



The Effectiveness of Creative Products and Entrepreneurship Learning and Teaching Factory to Prepare for Job Creator in the Industrial Revolution Era 4.0

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Abstract

Indonesia has now entered the era of the Industrial Revolution 4.0 that impacts vocational schools which are considered the highest contributor to unemployment in Indonesia. Therefore, the government established a revitalization program in vocational schools by learning about Creative Products and Entrepreneurship as well as Teaching Factories to produce competitive human resources who are ready to become job creators. This study aimed at portraying the effectiveness of Creative Products and Entrepreneurship Learning and teaching factories to prepare for job creators in the Industrial Revolution Era 4.0. The study was conducted by employing a descriptive qualitative method by utilizing the Nvivo 11 software to classify and display the results in the form of diagrams, graphs, and models. The results revealed that the implementation of the Creative Products and Entrepreneurship, as well as the Teaching Factories, has not been effectively transforming vocational students into job creators. There were some encountered factors contributing to this phenomenon; time management, teachers' competence, students' motivation, and funding. Thus, evaluations are necessary in terms of planning, development, and implementation to cultivate excellent graduates that are ready to create jobs.

Keywords: *Creative Products; Entrepreneurship; Job Creator; Teaching Factory*

Introduction

The development of technology and information has now come to the Industrial Revolution Era 4.0 that has affected all fields, especially education. Indonesia, in fact, is currently going through this industrial era in which the implementation of education should not only extend the knowledge but also sharpen skills and attitudes to generate excellent human resources that are intelligent and technologically literate.

Open Unemployment Rate of Central Java according to the Highest Level of Education enrolled from February 2017 to August 2020 demonstrates that vocational school graduates still contributed to the highest unemployment number compared to other education levels for the last 4 years. Based on the data obtained from Badan Pusat Statistik (2020) in August 2020, vocational school graduates accounted for 13,20% of the highest unemployment rate. The rate increased from 9,92% in August 2019. It means that the vocational school graduates still contributed to the highest unemployment in Indonesia.

However, the Directorate of Vocational High School Development (2019) mentioned the development of the Industrial Revolution Era 4.0 demands skilled workers with technological skills. With this regard, the learning process in vocational schools should be able to develop skills to generate innovative, inventive, self-motivated, and self-directed graduates. In addition, the graduates should be creative problem solvers to confront the increasingly complex global problems. Vocational schools are responsible to generate graduates that are ready to independently become entrepreneurs. They are expected to adjust to the environmental conditions by applying the entrepreneurship characteristics that will shape students' personality traits and furnish their mindset from 'job seekers' into 'job creators'.

In fact, there is still a miss and match between what is learned in schools and what is actually needed in the business and industrial world. This means that the learning materials in vocational schools are still not in accordance with the needs of the industrial world, so it is vital to increase the quality, relevance, and revitalization of education in vocational schools in order to generate quality and highly competitive human resources, as well as to create links and matches between learning in schools and the needs of the industrial world according to development in the Industrial Revolution Era 4.0.

Uno (2012) considered effective learning as the one that can produce fruitful and focused learning on students. The learning process can be effective if there is a good material organization, effective communication, mastery of teaching materials, positive attitudes towards students, fair values, and flexibility towards learning approaches. Moreover, vocational schools need to implement effective learning to produce graduates that are ready to become job creators by helping students to establish entrepreneurial spirit through Creative Products and Entrepreneurship Learning as well as Teaching Factories.

Ahmad (2013) affirmed that entrepreneurship education needs to be carried out in Indonesia from a variety of learning environments. In Addition, Lepisto & Ronkko (2013) vindicated that entrepreneurship education should be included in all disciplines. Moreover, Zhang et al., (2019) asserted that entrepreneurship learning can establish students' entrepreneurial intentions through changing attitudes, subjective norms, and perceived behavioral control towards entrepreneurship. Puni & Anlesinya (2018) mentioned that entrepreneurship education has a positive effect on entrepreneurial intentions. Also, Pugh & Adkins (2020) ratified that entrepreneurship education will positively affect students' business in the future. Regarding business, Hasan, Zahid & Khan (2016) affirmed that entrepreneurship education that is given to business schools positively influences the intentions, aspirations, and attitudes of students to start doing business. The study conducted by Mohamad et al., (2015) found that graduates who are exposed to both formal and informal entrepreneurship education have great potential to become entrepreneurs.

In an effort to prepare students to become entrepreneurs (job creators), the government developed a teaching factory-based learning model. The teaching factory is a combination of the existing learning approaches, namely Competency-Based Training (CBT) and Production-Based Training (PBT). According to Chryssolouris et al., (2016), the teaching factory has a significant impact on vocational training aiming to improve the quality of learning through learning by doing so that it is expected to foster an entrepreneurial spirit which is the criterion for the success of the teaching factory.

Furtherore, Lamancusa, et al., (2008) stated that the benefits of students were obtained from direct practical experience and team-based learning that involved students, teachers, and industry participation to enrich the educational process and provide tangible benefits for all parties. Putri et al., (2019) added that the teaching factory has a positive impact on improving the hard skills and soft skills of students. Also, the teaching factory is proven to be able to reduce the unemployment of the vocational graduates since students are provided with sufficient and maximal knowledge (Mavrikios et al., 2018). Muttaqien (2019) acknowledged that teaching factory is very appropriate to use in learning skills

programs since it is very effective and efficient in the use of tools, fulfillment of students' competencies with practical products, block schedules, and job sheets that are in accordance with the needs of the market and the industrial world.

Entrepreneurship learning must be able to run effectively so that it can prepare students to have an entrepreneurial spirit, knowledge, attitudes, and skills. Meanwhile, the teaching factory program has been designed to improve the knowledge, skills, and attitudes of students. Furthermore, it aims to match the link and match between learning programs implemented in schools with the needs of the industrial world. This study aimed at describing the effectiveness of Creative Products and Entrepreneurship Learning and Teaching Factories to prepare for job creators in the Industrial Revolution Era 4.0.

Research Methodology

The study was undertaken as a qualitative descriptive study. In addition, a case study was conducted by collecting data through interviews, observations, and documentation. The interview was executed structured systematically with subjects that were gathered through the purposive sampling technique. Furthermore, the encountered information was then transcribed in accordance with the answers given by the participants after the validity of the data had been done by using the NVivo 11 for coding the data effectively and efficiently so as to produce output data presented in the form of charts, graphs, and models.

Results and Discussion

In general, effectiveness depicts how far a predetermined goal is achieved. Supardi (2013) extended some indicators of effectiveness into; attitudes, abilities, persistence, opportunities, and quality teaching. On the other hand, Slavin (2009) mentioned the quality of teaching, level of teaching, incentives, and time. The implementation of learning at the State Vocational school 6 Surakarta can be considered to be effective if the indicators of learning effectiveness and indicators of learning success can be maximally achieved. Furthermore, the effectiveness of the Creative Products and Entrepreneurship and Teaching Factory learning can be explained as follows:

1. Creative Product and Entrepreneurship Learning (CPE)

Creative Product and Entrepreneurship learning aims to provide knowledge, improve skills, and shape the attitudes of students to become entrepreneurs. The subjects require products designed based on the creativity of students in the Industrial Revolution Era 4.0 such as creativity, critical thinking skills, communication, and collaboration. The implementation process of the CPE learning, regarding the time allocation, is considered less effective by teachers. The allocated time is 7 hours of learning which is divided into 2 hours of non-productive learning and 5 hours of productive learning. The implementation of the CPE learning was implemented in class XI so that class X had not obtained the CPE learning materials.

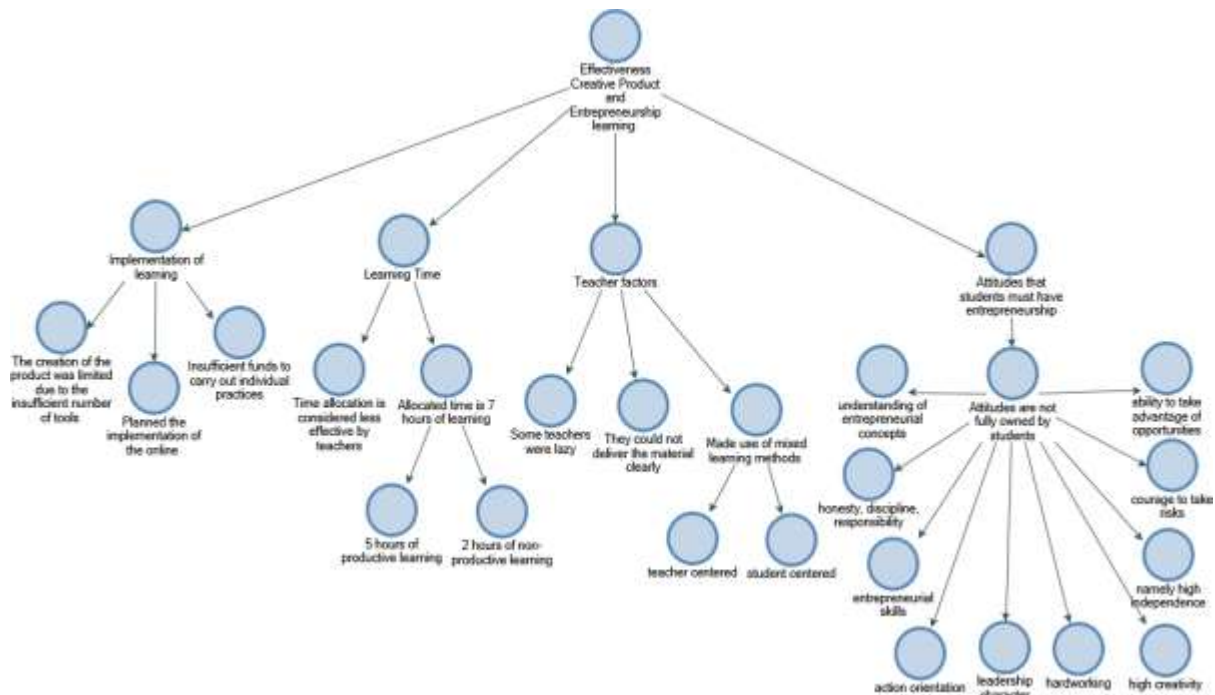


Fig. 1 Project map effectiveness creative product and entrepreneurship learning

Furthermore, the success of the CPE learning implementation is determined by the available infrastructure during the implementation of learning. The infrastructure should be fulfilled so as to positively affect the implementation of the theory and practice. Unfortunately, students still met several closures in carrying out the learning process, such as limited time and insufficient funds to carry out individual practices. Moreover, the creation of the product was limited due to the insufficient number of tools and raw materials.

Regarding the Industrial Revolution Era 4.0, students should have been able to look for more open opportunities. Nonetheless, the development of the Industrial Revolution Era 4.0 has not been optimized by teachers and students. In fact, the State Vocational school 6 Surakarta has just planned the implementation of the online CPE learning to market students' products.

Students, during the learning process, still had difficulties in understanding the learning material well. This condition was mainly motivated by the teacher factors. Some teachers were neglectful, and they could not deliver the material clearly. Still, they made use of mixed learning methods between teacher-centered and student-centered approaches. Sadly, some teachers did not recognize the use of attractive learning methods. According to Suherman (2008), entrepreneurship teachers should be able to carry out their duties and obligations properly and correctly according to the references contained in the learning design.

The Ministry of National Education (2010) determined some attitudes that students must have, namely high independence, high creativity, courage to take risks, action orientation, leadership character, hardworking, understanding of entrepreneurial concepts, entrepreneurial skills, unyielding, honesty, discipline, responsibility, and ability to take advantage of opportunities. However, in reality, these attitudes are not fully owned by students. The attitude that students must have to become an entrepreneur can be established by the teachers by providing motivation and constructing a mindset. Jayadi et al., (2020) suggested that CPE learning materials should be designed and presented as attractive as possible so that they can motivate students. The increased students' motivation is expected to change the mindset of students in entrepreneurship.

Nurbaya & Moerdiyanto (2012) defined several obstacles in entrepreneurial readiness. They are lack knowledge in entrepreneurship, capital, low motivation, lack of facilities, and means of entrepreneurial practice in schools. Furthermore, Suherman (2008) ratified that the indicators of the CPE learning success indicators are the alumni of educational institutions who had participated in the CPE learning process. They are expected to have an entrepreneurial spirit so that at least 40% of graduate students or alumni can build a business independently or in partnership. In fact, only 3% of graduates could become entrepreneurs after graduating from vocational schools. Thus, it is considered under the standard of graduates that must be achieved. This proves that the effectiveness of the implementation of CPE learning has not been maximized in producing students to become job creators.

2. Teaching Factory Learning

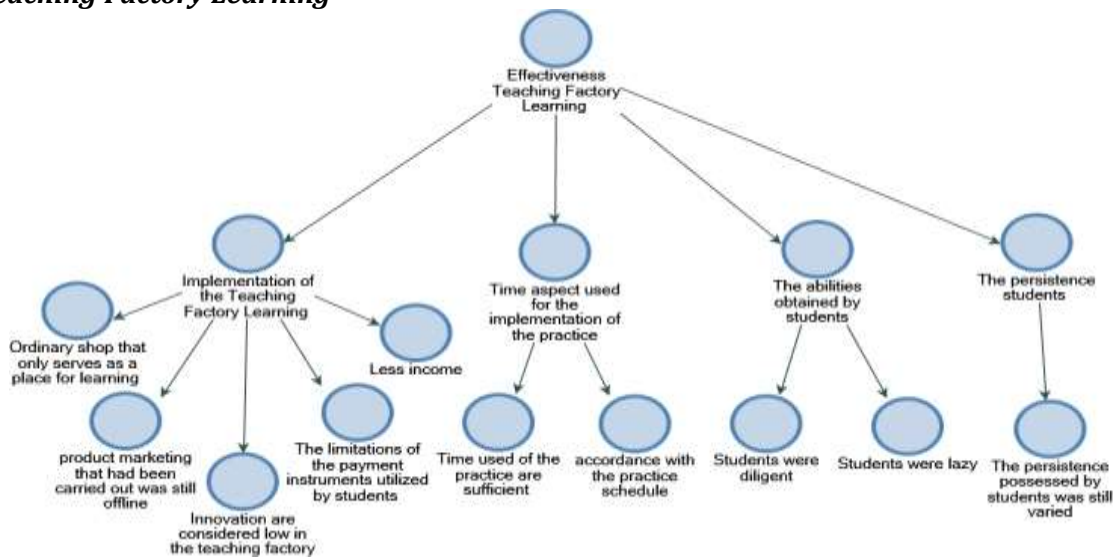


Fig. 2 Project map effectiveness teaching factory learning

Indicators of the effectiveness of learning regarding the time aspect used for the implementation of the practice are sufficient in accordance with the practice schedule, in which each student can carry out practice for two days, in order of attendance. Additionally, each semester, students can practice up to 3 times. This time is considered sufficient by the school as it has been adjusted to other learning schedules.

The human resources for implementing the teaching factory, namely students and teaching factory employees, play a pivotal role in achieving the effectiveness of the practice. The Directorate of Vocational Education (2017) asserted that human resources have the ability to design engineering and can apply a sense of quality, sense of efficiency, and sense of innovation. Further, for the learning process, the ratio of the number of teachers and students should be taken into account. However, the fact is that the products focused on teaching factories are still products on the market. There have been no products produced by students themselves. Hence, the quality, efficiency, and innovation are considered low in the teaching factory.

The implementation of the teaching factory which is still acknowledged as an ordinary shop that only serves as a place for learning caused less income. Sadly, there were only 2 cashier computers in the cashier which were used by 4 practical students. This condition is not in accordance with the ideal conditions of the teaching factory with regard to the aspect of facilities. Directorate of Vocational Education (2017) affirmed that facilities owned by schools must meet the ratio of 1:1 between the learners and the tools. The handling of the treatment should have been implementing Maintenance,

Repair, and Calibration (MRC). Furthermore, the process aids should have been appropriate and complete, and all equipment should be developed with addition and replacement.

The limitations of the payment instruments utilized by students as well as the frequent problems with the tools made students less optimal in carrying out their practice. The abilities obtained by students cannot be honed optimally. In addition, the persistence possessed by students was still varied. There were students who were diligent. In contrast, some were lazy. This was because students were not trained to be independent when practicing in the teaching factory. If students experienced difficulties, they would have asked for help from the teaching factory employees.

Besides, the product marketing that had been carried out was still offline, and there was no online marketing. It proved that the marketing and promotion plans had not been implemented which caused narrow market reach. The current development of the Industrial Revolution Era 4.0 should be considered by schools, especially teachers and students, to carry out technology-based learning. Mourtzis et al., (2018) elaborated the teaching factory in the Industrial Revolution Era 4.0 as an introduction for students to use technology developed and implemented through workshops by utilizing technology as a means that will improve quality, effectiveness, and potentially open up new abilities.

The results of the implementation of teaching factory learning at State Vocational School 6 Surakarta cannot be said to be effective because several aspects have not been fulfilled as previously disclosed. Sudiyono (2019) mentioned that managers of teaching factories do not fully understand the concept of teaching factory so that the planning of the teaching factory model is not optimal. Moreover, the implementation was still based on existing production units in schools which then continued with the teaching factory models.

The implementation of the teaching factory at the school has not been maximally achieved so that it has not been effective in encouraging graduates to become job creators. Rizky et al., (2018) stated that the success of the teaching factory depends on whether or not students are ready to work, have an entrepreneurial spirit, and produce quality products. Thus, schools that have a high success rate of teaching factory manage to make students ready to work and have an entrepreneurial spirit. Amalina et al., (2019) explained that teaching factory program significantly affects the interest of students towards entrepreneurship once a school implementing such a program carries out the plot well. Then, learners will be aware of their capabilities to create a business that can compete on the market.

Conclusion

It can be concluded that the Creative Products and Entrepreneurship learning and Teaching Factory implemented by the vocational school is not effective to encourage students to become job creators after graduation. This can be seen from the results of the tracer study of student graduates from 2016 to 2020 which only amounted to 3%. Besides, it has not experienced an increase in the last 4 years. In this regard, vocational school graduates should be able to produce an entrepreneur at least 40% of students. The success of CPE and Teaching Factory learning has not been maximally achieved due to ineffective time, factors from teachers regarding the use of learning methods, and media that are not optimal. Also, the influence on students from both external and internal factors plays a crucial role to cause such ineffectiveness. The students did not take advantage of technological developments in the Industrial Revolution Era 4.0. They have not been able to produce products, and the income of each factory has not been maximized. At last, the abilities of students have not been maximized to instill an entrepreneurial spirit. Therefore, problems impeding the implementation of CPE learning and teaching factory must be evaluated from the aspects of planning, implementation, and results so that the implementation can be effective in generating job creators after graduating from vocational schools.

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