of work [17]. Teaching factory can increase student employability, increase knowledge, skills, attitudes and character of students to be able to adjust to the world of work. The results of Dewi and Sudira's also state the same thing that the teaching factory has a contribution to the readiness of students in the world of work [14]. The teaching factory program can also build students' entrepreneurial spirit. Through teaching factory-based activities, students are trained to be able to become

entrepreneurs with mentoring and encouragement from teachers to be able to open job opportunities which ultimately students are required to be able to produce products that can be developed to be marketed. In line with the research of Gozali, Dardiri, and Soekopitojo that teaching factory activities can improve the entrepreneurial competence of students at Vocational high school majoring in culinary as the subject of their research. The teaching factory fosters the entrepreneurial character of students such as discipline, responsibility, independence and creativity in creating new works.

The employability skill which is built through the teaching factory program in Vocational High Schools include:

1. Communication skill that contributes to productive and harmonious relationships between professional colleagues and customers.
2. Teamwork skill, which will contribute to productive working relationships and outcomes.
3. Problem solving skill, which contributes to productive output.
4. Initiative or entrepreneurial skill, which contributes to creative output
5. Skills in planning and organizing that contributes to short-term and long-term strategic planning.
6. Skill in self-management, which contributes to the growth and self-satisfaction of the profession
7. Study skillSkill in using technology

These skills can prepare graduates according to the needs in the industrial world and create graduates who are ready to work. The results of this study are in line with the research of Hakim and Fitri which proves quantitatively that there is a positive and significant relationship between the teaching factory program and the improvement of students' employability skill. According to Munadi et al. that employability skill for vocational students are needed to increase competitiveness and be successful in increasing productivity.

According to the principals and vice principals of the curriculum section, effective steps taken by schools in carrying out the teaching factory program in order to produce graduates who have employability skills that are in accordance with market needs, among others, compiling programs or planning activities, implementing the theoretical and practical learning process, and conducting an assessment or evaluation. Nurtanto, Ramdani, and Nurhaji also explained that the main teaching factory management includes planning, organizing, implementing, and evaluating. Evaluation activities are used to plan programs that are even better in line with expectations. What is more important is that the teaching factory activities must be in accordance with the department's competence, the curriculum content must be in accordance with the competence expected by the industry so that the map link has continuity with the Ministry that implements the independent learning.

Overall, the researchers conclude that the teaching factory activities have only been implemented in 4 vocational high school majoring in accounting from 8 vocational high schools, meaning that not all vocational high school have implemented the teaching factory. This is because some of the main obstacles are in the facilities that must be provided. While the implementation of the teaching factory in 4 SMKs that have been

programmed can be carried out well, involving DUDI in several activities with students, schools provide facilities such as mini banks, practical laboratories, and manual laboratories to support the implementation of teaching factory. The schools cooperate with DUDI in the implementation of field work practices, curriculum preparation, preparation of learning materials, and guest teachers. However, all schools are of the opinion that the implementation of the teaching factory is still not running optimally, there is still a need for a planned program and maximizing the involvement of DUDI. The same research results were obtained from Sudiono's research that vocational high school have not yet understood the function of the teaching factory, it can be seen from the weakness of planning, implementation of learning, production activities, and industrial cooperation, as well as requiring the assistance efforts, especially the more optimal involvement of DUDI [7].

4 Conclusion

The teaching factory program implemented by SMKs in Surakarta includes mini bank activities, Field Work Practice (PKL) activities, practical activities in the computer laboratory and in the accounting manual laboratory. Meanwhile, other teaching factory activities include inviting DUDI practitioners to teach in schools and opening a stand (training tent) for selling the students' products. Schools have collaborated with DUDI including in the implementation of field work practices, curriculum preparation, preparation of learning materials, and guest teachers. Teaching factory can increase students' employability, improve students' knowledge, skills, attitudes and character to be able to adjust to the world of work. The teaching factory program can also build students' entrepreneurial character such as discipline, responsibility, independence and creativity in creating new works.

The obstacles in implementing the teaching factory experienced by SMKs majoring in Accounting in Surakarta City are: (1) The rapid change in the world of work so that it is difficult for schools to follow, (2) The difficulty of getting DUDI partners who can be invited to cooperate, (3) Less optimal implementation of activities with DUDI, (4) The high needs for funding in completing facilities and implementing activities, (5) The Covid-19 pandemic condition that does not allow the implementation of practice in schools and at DUDI. The implementation of the teaching factory in the Vocational high school in Surakarta City still needs to be optimized by developing a planned program and the needs to maximize the involvement of DUDI in the student learning activities.

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