THE EFFECTIVENESS OF TEACHING FACTORY BASED LEARNING TO STRENGTHEN ENTREPRENEURIAL COMPETENCIES AND INTENTIONS

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ABSTRACT

The Government of the Republic of Indonesia issued Presidential Instruction No. 9/2016 on the revitalization of vocational high schools (SMK). Various vocational high schools were selected to participate in the revitalization program. Schools that are selected in the revitalization program are required to implement teaching factory-based learning (TF). SMK 1 Jombang, SMK 1 Magetan, and SMK PGRI 1 Giri Banyuwangi are 3 vocational high schools in East Java that have participated in the revitalization program since 2016, so they have implemented TF activities. This study intends to examine how the impact of the implementation of TF-based learning for strengthening students' entrepreneurial competencies and intentions. There are 4 TF models implemented by schools that are: Production Based Learning (PBL), Internship (INTRNSHP), Cooperative Education Placement (CEP), and School-Based Enterprises (SBE). This study revealed there are 2 TF-based learning models that had a very strong influence in developing entrepreneurial competencies and intentions, namely: PBL and SBE. PBL and SBE are proven capable of developing entrepreneurial competencies, both for the aspects of knowledge, skills, and attitudes. PBL has a very strong impact on the development of students' entrepreneurial competencies, especially for the following indicators: mentality as an entrepreneur, competent in utilizing resources, capable of making business strategies, passion for entrepreneurship, and strengthening perseverance. SBE has proven to be able to foster a very strong intention in entrepreneurship, for indicators: preparing themselves as entrepreneurs, fostering a strong desire to become entrepreneurs, and reinforcing the decision of students to establish the entrepreneurial profession as the first choice. This study also revealed that the longer involvement in TF-based learning, the higher score of entrepreneurial competencies and intentions. Besides, this study also found that the sequence of effective learning models in strengthening students' entrepreneurial competencies is: PBL, SBE, CPE, and INTRNSHP. While the sequence of effective learning models in strengthening student' entrepreneurial intentions are: PBL, SBE, INTRNSHP, and CPE. To see the consistency of the effectiveness of the TF-based learning model in improving students' competency and entrepreneurial intention, there needs to be further research on the research theme.

Keywords: Teaching Factory-Based Learning, Entrepreneurial Competencies, Entrepreneurial Intentions.

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INTRODUCTION

The Central Bureau of Statistics (BPS) reported that graduates of vocational high schools in the last 3 years have always been the biggest contributors to the open unemployment rate, it was 11.41% (2017), 11.24% (2018), and 10.42% (2019) (Pusat Data dan Statistik Pendidikan dan Kebudayaan, 2018). Besides it was related to graduates' unpreparedness to work, a high unemployment rate also indicates low entrepreneurial intention and the unpreparedness of vocational graduates to be entrepreneurs. Prianto (2015) stated that one of the main problems of Indonesia's young generation in facing the 21st century is related to the low culture of entrepreneurship. In other words, hard efforts are needed to make vocational high schools which are capable of delivering graduates to be entrepreneurs.

The study conducted by Winarno, et al., (2019) revealed that the failure of entrepreneurship education in preparing prospective new entrepreneurs was caused by entrepreneurship education activities that only focus on aspects of knowledge, and were not supported by practical activities. While other previous studies proved that entrepreneurship education implemented intensively was proven to raise a new entrepreneur (Manolova et al., 2014).

A study, conducted by Surlemont (2007), stated that entrepreneurship education with an effective implementation can deliver positive perceptions of the profession as an entrepreneur. While a study conducted by Prianto (2017) and Prianto et al., (2018) proved that effective entrepreneurship education has a direct effect in strengthening entrepreneurial personality and entrepreneurial attitudes, and it finally will foster entrepreneurial competencies and intentions. The question is why very a few vocational students who set the entrepreneurial profession as the main choice after they graduate.

As limited work opportunities and employment, entrepreneurship education is demanded to be able to deliver graduates with strong character and entrepreneurial competency. For this reason, effective learning processes are needed to strengthen the character and entrepreneurial competency for students. OECD (2012) explained that to face the demands of the world of work in the 21st century, students must have strong entrepreneurial competencies.

To strengthen the role of vocational high schools in delivering graduates with readiness to work and possessing entrepreneurship, the government published Presidential Instruction 9/2016 on the revitalization of vocational high schools. Starting in 2016, the government has established selected vocational high schools to take part in the revitalization program. One of the programs implemented by vocational revitalization participants is the implementation of teaching factory (TF) based learning. This is an effort to prepare graduates' readiness to work and strengthen graduates' intention in entrepreneurship.

SMK 1 Jombang, SMK PGRI 1 Giri Banyuwangi, and SMK 1 Magetan are 3 selected vocational high schools in East Java to participate in the revitalization program, so those schools must implement TF-based learning. This study will examine 3 research questions, as follows:

1. How is the development of students' entrepreneurial competencies and intentions after involving in TF-based learning?
2. Does TF-based learning influence positively to develop student's entrepreneurial competencies and intentions?
3. Among the various models of TF-based learning, which learning model is proved to be the most effective to strengthen students' entrepreneurial competencies and intentions?

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TEACHING FACTORY (TF)

In principle, the TF is a concept of work-based learning through synergies between the school and the industry as a partner to deliver graduates with work and entrepreneurial competency. The optimal implementation of TF based learning is expected to generate benefits for schools, teachers, or students, and activate economic activities at the local level (Damarjati, 2017). In practice, TF is a learning concept based on production or service activities referring to standards and procedures applied in the industry, and the activities are carried out in an atmosphere as in industry.

TF-based learning approach, as implemented in vocational high schools, is learning activities that implement the concept of work-based learning (Ferrandez et al., 2016). Learning activities are designed by creating an atmosphere as in the world of work and business, or placing students in the business and industrial world together with learning activities in schools. TF-based learning which implemented by revitalized vocational high schools, are: (1) production based learning approach (Lackeus, 2013) or learning by creating value (Lackeus, 2015); (2) internship (McHug, 2017), (3) cooperative education placement (Howard, 2004), (4) school-based enterprise (Arenas, 2003).

Production Based Learning (PBL)

PBL is a model of entrepreneurship education through creating product, offering value or new ways of working to customers. PBL provides opportunities for students to create and offer new values or ways of working for consumers. PBL plays an important role in building and strengthening entrepreneurial competencies; regardless of whether the values and ways of new work offered are accepted by the community or not. This entrepreneurship learning model by Lackeus (2013) is called learning by creating new values and ways of working. This approach, based on Lackeus (2015), is called as the entrepreneurship learning model through business activities. PBL-based entrepreneurship learning in vocational high schools is part of the development of the school curriculum (local content) and is implemented every semester, starting in 3rd semester to 6th semester.

Internship (INTRNSHP)

Internship is a work-based learning approach providing opportunities for students to have internships in the business world for a specified period of time (McHug, 2017). In various vocational schools, this activity is popularly known as industrial work practice program. Practical work is applied by students in the business and industrial world, government institution or private agencies, or work practices in business centers owned by schools. Students carry out this activity from 3rd semester to 6th semester. Through internships, students are expected to be able to apply the competencies learned in school to be practiced in the business and industrial world.

Cooperative Education Placement (CEP)

Cooperative education placement is done by positioning the school as a place to develop human resources, while the industry provides the resources and instructors needed for these activities (Howard, 2004). CEP provides benefits for both the school and industry. The school

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will get resources support to develop student competencies in line with industry needs. The teachers will also get knowledge and information related to the competencies that must be taught to students. Conversely, the industry will also get support for the availability of workers in accordance with the specification of the skills the industries want. Through CEP, schools send students to work practices in the business and industrial world, or work practices in business centers in the school with work standards as in the industrial world. In the revitalized vocational high schools, CEP can be followed by students from 3rdsemester to 6th semester.

School-Based Enterprise (SBE)

School-based enterprise is implemented in the form of work practices in production units or business center in schools (Arenas, 2003). Students are taught to organize business activities in schools under the supervision of teachers, starting from product or service planning, production activities, structuring, promotion, sales, customer service, to evaluation after a series of activities (Stern et al., (1994). In some vocational high schools with business centers, such as shops, production shops, hotels and other businesses can be used as a place of work practice. Those will provide students with learning experiences on how to manage business, starting from planning, production activities, promotion, sales products or services, and evaluation of business activities. In the revitalized vocational high schools, this activity can be followed by the students from 3rd semester to 6th semester.

Entrepreneurial Competency

A competency deals with a wide range of behavior of someone and the competency supports their success in their job (Fisher et al., 2008; Krueger, 2007; Murnieks 2007; Markman et al., 2005). Roe (2001) explained that competency is a standard of ability to do tasks or roles in certain fields. Martono et al., (2018) explained that competency is an achievement of student learning outcomes combining knowledge, skills, and attitude. Based on previous studies, researchers identify entrepreneurial competency including three aspects, namely: (1) Aspect of knowledge, (K) (Kraiger et al., 1993); (2) Aspect of skill (S) (Fisher et al., 2008); (3) Aspect of attitude (A) (Fisher et al., 2008; Krueger, 2007; Murnieks, 2007; Markman et al., 2005).

Aspect of knowledge can be explained as (a) mental models, it means with entrepreneurial knowledge possessed, someone can complete tasks even though they have limited resources, knowledge about risks, and various possible ways of completing tasks ; (b) declarative knowledge, this knowledge is possessed as basic knowledge of entrepreneurship, the ability to create value, to generate ideas, to see opportunities, accounting, finances, technology, and marketing; and (self-insight of entrepreneurship, it is stability and compatibility with the entrepreneurial profession (Kraiger et al., 1993).

Aspect of skill can be seen from: (a) marketing skills, it is shown by a skill to conduct a market research, to evaluate market situations, to market products and services, to persuade others, to convey ideas attractively, to establish relationships with customers , and to explain visions ; (b) resource skills, it is shown by skill in making business plans, making financial plans, extracting funds, and accessing resources; (c) opportunity skills, it is shown by skill to identify and recognize various business opportunities and various other opportunities that can be developed in terms of products, services, and business development ; (d) interpersonal skills, it is shown by having the soul of leadership, skill to motivate others, skill to manage others, skill to listen to other people's opinions, resolve conflict, and socialize; (e) learning skills, it is shown by

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skill to be active learners, skill to adapt to new situations, skill to overcome uncertainty situations ; (f) strategic skills, it is shown by skill to set priorities and focus on goals targeted, skill to define a vision, develop a strategy, skill to identify strategic partners (Fisher et al., 2008).

Aspect of attitude can be seen from: (a) entrepreneurial passion (Fisher et al., 2008) ; (b) self-efficacy, the courage to declare "*I can*" or belief in one's ability to perform certain dreams (Fisher et al., 2008) ; (c) entrepreneurial identity, "*I have the values*" or deep beliefs, skill to give awards to the values and new ways of working (Krueger, 2005; 2007); (d) pro-activeness, "*I do something*", initiator, proactive, more action oriented rather than rhetoric. (Sanchez, 2011; Murnieks, 2007); (e) tolerant of uncertainty, feel comfortable and enjoy with uncertainty situations, easily adjust to oneself, and always be open with new unexpected things (Sanchez, 2011; Murnieks, 2007); (f) innovativeness, "*I create*" , Capacity of creation, novel thought and action, rule breaker, visionary, creative, and innovative (Krueger, 2005; Murnieks 2007); (h) perseverance, "*I overcome*", diligent and persistent even in unfavorable conditions (Markman et al., 2005; Cotton, 1991).

Based on previous studies, it can be summarized that overall entrepreneurial competencies includes 15 indicators, including 3 indicators of knowledge: (C1) possessing entrepreneurship knowledge, (C2) mental as an entrepreneur, and (C3) entrepreneurial insight; 6 indicators of Skill: (C4) marketing skills, (C5) business opportunities skills, (C6) resource skills, (C7) interpersonal skills for relationships or business relationships, (C8) learning skills in the field of entrepreneurship, and (C9) strategic skills for making business; and 6 indicators of attitude: (C10) entrepreneurial passion, (C11) confidence and self-efficacy, (C12) pro-activeness, (C13) dare to face uncertain situations, (C14) innovativeness, and (C15) perseverance.

Entrepreneurial Intention

Effective entrepreneurship learning will be characterized by growing intention, desires, interests, and passion from the students to conduct business activities. Strengthening the culture of entrepreneurship must be done by examining various factors that can encourage the growth of entrepreneurial intention (Krueger et al., 2000). Intention in entrepreneurship is related to the psychological dimension. Krueger et al., (2000) stated that intention is the main factor of various planned behaviors. Thus, if someone is not currently involved in entrepreneurial activities, and they intend to be involved in entrepreneurial activities; the activities are categorized as planned behavior.

Various studies conducted by previous researchers explained that the entrepreneurial intention can be seen from various aspects, including: (a) individual expectations (Autio et al., 2001); (b) attitudes and hopes towards preferred career choices (Brenner et al., 1991); (c) serious attitudes and intention to plan business activities (Chen, et al, 1998); (d) expectations and behavior related to business activities (Engle et al., 2010); (e) expectations and intention shown by evidence of running a business (Franke & Luthje, 2004); (f) intention, behavior, and real effort to start a business activities (Hmieleski & Corbett, 2006); (g) readiness and intention, namely self-readiness and intention in running business activities (Linan & Chen, 2009); (i) independence, encouragement to become an independent person (Souitaris et al., 2007).

Valliere (2015) has reviewed 21 previous researchers who discussed instruments to measure entrepreneurial intention. Based on various previous studies on entrepreneurial intention, in this study students' entrepreneurial intention was measured using the 5 scale of The Entrepreneurship Intent Scale (EIS), as developed by Valliere (2015). The students'

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entrepreneurial intention will be seen from the emergence of various attributes, such as: (I1) wishing to be an entrepreneur, (I2) being interested in the entrepreneurial profession, (I3) preparing themselves for entrepreneurship , (I4) having a strong desire to be an entrepreneur , (I5) believing to be an entrepreneur can give a better life expectancy , (I6) having a strong inner motivation for entrepreneurship, (I7) having immediately a real entrepreneurial activities after graduation, and (I8) setting to be entrepreneur as a main choice.

Based on the various characteristics of the four TF-based learning models, this study proposes a research hypothesis, as follows: (1) The more intensive the student's involvement in TF-based learning, the stronger the competence and entrepreneurial intention of the students; (2) The implementation of four TF-based learning models, namely PBL, SBE, INTRNSHP, and CEP has a positive impact on strengthening the competence and entrepreneurial intention of vocational students; (3) PBL and SBE-based learning is an effective learning approach to increase the competence and entrepreneurial intention of vocational students.

RESEARCH METHODS

This study uses a longitudinal research approach to examine the development of students' entrepreneurial competencies and intentions after they involve in teaching factory-based learning for 4 semesters (2 years). The populations in this study were students of Accounting, Marketing, and Hospitality program from SMK 1 Jombang, SMK 1 Magetan, and SMK PGRI 1 Giri Banyuwangi, East Java Indonesia. Those schools implemented teaching factory-based learning for 2 semesters in Academic Year 2018/2019 (students are in 11th grade), and 2 semesters in Academic Year 2019/2020 (students are in 12th grade). The population in this study was 386 students. The number of samples is determined using a formula developed by Phrasisombath (2009) as follow

$$n = \frac{N}{1 + N\alpha^2}$$

(n=sample size, N=population, α=margin of error is at 5%).

Thus, the samples obtained are 196 students. The sampling technique used in this study is proportional random sampling. The students who were selected as research samples for 4 semesters (from 3rd semester to 6th semester) took part in teaching factory-based learning activities, namely: (1) internship, (2) production-based learning, (3) cooperative education placement, and (4) School-based enterprise.

Learning in the form of internship is implemented by assigning the students to practice on the work field in the school business center in accordance with students' specializations. Production-based learning is implemented by assigning students to analyze and create good works in the form of goods or services, followed by conducting market analysis, and selling the goods or services to consumers. Cooperative education placement is implemented by assigning students to work in business centers both in schools and outside of school which are cooperative between schools and the industry. Learning in the form of school-based enterprise is implemented by assigning students to run or manage business activities owned by the school.

The development of students' entrepreneurial competencies and intentions is measured based on indicators identified by using a questionnaire by Likert scale of 5. Measurement of development of students' entrepreneurial competencies and intentions is done by using the principle of self-evaluation as developed by Judge, et al., (1997) and Sharma & Misra (2017). The self-evaluation activities are conducted by giving students the opportunity to evaluate the

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development of students' entrepreneurial competencies and intentions after they are involved in TF-based learning in each semester. The development of students' entrepreneurial competencies and intentions is evaluated for 2 years (4 semesters).

The questionnaire on entrepreneurial competencies and intentions was developed by researchers based on 15 indicators of entrepreneurial competencies, and 8 indicators of entrepreneurial intentions. An example of instruments to measure entrepreneurial competencies is as follows: "*After participating in production-based learning, I feel that I have a very deep understanding of entrepreneurship*". While an example of instruments to measure entrepreneurial intentions is as follows: "*After participating in an internship, I have a very strong desire to be an entrepreneur*".

To identify how the effects of 5 teaching factory-based learning models on students' entrepreneurial competencies and intentions, the data was analyzed with a multivariate variant model (Manova) by using the general linear model (GLM) procedure. Data analysis was performed by using SPSS software. With the technique of multivariate analysis, this study will examine whether there are significant differences mean for students' entrepreneurial competencies and intentions when they follow the four TF-based learning models. Thus, this study is expected to identify the effectiveness of teaching factory-based learning models in strengthening the students' entrepreneurial competencies and intentions in vocational high schools.

This study also uses thematic analysis to reveal various factors that influence the growth of students' entrepreneurial competence and interest. By using thematic analysis, this study intends to describe various issues related to research problems more broadly and deeply (Boyatzis, 1998; Alhojailan, 2012).

RESULTS AND DISCUSSION

Development of Students' Entrepreneurial Competence and Students' Entrepreneurial Intention

A summary of the development of entrepreneurial competencies and intentions of vocational students after involving in TF-based learning is presented in Figure 1. Overall, the involvement of students in 4 TF-based learning models can strengthen entrepreneurial competencies and intentions. This is seen from the increasing score of entrepreneurial competencies and intentions starting from 3rd semester to 6th semester. This study shows that the intensity of students' involvement in TF-based learning has a positive effect on the development of students' entrepreneurial competencies and intentions. This study revealed that PBL and SBE learning models are 2 teaching factory-based learning models that are able to have a strong influence on the development of students' entrepreneurial competencies and intentions (graphically see Figure 1).

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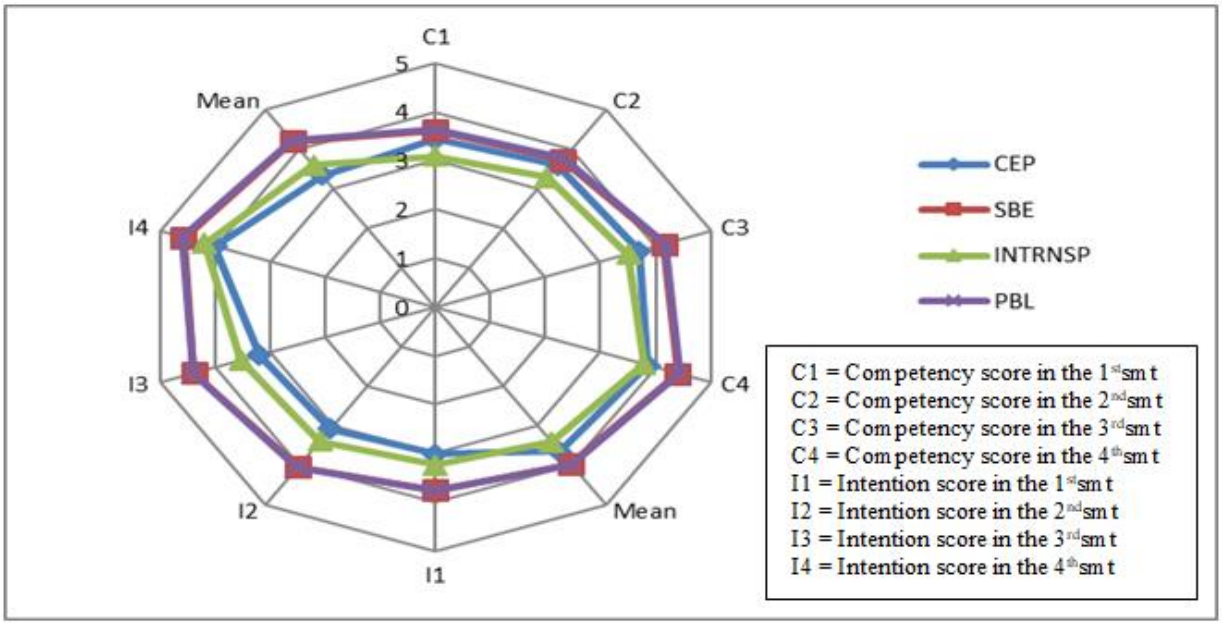

FIGURE 1
STUDENTS' ENTREPRENEURIAL COMPETENCIES AND INTENTIONS IN 4 SEMESTERS BASED ON THE LEARNING MODELS

The development of students' entrepreneurial competencies and intentions after following the TF-based learning for 4 semesters is presented in Table 1. Based on the data in Table 1, it can be seen the trends in the development of students' entrepreneurial competencies and intentions for 4 semesters, as described in Table 2. The data in Table 1 and Table 2 show that the intensity of students' involvement in TF-based learning has a strong influence on the development of students' entrepreneurial competencies and intentions. This can be seen from the significant differences in the scores of students' entrepreneurial competencies and intentions among semesters. This is in line with Prianto's study (2017) which revealed that the level of student involvement in entrepreneurial learning had a significant effect on the growth of entrepreneurial intentions. The findings of this study are also in line with the opinion of Kasali (2010) which states that strengthening work culture and entrepreneurial culture will run effectively if the cultures are implemented consistently. The process of strengthening entrepreneurial culture begins with coercing or requiring students to involve in entrepreneurship. If this activity is implemented continuously, it will become an entrepreneurial habit, and the peak will be an entrepreneurial culture (Kasali, 2010).

Table 1
DIFFERENCES IN THE DEVELOPMENT OF ENTREPRENEURIAL COMPETENCIES AND INTENTIONS FOR 4 SEMESTERS

Dependent Variable	Semester (I)	Semester (J)	Mean Different (I-J)	SE	Sig.
Entrepreneurial competence	The 1st Semester	The 2nd Semester	-0.1644*	0.0125	0.000
		The 3rd Semester	-0.4744*	0.0125	0.000
		The 4th Semester	-0.6987*	0.0125	0.000
	The 2nd Semester	The 3rd Semester	-0.3100*	0.0125	0.000
		The 4th Semester	-0.5344*	0.0125	0.000

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	The 3rd Semester	The 4th Semester	-0.2244*	0.0125	0.000
Entrepreneurial intention	The 1st Semester	The 2nd Semester	-0.2075*	0.144	0.000
		The 3rd Semester	-0.4544*	0.144	0.000
		The 4th Semester	-0.8650*	0.144	0.000
	The 2nd Semester	The 3rd Semester	0.2469*	0.144	0.000
		The 4th Semester	-0.6575*	0.144	0.001
	The 3rd Semester	The 4th Semester	-0.4106*	0.144	0.000

Table 2
COMPARISON SCORES OF ENTREPRENEURIAL COMPETENCIES AND INTENTIONS OF VOCATIONAL STUDENTS FOR 4 SEMESTERS

Dependent Variable	Comparison of Competency Scores and Entrepreneurial Intention between Semesters	Conclusion
Entrepreneurial Competencies	The 1st smt<The 2nd smt	The 4th smt > The 3rd smt > The 2nd smt > The 1st smt. The longer involvement in TF-based learning, the higher score of entrepreneurial competencies.
	The 1st smt<The 3rd smt The 1st smt<The 4th smt The 2nd smt<The 3rd smt	
	The 2nd smt<The 4th smt The 3rd smt<The 4th smt	
Entrepreneurial Intention	The 1st smt<The 2nd smt	The 4th smt > The 3rd smt > The 2nd smt > The 1st smt. The longer involvement in TF-based learning, the higher score for entrepreneurial intentions.
	The 1st smt<The 3rd smt The 1st smt<The 4th smt The 2nd smt<The 3rd smt	
	The 2nd smt<The 4th smt The 3rd smt<The 4th smt	

Source: Analyzed based on data in Table 1

Based on the data presented in Table 2, it can be stated that the more intensive the student's involvement in TF-based learning, the stronger the competence and entrepreneurial intention of the students. Thus, these findings strengthen the first hypothesis as proposed in this study.

The Effect of TF-Based Learning Models in Strengthening Students' Competency and Entrepreneurial Intention

The impact of implementing 4 TF-based learning models in forming entrepreneurship competency scores (per indicator) is presented in Figure 2. This study revealed that the INTRNSHP learning model had an impact on strengthening entrepreneurial competencies in the "*high*" category for indicator C9, C11, and C15; while the other 12 indicators are in the "*moderate*" category. The CEP learning model has an impact on strengthening entrepreneurial competencies in the "*moderate*" category for indicator C1 and C13, while 13 other indicators are in the "*high*" category. Whereas the SBE and PBL learning models are able to strengthen students' entrepreneurial competencies including 15 indicators in the "*high*" and "*very high*" categories. The SBE learning model is able to strengthen entrepreneurial competencies in the "*very high*" category for indicator C2 (strengthening mentality as an entrepreneur), C5 (strengthening skills in seeing business opportunities, and C10 (strengthening the enthusiasm for entrepreneurship), while the learning model PBL is able to strengthen entrepreneurial competencies in the "*very high*" category for indicator C2 (strengthening mentality as an

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entrepreneur), C6 (skills in utilizing resources), C9 (strengthening skills in making business strategies), C10 (strengthening the passion for entrepreneurship), and C15 (strengthening perseverance). Graphically the impact of the implementation of 4 learning models to the strengthening of entrepreneurial competencies of students can be seen in Figure 2.

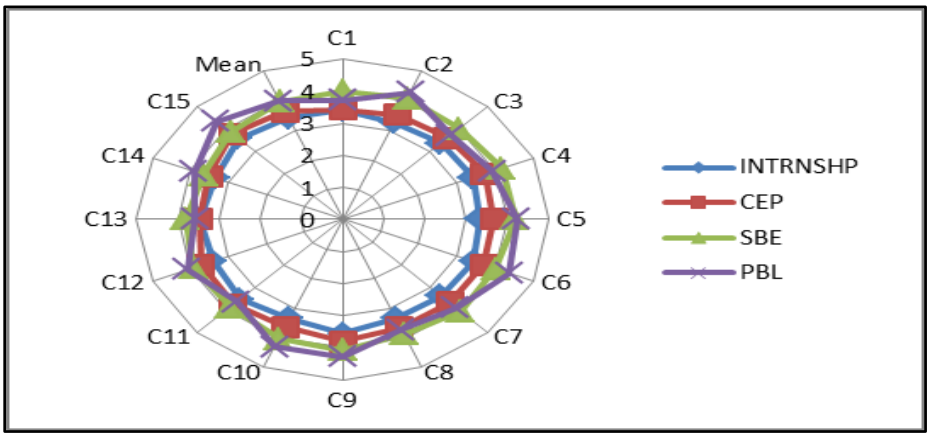

FIGURE 2
STUDENTS' ENTREPRENEURIAL COMPETENCIES SCORE (PER INDICATOR) ACCORDING TO THE IMPLEMENTED LEARNING MODEL

Based on the data as presented in Figure 2, the SBE and PBL learning models can strengthen entrepreneurial competencies, both related to aspects of knowledge, skills, and attitudes. This study revealed that the SBE learning model had a very strong influence in forming entrepreneurial mentality (aspect of knowledge), strengthening skills in seeing business opportunities (aspect of skills), and strengthening the motivation of entrepreneurship (aspect of attitude). While PBL learning model has a very strong influence in shaping entrepreneurial mentality (aspect of knowledge), proficient in utilizing resources and competent in making business strategies (aspect of skill) and strengthening the passion for entrepreneurship and strengthening perseverance in carrying out business activities (aspect of attitude). The results of this study at the same time answer the main problems in entrepreneurship learning which so far emphasizes more aspects of knowledge, so students have no experience in running business activities and are less able to develop entrepreneurial motivation (Winarno, 2012; Haris, et al., 2000; and Winarno, et al., 2019).

The impact of implementing 4 teaching factory-based learning models in forming entrepreneurial intention (per indicator) is presented in Figure 3. This study revealed that the INTRNSHP learning model had an impact on strengthening entrepreneurial intentions in the "*moderate*" category for 1 indicator; while 7 other indicators are in the "*high*" category. The CEP learning model had an impact on strengthening entrepreneurial intentions in the "moderate" category for all indicators (8 indicators). Whereas SBE and PBL learning models are able to strengthen students' entrepreneurial intentions in the "*high*" and "*very high*" categories. The SBE learning model is able to strengthen entrepreneurial intentions in the "*very high*" category for indicator I3 (preparing for entrepreneurship), I4 (strong desire to be an entrepreneur), and I8 (establishing a profession as an entrepreneur as the first choice of career). Whereas the PBL learning model is able to strengthen entrepreneurial intentions in the "*very high*" category for indicator I2 (interested in the profession as an entrepreneur), I7 (immediately making real

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entrepreneurial activities after graduation), and I8 (establishing the profession as an entrepreneur as the first choice of career).

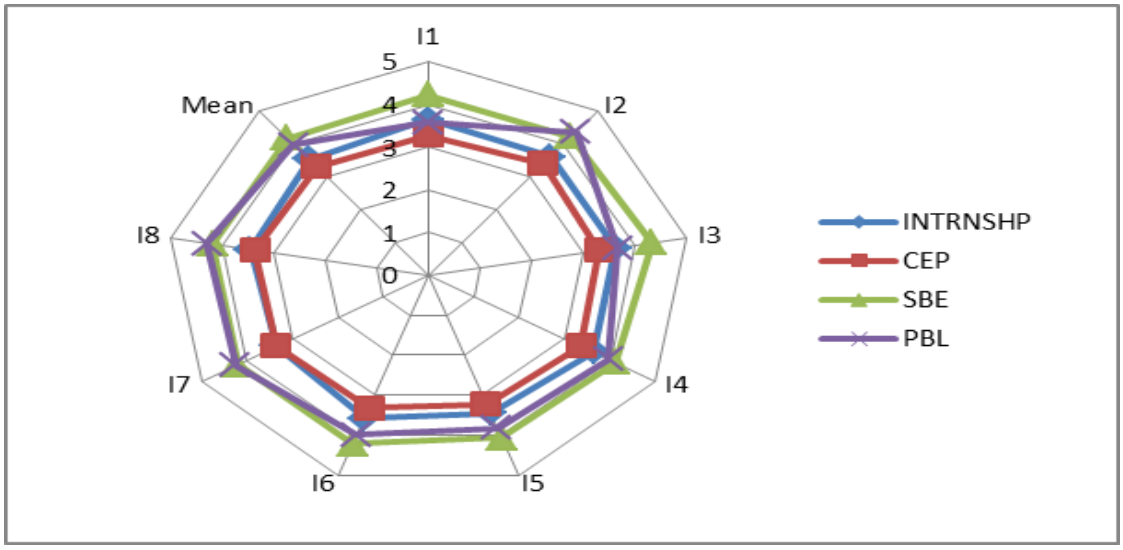

FIGURE 3
STUDENTS' ENTREPRENEURIAL INTENTION SCORE (PER INDICATOR) ACCORDING TO THE IMPLEMENTED LEARNING MODEL

Based on the data in Figure 3, it is known that the SBE learning model has a very strong influence in developing entrepreneurial intention for 3 aspects, namely: preparing students for entrepreneurship, fostering a strong desire to become an entrepreneur, and reinforcing students' decisions to establish entrepreneurial profession as the main choice. Whereas the PBL learning model has a very strong influence in developing entrepreneurial intention for 3 aspects, namely: fostering an interest in the entrepreneurial profession, encouraging students to immediately make real entrepreneurial activities after graduation, and reinforcing students' decisions to establish the entrepreneurial profession as the first choice. This study revealed that both the SBE and PBL could reinforce the decision to make the entrepreneurial profession as a top choice.

Statistical analysis with multivariate variant models was used in this study to examine the effect of implementing 4 TF-based learning models to the strengthening of students' entrepreneurial competencies and intentions. A summary of the statistical test results is presented in Table 3.

Table 3
EFFECTS OF THE IMPLEMENTATION OF LEARNING MODELS ON STUDENTS' ENTREPRENEURIAL COMPETENCIES AND INTENTIONS

Source	Dependent variable	Sum of squares	Df	Mean squares	F	Sig.[c]
Corrected model	Entrepreneurial competencies	73.345[a]	4	18.336	4.022	.000
	Entrepreneurial intentions	174.097[b]	4	43.524	1.156	.000
Model	Entrepreneurial competencies	36.643	3	12.214	976.768	.000
	Entrepreneurial intentions	105.299	3	35.100	2.1133	.000
Semester	Entrepreneurial competencies	46.892	3	15.631	1.2503	.000
	Entrepreneurial intentions	66.384	3	22.128	1.3323	.000
Model*semester	Entrepreneurial competencies	3.253	9	3.61	2.8904	.000

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	Entrepreneurial intention	6.151	9	683	41.147	.000
a. R Squared=0.812 (Adjusted R Squared=0.809); b. R Squared=0.824 (Adjusted R Squared=0.818); c. Computed using alpha=0.05						

This study proves that the implementation of 4 TF-based learning models has a positive influence on the development of entrepreneurial competencies and intention in vocational students. The implementation of TF-based learning model in vocational high schools is able to foster students' entrepreneurial competencies by 80.9% and foster students' entrepreneurial intentions by 81.8%. This proves that the requirement for vocational high schools' participants in the revitalization program to implement TF-based learning brings positive benefits for the development of students' entrepreneurial competencies and intentions. Thus, this study strengthens the second hypothesis which states that the implementation of four TF-based learning models, namely PBL, SBE, INTRNSHP, and CEP has a positive impact on strengthening the competence and entrepreneurial intention of vocational students.

The Effectiveness of TF-Based Learning Models in Strengthening Entrepreneurial Competencies and Entrepreneurial Intention

Statistical analysis also revealed differences scores in students' entrepreneurial competencies and intentions after following the 4 TF-based learning models, as presented in Table 4. These statistical data illustrate that the TF-based learning models are the most effective in strengthening students' entrepreneurial competencies and intentions.

Table 4
THE DIFFERENCES IN THE EFFECT OF IMPLEMENTING 4 TF-BASED LEARNING MODELS TOWARDS THE DEVELOPMENT OF ENTREPRENEURIAL COMPETENCIES AND INTENTION

Dependent Variable	Learning Model (I)	Learning Model (J)	Mean Different (IJ)	SE	Sig.
Entrepreneurial Competencies	CEP	SBE	-0.330*	0.006	0.000
		INTRNSHP	0.233*	0.006	0.000
		PBL	-0.352*	0.006	0.000
	SBE	INTRNSHP	0.563*	0.006	0.000
		PBL	-0.022*	0.006	0.000
	INTRNSHP	PBL	-0.585*	0.006	0.000
Entrepreneurial Intentions	CEP	SBE	-0.868*	0.005	0.000
		INTRNSHP	-0.263*	0.005	0.000
		PBL	-0.885*	0.005	0.000
	SBE	INTRNSHP	0.604*	0.005	0.000
		PBL	-0.017*	0.005	0.001
	INTRNSHP	PBL	-621 *	0.005	0.000
**The mean difference is significant at the 0.05 level*					

Based on the data in Table 4, it can be seen the comparison of learning models in forming entrepreneurial competencies and intentions of vocational students, as described in Table 5. The data presented in Table 4 and Table 5 reveal that PBL and SBE-based learning are the most effective TF-based learning models for strengthening students' entrepreneurial competence and intention. Thus, this study strengthens the third hypothesis which states that PBL and SBE-based learning is an effective learning approach to increase the competence and entrepreneurial intention of vocational students.

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Table 5
COMPARISON OF LEARNING MODELS IN FORMING STUDENTS' ENTREPRENEURIAL COMPETENCIES AND INTENTIONS

Dependent Variable	Comparison of the Influence of Learning Models	Conclusion
Entrepreneurial Competencies	SBE>CPE	PBL>SBE>CPE>INTRNSHP. The sequence of effective learning models in forming entrepreneurial competencies is: PBL, SBE, CPE, and INTRNSHP.
	SBE>INTRNSHP	
	PBL>CPE	
	PBL>INTRNSHP	
	PBL>SBE	
	CPE>INTRNSHP	
Entrepreneurial Intention	SBE>CPE	PBL>SBE>INTRNSHP>CPE. The sequence of effective learning models in forming entrepreneurial interests is: PBL, SBE, INTRNSHP, and CPE.
	SBE>INTRNSHP	
	PBL>CPE	
	PBL>INTRNSHP	
	PBL>SBE	
	INTRNSHP>CPE	

Source: Analyzed based on data in Table 4

The results of this study strengthen Kuswantoro's study (2014) which states that TF-based learning can be used to implement competencies taught in real situations as in business activities. This study also strengthens studies conducted by Athayde (2009), Izedomi & Okafor (2010) and Kumar, et al., (2013) which states that entrepreneurship education activities carried out effectively can strengthen various entrepreneurial competencies and intention. This study proves that teaching factory-based learning, which combines theoretical and practical studies together, can increase the effectiveness of learning in the field of entrepreneurship; as expressed by Coduras, et al., (2010) and Prianto, et al., (2018). The results of this study prove that TF-based learning can be a bridge between learning activities in schools with the competency specifications needed by the business.

In the context of entrepreneurship development among vocational students, PBL and SBE learning models are the 2 most effective TF-based learning models to strengthen the entrepreneurial spirit for students. Referring to the study of Valerio et al., (2014), PBL and SBE learning models are effectively used to develop students' entrepreneurial mindset. The results of this research study also answer the classic question: "*Are entrepreneurs born or made?*" (Psilos & Galloway, 2018). This study proves that an effective learning approach can be an instrument for developing an entrepreneurial mindset. So, to create new entrepreneurs it can be prepared through educational activities carried out with appropriate learning approach.

The implementation of TF-based learning on the SBE and PBL models is proved that it is able to develop aspects of knowledge, practical skills, and attitude and it is basically a manifestation of the concept of mastery learning (Prianto et al., 2019). Prianto, et al., (2019) explained that learning activities that only emphasize aspects of knowledge without followed by the actual application of theory (practice), although it is studied in depth; it will only produce graduates with a pseudo of understanding. They may understand something, but are unable to behave or work according to their field of knowledge. Conversely, carrying out practical activities without adequate knowledge also has the potential to produce graduates of worker-handyman, create waste and produce an optimal output. The combination of mastery of theoretical concepts followed by the ability to apply the theory will produce a level of deep understanding (profound of understanding) and create efficiency, and hope graduates can be able to apply the values of entrepreneurship (entrepreneur ability).

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TF-based learning with the SBE approach is proven to be able to strengthen entrepreneurial mentality, sensitivity in seeing business opportunities, and strengthen enthusiasm for the entrepreneurial profession. Meanwhile, the PBL approach is proven to be able to strengthen entrepreneurial mentality, ability to optimize resources, ability to develop business strategies, strengthen entrepreneurial spirit, and strengthen persistence. This study reveals that the strengthening of certain attitudes, values, habits and behaviors as an entrepreneur; should be implemented consistently and sustainably.

This study proves that SBE and PBL-based learning is an effective learning strategy in familiarizing students to carry out business activities. This study reveals that SBE and PBL-based learning is proven to be able to strengthen mentality as an entrepreneur. Daring to face a failure is one of the mental attitudes of entrepreneurs that can be strengthened through SBE and PBL-based learning. One of the main problems faced by young people in Indonesia in developing an entrepreneurial culture is the fear of facing failure. As a result, many young people in Indonesia do not make entrepreneurship their main choice after graduating from school, so that the entrepreneurial culture automatically does not develop properly. This phenomenon is not only faced by the younger generation in Indonesia, but various countries with not yet strong entrepreneurial cultures also face similar problems. The study by Fridhi (2020) reveals that students in Saudi Arabia have low entrepreneurial interest because they are afraid to face a failure, and this phenomenon has an impact on the low culture entrepreneurial.

Various research findings in this study are in line with the education theory which states that education is a process of habituation and culture. As an educational practitioner, Kasali (2011) state that education is an effort to develop a new culture through a process of habituation. Of course, the habituation process must be carried out continuously, and should get support from various stakeholders, such as principals, teachers, parents, families, and community members. If the habituation process takes place intensively and continuously, the habituation will turn into a culture. In his book entitled "*Wirausaha Muda Mandiri, Ketika Anak Sekolahan Berbisnis*", Independent Young Entrepreneurs, When Students Do Business, Kasali (2011) reveals the stories of students who are successful in running business activities, because their environment is continually accustomed to carry out business activities. This story proves the importance of habituation for students to carry out business activities; if one day they are expected to have the competence and entrepreneurial intention. This is in line with Almahdi's (2019) study which states that entrepreneurial education will run effectively if it is carried out through various events and takes place in a sustainable manner.

CONCLUSION

There are 3 main research findings in this study

1. The implementation of 4 TF-based learning models in 4 semesters proved capable of developing 15 entrepreneurial competencies and fostering 8 attributes of entrepreneurial intention. Students' entrepreneurial competencies and intentions keep increasing consistently, starting from the evaluation activities implemented at the end of 3rd semester until the end of 6th semester. This proves that entrepreneurial learning will run effectively if it is carried out by combining all the theories and practice together. Entrepreneurial learning with a deductive approach that is more filled with lecture activities by teachers is not suitable for entrepreneurial learning. Entrepreneurial learning must use the principles of learning by doing and work-based learning, as applied in 4 TF-based learning models in this study. This study also proves that the intensity of students' involvement in TF-based learning largely determines the development of competencies and intention in entrepreneurship.

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2. The implementation of the TF-based learning model has a positive effect on the development of students' competencies and intentions. The contribution of the application of the TF-based learning model to the development of entrepreneurial competencies and intentions was 80.9% and 81.8%. In other words, the implementation of TF-based learning has a very strong influence on the development of entrepreneurial competencies and intentions.

3. This study found 2 TF-based learning models that had a very strong influence in developing entrepreneurial competencies and intentions, namely: (a) production-based learning (PBL) and (b) school-based enterprise, SBE. PBL and SBE are proven capable of developing entrepreneurial competencies, both for the aspects of knowledge, skills and attitudes. PBL has a very strong impact on the development of entrepreneurial competencies, especially for the following indicators: mentality as an entrepreneur, competent in utilizing resources, capable of making business strategies, passion for entrepreneurship, and strengthening perseverance. SBE has a very strong impact on the development of entrepreneurial competencies, especially for the following indicators: mentality as an entrepreneur, competent in seeing and exploiting business opportunities, and passion for entrepreneurship. PBL is proven to be able to foster a very strong intention in entrepreneurship, for indicators: interested in the entrepreneurial profession, encouraging students to immediately make real entrepreneurial activities after graduation, and reinforce students' decisions to establish the entrepreneurial profession as the first choice. SBE has proven to be able to foster a very strong intention in entrepreneurship, for indicators: preparing themselves as entrepreneurs, fostering a strong desire to become entrepreneurs, and reinforcing the decision of students to establish the entrepreneurial profession as the first choice. Both PBL and SBE have proven to be able to encourage students to prioritize the entrepreneurial profession as their first choice after graduation. PBL and SBE are the two most effective TF-based learning models for developing entrepreneurial competencies and fostering students' entrepreneurial intention.

IMPLICATIONS FOR NEXT RESEARCH

This research was conducted in vocational high schools in the fields of business and management, with the different characteristics of scientific fields such as vocational high schools in the fields of technology, health, catering services, tourism, and the like. Thus, the results of this study certainly cannot be generalized to non-business and management program. There needs to be further research examining the effectiveness of TF-based learning in vocational school in the field of technology, health, tourism services, and other vocational programs. This study also only compared the four TF-based learning models implemented in vocational high schools in business and management program, namely CEP, INTRNSHP, SBE, and PBL. It is necessary to study various other learning models that are relevant to vocational high schools in non-business management program.

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