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Integration of Entrepreneurship in the Teaching Factory (TEFA) Learning Method: Literature Review

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Abstract: Quality education involves teachers, infrastructure, facilities, and management. Vocational high schools (SMK) prepare students for employment or entrepreneurship in their chosen fields. However, the high unemployment rate among vocational high school's graduates indicates a gap between their competencies and industry demands. To address this issue, the government has implemented the "Merdeka Curriculum" and supporting programs such as Teaching Factory (TEFA). The goal of this method is to create a teaching model for entrepreneurship education in vocational high schools that is based on the Teaching Factory (TEFA) methodology. A literature review is the research approach employed, and the sources include books, journal articles, and websites that may be accessed via Google Scholar and ResearchGate. The research stages consist of planning, implementation, and reporting. TEFA is a production-based learning approach that fosters thinking critically and ability to solve problems, connects students with the industrial world, and boosts students self-confidence, according to the compiled articles. Integrating entrepreneurship into TEFA is expected to improve students' practical skills, creativity, and job readiness, making vocational high schools graduates more competitive and capable of contributing to the economy.

Keywords: *Teaching Factory; Entrepreneurship; Vocational High Schools.*

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I. INTRODUCTION

Education is important and strategic for the rise and development of the nation. The goal of the education sector's development is to raise the calibre of human resources (HR) so that they can compete on a worldwide scale, particularly in the twenty-first century. The education program is the nation's ideal as stated in the opening of the 1945 Constitution. The government and educational institutions strive to improve all human resources. Quality education is supported by various factors such as teachers, facilities and infrastructure, facilities, and proper management. The quality of education is dynamic and develops according to the expectations of the community. According to Law No. 20 of 2003 of the Republic of Indonesia, vocational secondary education equips students for employment in specific professions. Depending on their topic of study, graduates of vocational high schools (SMK) are expected to either work for an educational institution that approaches commercial life circumstances (DUDI) or start their own business. As an educational institution, colleges of applied sciences feel they have a responsibility to equip their graduates with the skills needed for an integrated life, which combines general and specific opportunities to overcome life's problems. Every graduate entering society needs to have the following life skills: academic, vocational, social, thinking, and personal abilities.

Implementation and development of Vocational High Schools (SMK) in the teaching and learning process are based on the philosophy of essentialism, existentialism, and pragmatism. Pragmatism as the basis for the concept of situational cognitive learning means that the more often students interact with learning objects, the more experience and knowledge they gain. The theory of experiential learning defines learning as a process in which knowledge is formed through the transformation of experience, combining cognition with transformational experience (Kolb, Boyatzis, & Mainemelis, 1999). In order to challenge students to develop their critical thinking and problem-solving abilities, the experiential learning approach might encourage them to choose to learn (Manolas, 2005). Spanjaard et al. (2018) assert that experiential learning, or actual learning based on practice, can boost the self-esteem of learners and give them greater confidence when working in the real world. The hope that

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vocational high schools can produce graduates who meet the demands of the workforce still faces serious challenges. The overall joblessness rate for vocational students is at its highest level in recent years, which is proof of this. According to the Central Statistics Agency (BPS), there were 7.99 million unemployed people in Indonesia at the end of February 2023, or 5.83% of the working-age population. In February 2023, among graduates of vocational high schools, the general jobless rate remained the highest at 9.60%, as compared to graduates of other educational levels. High school graduates (SMA) are ranked second highest in unemployment at 7.69%. In addition, the unemployment rate is 5.91% for Diploma I/II/III graduates and 5.52% for Diploma IV, S1, S2, S3 graduates and 5.41% for junior high school (SMP) graduates (Official Statistics News, 2023).

Statistical data shows that vocational schools have not fully met expectations. The competencies, knowledge, and skills of vocational high school graduates do not fully meet the demands of the workforce. The skills required in the workplace differ from the abilities and credentials of those with vocational education. The Ministry of Education, Culture, Science, and Technology as the authority in the field of education is implementing a curriculum development policy known as the "Independent Curriculum" in various educational institutions in 2022 to 2024 as an additional opportunity from learning to recovery. The implementation of the independent curriculum implemented by the government includes the Sekolah Penggerak and Pusat Keunggulan programs in Vocational High Schools (SMK) (Nugraha, 2022). Students must be prepared for the workforce after graduation through active learning that is grounded in real-world experiences and fosters creativity and innovation. The learning process can therefore be beneficial (The EU, 2012). According to Ruskyte and Navickas (2017), active learning motivates students to become more engaged, responsible, active, and deeply immersed in learning activities. It also boosts their self-confidence and exposes them to higher-level thinking. Businesses use teaching factories (TEFAs), a type of active learning, to create goods and services. Schools and industry work together as partners to implement TEFA in a way that enhances students' skills. This is the primary goal of TEFA implementation.

II. METHODOLOGY

The method used in this study is a literature review. The process of locating, acquiring, reading, and assessing research literature in an area of interest is known as a literature review (Cooper and Schindler, 2014). The quality of the literature is based on the literature sources used as references in the study. According to Creswell and Creswell (2018), the sources of the literature review are: encyclopedias, journal articles, books, conference papers, dissertations and the web. The database's review sources, which were chosen in accordance with the study's focus on entrepreneurship and teaching factory learning (TEFA), include researchgate, sciencedirect, and Google Scholar. Keywords associated with the literature review's subject teaching factory, entrepreneurship, and experiential learning were used to find papers. According to Zhu, Sari, & Lee (2018), the stages of conducting a literature review include:

- *Planning Stage*

  Researchers must pay attention to the research questions to be used and prepare a protocol as a framework for compiling the review.

- *Implementation Stage*

  Researchers must consider the importance of literature through selection, data collection process, research, in-depth study, and synthesis to produce a good review article.

- *Reporting Stage*

  The results of the review must be systematically arranged in the form of a paper.

III. RESULTS AND DISCUSSION

A. Entrepreneurship

Entrepreneurship is an important mechanism to facilitate the selection process, namely the creation of a diversity of knowledge that plays an important role in economic growth (Audretsch and Keilbach, 2004). According to Schramm (2006), entrepreneurship is defined as a process experienced by a person or group of people to take financial risks in an effort to create a new organization and use innovative methods or new technologies that benefit others. Finding chances for success is based on the creative and inventive skills of entrepreneurship. The ability to develop fresh, original ideas by using creativity and generating chances for creative endeavours is the foundation of entrepreneurship education. This process starts when fresh concepts, ideas, and thoughts enter to mind in order to produce something special that adds value and turns into a source of excellence and opportunity (Suryana, 2003). The primary problem in entrepreneurship education, according to Heinonen and Poikkijoki (2006), is how to encourage the process of becoming an entrepreneur through learning activities.

Entrepreneurship education equips students with soft and practical skills, such as the ability to solve problems, think critically, work together, and persist in the face of challenges. With the development of entrepreneurship education, principles and methodologies are applied in shaping students' life skills through the school curriculum. In addition, the entrepreneurial skills taught to students make them effective individuals in life. With the help of entrepreneurial skills, students become more personally and socially responsible individuals.

According to Jufri and Wirawani (2014), the internal process of developing a good entrepreneurial spirit does not begin until the child reaches school age, but this process can begin along with the child's development. Before the child reaches school age, the process of introducing entrepreneurship can be done by training parents and other family members. Teachers can continue this process when the child reaches school age in various ways, including entrepreneurship in learning inside and outside the classroom.

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An entrepreneur is a person who has the ability to create, manage, and institutionalize the business he owns (Muttaqien, 2019). According to Setiawati (2017), an entrepreneur is someone who creates something new, either as commodities or services on a platform which can bring breakthroughs to the country's economy. Important things that entrepreneurs need to have (Ciputra, 2009):

- *Creating Chances*
  This goes beyond simply searching for chances.

- *Innovative Thinking*
  Creating fresh and unique products.

- *Measured The Risk Taking*
  The ability to take measured chances with bravery.

Yuyus (2010) stated that the characteristics of entrepreneurs are: achievement motivation, future orientation, entrepreneurial leadership, business networks, responsiveness, creativity and innovation in changing attitudes. Dwi Rorin (2017) mentioned entrepreneurship which includes: self-confidence, focus on tasks and results, risk taking, leadership, originality, vision of the future, honest and hardworking, very creative, dedicated to work, professional ethics, sense of responsibility and always looking for opportunities. These characters can later grow and develop in the teaching factory at every stage of the learning process.

Factors both internal and external to a vocational high school students growth entrepreneurship can provide insight into how the school and family environment can influence students' vocational interests, interests and abilities to become entrepreneurs. The following is an analysis of these factors according to Fidhyallah, Elfandi, & Yohana (2021), including:

- *Curriculum*
  Integration of entrepreneurship material into the vocational high school curriculum involves providing a comprehensive entrepreneurship module, giving students the opportunity to explore business concepts, business planning, financial management, and other skills needed to become an entrepreneur. This program emphasizes hands-on learning and projects that encourage creativity and innovation in order to spark students' interest in starting their own businesses.

- *School Environment*
  Support from teachers for entrepreneurship in schools can encourage students to explore their interests in the business world. Schools can support extracurricular activities and competencies that focus on entrepreneurship or competitions related to business. Students have the chance to grow their networks and refine their company concepts.

A holistic approach to teaching entrepreneurship combines cognitive (knowledge), affective (values, attitudes, and motivation), and psychomotor (skills) aspects to provide a complete and in-depth learning experience for students. The following are the implementations of a holistic approach, including (Susanto, 2012):

- *Cognitive Aspect*
  - Obtaining business knowledge that involves students in deeply understanding business concepts such as planning, financial management, marketing, and HR management.
  - Students are given training to hone their analytical with ability to solve problems. Students have the ability to evaluate business problems, recognize opportunities, along with find creative and innovative solutions to face challenges that arise in running a business.

- *Affective Aspect*
  - Students are given the opportunity to develop essential values in entrepreneurship such as perseverance, independence, creativity, and social responsibility. Students develop an optimistic and confident mental attitude towards the potential to become entrepreneurs.
  - Student motivation and interest are strengthened through interesting and relevant learning experiences. Students are encouraged to explore interests in the business world and are encouraged to take real steps in realizing business ideas.

- *Psychomotor Aspect*
  - Students are given training in a variety of practical skills that are essential to operating a business including business planning, presentation, negotiation, time management, and leadership. Students have the opportunity to practice directly through simulations, role-plays or real-life projects.

Students can apply the skills they learn in business situations in industrial internships, working with local companies or by running business simulations.

B. Teaching Factory Learning (TEFA)

The Teaching Factory (TEFA) is a real-world learning idea that can help close the knowledge gap between academic and business demands. Innovative learning technology and productive practices are teaching method concepts that are oriented towards managing student learning to align with the needs of the industrial world (Indrawati, 2017; Novrian S. Perdana, 2019). TEFA is a production or service-based learning approach that refers to standards or procedures applied in the business world, industry, and work life so that it should be able to close the gap in needs-based competency business world, industry world, work world and competencies produced by schools (Perdana, 2018). Establishing positive and mutually benefical partnerships between Vocational High Schools (SMK) and the business, industry, and work sectors is crucial to achieving the goals of the teaching factory (TEFA). This development will be more optimal if the text of the MOU/Understanding/Cooperation Agreement contains appropriate cooperation with agencies related to the business world/industry/work world according to their expertise (Sani, 2020). The Department of Professional Education Development (2007) acknowledges that learning factories are a means of learning and entrepreneurship for students and teachers and support school operational costs. One effort to fulfill the task of vocational education is to establish a

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teaching factory. According to Dikdasmen (2005), the tasks of vocational education are:

- Regional training center or training opportunity provider
- Examination center
- Training factory (TEFA)
- Output placement of graduates and employees
- Business center and franchise development for the community.

The purpose of teaching factory learning is more than just the material listed in the book. In addition to training soft skills, students are also given direct experience and real practice to prepare themselves to face the world of work. This learning teaches students how to identify problems, develop prototypes, prepare business proposals, and how students convey solutions to a problem. According to the Directorate of PSMK/Vocational High School Development (2008), the teaching factory (TEFA) elements are as follows:

- Operational Management
- Human Resources
- Finance and Investment
- Entrepreneurship
- Partnership
- Curriculum
- Product Realization Learning Process
- Facilities and Infrastructure
- Products/Services.

Operational management is the management of TEFA management. Management includes planning, organizing, implementing and evaluating. In this process, students must fully participate in the TEFA process. This aims to prepare students to have good skills and entrepreneurship before entering the industrial world. Learning will produce meaningful things if students are active, constructive, enthusiastic, cooperative, and work in real activities. The TEFA program can be implemented if the facilities and infrastructure owned by the school meet the needs of producing goods or services according to the education program. Another goal of the TEFA process is to instill entrepreneurship in students. Through TEFA, goods and services with added value are produced with quality that is acceptable to the community. The main components of the implementation of the teaching factory (TEFA) are students, teachers and school management (Supriyantoko et al., 2020). These three key factors are the most important to support the success of TEFA implementation. According to Lamancusa et al. (2008), the TEFA teaching method was discovered for three reasons, namely:

- Traditional education is insufficient on its own
- Opportunities for learners to gain firsthand practical experience
- Collaborative learning opportunities where industry, instructors, and students collaborate to enhance the educational process and yield tangible advantages for all parties.

The teaching factory (TEFA) has multiple steps, such as the following, according to Suhartini et al. (2020):

➢ *Curriculum synchronization*

Core competencies or curriculum used in schools are in accordance with the competencies needed in industry. Industry leads and determines the competencies that must be included in the curriculum. Learning materials are developed into modules similar to those used in industry. The learning process is followed by work methods applied in the field.

➢ *Synchronization of learning facilities and infrastructure*

The laboratory is arranged according to industrial conditions, including layout and workflow, and is equipped for different skill levels.

➢ *Production plan*

The products to be made include the skills listed in the curriculum and are adjusted to the products produced by the industry.

➢ *Production process*

Students work on products following the industrial workflow under the guidance of teachers and industry partners.

➢ *Product evaluation*

Teachers and industry partners are responsible for guiding students. The production results will show students' strengths and weaknesses in the work process.

➢ *Training from industry partners*

Industry partners provide training to students to help them understand work tasks that they have not mastered. This training can be done in a school or industry environment.

C. Integration of Entrepreneurship in Teaching Factory Learning Method

The structure of the entrepreneurship program to improve students' skills is according to the findings of earlier studies and field observations. School activities are adjusted to the needs of the business world through the development of school production units (UP) and industrial work practices (prakerin) which are carried out through cooperation and agreements with various parties with the aim of producing skilled vocational high school graduates to meet the needs of companies/industry (DUDI).

Learning objectives can be interpreted as the teacher's efforts to develop students according to their duties. According to Ibrahim and Syaodih (1996), learning objectives are interpreted as the behavior of learning outcomes expected by students after the learning process. Yulaelawati (2004) divides learning behavior into three categories: intellectual, emotional and psychomotor ability. This is reflected in the objectives of entrepreneurship learning, namely: a) students are expected to understand the concept of entrepreneurship, b) students have knowledge, skills, and entrepreneurial mindsets that can support their lives in the future, and c) students are expected to know how to manage their business well. One of the main objectives of the teaching factory (TEFA) program

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in vocational high schools is to improve graduate skills according to industry needs, which ultimately has an impact on strengthening the competitiveness of Indonesian industry. The competencies presented are integrated and include psychomotor skills, attitudes and thinking or mental skills (cognitive) and high-level thinking skills (HOTS) that are able to think critically and solve problems (D. VHS, 2016). Teaching factory (TEFA) is a learning methodology that facilitates efficient and effective learning by adopting application-oriented practices and training that combines realistic and industry-relevant learning and work environment atmospheres and experiences (Chryssolouris et al., 2016). Previous studies have shown that students' entrepreneurial characteristics increase after participating in entrepreneurship education such as entrepreneurship training and involvement in business classes (Rasheed, 2003) (Chen et al., 2010). "Factory to classroom" and "academia to industry" are two distinct TEFA operating designs that include two knowledge transfer and two experience transfer pathways. TEFA's "factory to classroom" idea seeks to replicate the actual industrial or production setting in the classroom (Chryssolouris et al., 2016).

With entrepreneurship education in vocational schools, students can develop creativity and innovation to create economic value. The TEFA learning model is based on the production of goods/services by following quality standards and industry work procedures, providing learning experiences that emphasize the development of competencies, especially soft skills such as work ethics, discipline, honesty, responsibility, creativity, entrepreneurial character, cooperation, and intelligence in competing. These competencies are rarely obtained through conventional education so that the focus of achieving expertise shifts to hard skills. Therefore, this study aims to develop an entrepreneurship learning model based on teaching factory (TEFA) in Vocational High Schools (SMK).

IV. CONCLUSIONS

Education is crucial to the country's development, particularly in raising the calibre of human resources (HR) so that they can compete in the global market. Vocational High Schools (SMK) focus on preparing students with practical abilities and expertise that are applicable to the workplace and industry. However, major challenges still exist, such as the high rate of unemployment among graduates of vocational high schools. A new curriculum and related initiatives like the Teaching Factory (TEFA) have been introduced by the government to close the skills gap between graduates and industry demands, which combines experiential learning and entrepreneurship. This method aims to improve students' practical skills, creativity, and work readiness, so that it is hoped that graduates of vocational high schools will face greater competition and able to contribute to the economy.

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