

# The Effect of Teaching Factory Learning Implementation on Student Entrepreneurial Readiness Wood Construction Engineering Expertise Competencies State Vocational High School 1 Sidoarjo

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**Abstract**— Entrepreneurship is one of the solutions to reduce the number of unemployed graduates of vocational level. One way to establish entrepreneurial readiness of students with learning teaching factory. Collecting data using questionnaire in which the respondents is students of class XII Wood Construction Engineering Expertise State Vocational High School 1 Sidoarjo as many as 31 student's. Data test analysis using SEM-PLS, obtained P 0,016 that it mean <0.05. It concluded there is a significant effect on the implementation of teaching factory learning on student readiness entrepreneurs with a percentage of 54.9%. Implementation of teaching factory learning in the Wood Construction Engineering Expertise State Vocational High School 1 Sidoarjo class XII considered good. This is based on: (a) the ability of student's to receive order is very good (81.4%); (b) the ability of students to analyze orders is not good enough (30.4%); (c) the ability of students to declare order work readiness is very good (85.6%); (d) the ability of students to work on orders is good (55.4%); (e) the ability of students to perform quality control is not good enough (46.6%); and (f) the ability of students to deliver the order is good (50.1%).

**Keywords:** *Teaching Factory, Entrepreneurial Readiness*

## I. INTRODUCTION

The vocational education, there are several terms that related to, among others: vocational education, technical education, professional education, and occupational education. [1] said vocational education is a form of talent development, basic education skills and habits that lead to the world of work which is seen as an exercise of skill. Vocational education is an education system that emphasizes the development of students' skills in accordance with the areas of expertise of interest and required the industrialized world. Vocational training also trains students to be able to prepare themselves to work independently and work in a working group.

There is essentially Vocational High School aims to produce graduates that are productive, able to work independently, and can fill the job as a middle-level

manpower in accordance with its competence. Samsudi in [2] mentions a national ideally vocational graduates who can immediately enter the workforce around 80-85 percent. The fact, in a vocational education often facing several challenges, one of the challenges is how to increase employment opportunities for students who already have a vocational education.

Number of graduates at vocational secondary level each year has increased as data published by the Center for Data and Statistics Education and Culture 2016, the number of graduates of public and private vocational students in Indonesia in the academic year 2014/2015 as much as 1,343,102 students, and in 2015/2016 as 1.42987 million students. The growth is not balanced by the number of available industrial world, is evident from the data released by the CPM that the Unemployment Rate (TPT) in August 2015 to 2016 for Vocational High School education level as much as 12.65% in 2015, and as much as 11:11% in 2016, in which the Unemployment Rate (TPT) to level this education occupies the highest position. In addition to the development of science and technology applied in industry demands for quality human resources who are competent in their field. But it is not matched by the ability of schools to provide the skills required education industry.

In accordance with the statement of the Head of the National Professional Certification (BNSP), Abdurrahman (in beritasatu.com, 2015) says that the power of graduates of vocational schools (SMK) to boost the industry. But the problem there is power vocational graduates do not all have the quality in accordance with the wishes of industry. The cause of the high unemployment rate caused by several factors, such as limited number of industries, The competence of students who lack the appropriate infrastructure is incomplete, It also causes the students difficult to find a place for the working practices of the industry. To overcome these problems needs to be a learning method too can replace the work practices of the industry.

Of the various problems that have been raised in the above paragraph, vocational education should be able to teach the skills needed industry. This can be overcome with the implementation of learning teaching factory. Teaching factory is a concept of learning in the real atmosphere, so as to bridge the gap between the needs of industry competence and knowledge of the school [4]. Presents a teaching factory industry/real work in a school environment to prepare graduates who are ready to work. It can be concluded that learning is a teaching factory that emphasizes learning skills of students in order to carry out business activities and production in accordance with the conditions of the industrial world.

On learning teaching factory models of the TF-6M proposed by [3] as follows: (a) Receive order giver berbetuk communication activities. Students act as a worker receives a guest who had orders; (b) to analyze the order form from the original order analysis activities diaharapkan workable into finished products according to the demands drawings. Students are required in the not too long to be able to give answers to the ability to do the order according to specifications and within a certain time; (c) To declare the readiness of working order is a statement of readiness for work order according to specifications. The statement may not occur when students are not confident that he can perform on demand. Once the students expressed their readiness, meaning he made a promise that must be keep; (d) Working order regarding activities to do the work according to the demands of the job specifications have been generated from the analysis process orders. Students as workers

must comply with prescribed operating procedures; (e) Perform quality control are students who act as workers conduct an assessment of the workpiece to the task. This step requires honesty, prudence and thoroughness. Dishonesty will also damage the trust grantor order; and (f) Submit the order form of communication activities. To be able to communicate, students must have faith that the workpiece generates will be accepted by the order giver, because it has met specifications. Based on the TF-6M scheme, the recipient of the order in question are students of, an order that the teacher, while the order is itself a task. Learning teaching factory standards implemented by the procedures and actual work to produce a quality product and workmanship in accordance with the demands of the industry. In addition, students also acquired skill required in accordance with the industrial world.

[5] conducted a study Students Teaching Factory Implementation Efektivitas Vocational High School (SMK) in Solo Technopark with the result that the effectiveness of the implementation of learning in teaching factory program included in the category of very high and shows the implementation pembelajaran running smoothly, implementation time and attendance arrangements included in the high category. [6] said in a study on the implementation of vocational teaching factory RSBI DIY seen that the activities of teaching factory is able to enhance the entrepreneurial spirit of students. Teaching factory activity can contribute to improving the entrepreneurial spirit of students if the

activities carried out in accordance with the competencies learned.

The research has been done to prove that learning teaching factory can be used as a solution in reducing the unemployment rate of secondary vocational school level. And the implementation of learning teaching factory in State Vocational High School 1 Sidoarjo Competency Technical Expertise Construction Wood should help the students to prepare themselves to be ready to work or prepared as entrepreneurs, and ready to adapt to the working world. There is a readiness entrepreneurial characteristics, namely (a) trust and optimistic; (B) task-oriented and results; (C) a risk taker and like challenges; (D) leadership; (E) originality; (F) oriented toward the future.

## II. RESEARCH METHODS

This study aims to determine how much influence the implementation of learning teaching factory on the readiness of student entrepreneurs. The research model uses a quantitative model with the data analysis of SEM (Structural Equation Model) based PLS (Partial Least Square). There are two variables used are entrepreneurial readiness of students as the dependent variable (Y) and the implementation of learning teaching factory as the independent variable (X). Here is a table groove relationship between variables is shown.

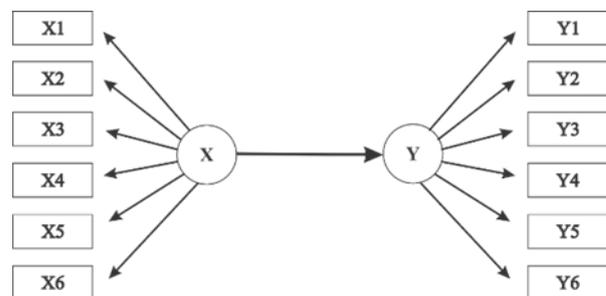


Figure 1. Diagram Line Corelation Variables X and Y

The population in this study are students of class XII in Wood Construction Engineering Expertise State Vocational High School 1 Sidoarjo. Popuasi number as many as 31 students apply learning teaching factory. The sampling technique used was saturated sampling, ie sampling by taking the entire members of the population as a respondent or samples. The sample in this research as many as 31 students.

There is 2 types of data in research, primary data or main data and secondary data or supporting data. In the basic data (primary) in this study was obtained from the results of the posttest HOTS respondents. While the secondary data or supporting data in the study of the list of names of students as respondents by the researchers obtained from administrative staff Faculty of Education, State University of Malang.

There is 2 questionnaires used in this re-search, the questionnaire teaching factory im-plementation of learning and teaching factory questionnaires learning implementation on the readiness of student entrepreneurs, who each questionnaire consists of 20 items statement.

Testing the hypothesis in this study using the approach of SEM (Structural Equation Model) based PLS (Partial Least Square). SEM analysis is a multivariate analysis technique which is a combination of factor analysis and regression analysis (correlation), which aims to examine the relationship between variables, [7]. Meanwhile, according to [8] is an alternative approach that shifts a covariance-based SEM approaches be based variants. Calculated using a hypothetical model to determine the path co-efficients SmartPLS existing path on the model or hypothesis keterdukungan significant Hartono [8]. The path coefficients are significant or positive when the value of  $P < 0.05$ .

III. RESULTS AND DISCUSSION

The data obtained in this study of student competency skills Timber Construction Engineering Expertise class XII State Vocational High School 1 Sidoarjo. The amount of data collected as many as 31 of each questionnaire.

Table 1 Selection Item Lesson Teaching Factory

Construct	Loading Factor	Cronbach's alpha coefficient	composite Reliability
Receiving Order	0.814	0.853	0.898
analyze Order Working readiness	0.304	0.575	0.766
working Order Quality Control	0.856	0.667	0.784
working Order Quality Control	0.554	0.601	0.790
Quality Control	0.466	0.709	0.821
Submit Order	0.501	0,729	0,848

From the data presented in Table 1, the highest factor loading value contained in the indicator "readiness work order" that is equal to 0.856. Whereas inlay lowest loading factor contained in the indicator "analyzing order". It can be interpreted that the students' abilities to analyze the order should be improved, because the loading factor values  $< 0.50$ . In addition, indicators of quality control also has a loading factor value  $< 0.50$ . But the overall implementation of learning teaching factory done quite well. Based on these results explained that the implementation of learning teaching factory readiness activities have the advantage in working order and submit the order.

Table 2 Item Selection Student Entrepreneurial Readiness

Construct	Loading Factor	Cronbach's alpha coefficient	composite Reliability
Confident and Optimistic	0.951	0.870	0.911
Oriented Tasks & Results	0,940	0.886	0.922
Dare to Take Risks	0.946	0.828	0.897
Leadership	0,849	0.823	.894
Keorisinalitasan	0.936	0.873	0.922
Oriented Future	0,885	0.798	0.883

Based on the exposure data in table 4.2 it can be stated that the highest loading factor values contained in the indicator "confident" that is equal to 0.951. While the value of the lowest loading factor contained in the indicator "future-oriented" with the loading factor value of 0.885. However, these differences are not significant, so it can be concluded that the students have a good entrepreneurial readiness due to value loading factor  $> 0.50$ .

Before the test the hypothesis, test the validity and reliability of the construct. After testing the validity of indicators, known indicators used in the study has good validity. In the convergent and discriminant validity also has good validity. The next stage of the construct reliability test performed, and the data is known to have high levels of a good reliable

After fulfilling the prerequisite test, the construct validity and reliability test, it can test the hypothesis.

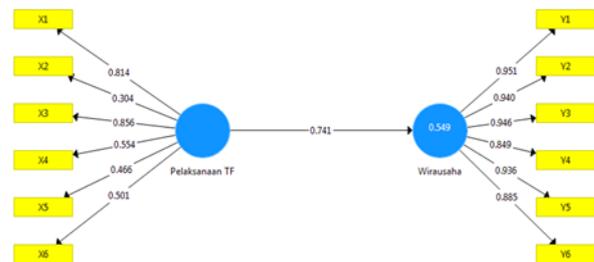


Figure 2. Hypothesis

Table 3 Hypothesis

Corelation	path coefficient	Standard deviation	statistics t	P
Implementation Readiness Entrepreneurial Teaching factory >>	0.741	0.107	5.022 *	0,016

The calculations show that the path co-efficient of 0.741 with a t-statistic of 5.022 ( $p < 0.05$ ) give the decision that the implementation of the teaching factory significantly influence entrepreneurial readiness. Implementation of good teaching factory will increase students' entrepreneurial readiness.

Teaching Factory Learning Implementation in State Vocational High School 1 Sidoarjo

Data from the analysis of Table 1 represent the value loading factor receives an order giver students majoring in Engineering Construction Wood at 0.814. It can be concluded that the students' ability to receive orders very good giver. Phase accept orders an early stage in the implementation of learning teaching factory. [3] received the order giver is a form of communication activities. In this case the student acts as a worker receives a guest who had orders. The opinion is in line with the findings of researchers, where students in implementing the learning teaching factory can understand the teacher's explanations while giving practical assignments. In addition,

students can understand the teacher's explanation about the specifics of the task with good practice.

The second stage is to analyze the order, from the data analysis Table 1 indicates the value of the loading factor is worth 0.304. From these results it can be concluded that the students' ability to analyze the order is less good. Analyzing the order form from the original order analysis activities and is expected to be worked into finished goods according to the demands of images [3]. The findings of researchers that students have the ability to analyze the task of the teacher's practice protocols well. The findings are consistent with the results of research [3] that students are required within a time not too long, otherwise the student must also have knowledge that embodies so that students are able to analyze the order appropriately.

The third stage is expressed readiness working on an order, the statement corresponding readiness to work order specifications, (Hi-dayat: 2011). The results of the analysis of table 1 in readiness indicators do have a loading factor value of 0.856 which is where the value is the highest value among other indicators. It can be concluded that the students' ability to express readiness excellent working order. This is consistent with the findings of researchers, that students have the confidence to do the work with a good practice so that students are motivated in doing the practice. [3] stated that the readiness statements will not occur when students are not sure that he can perform on demand.

The fourth stage is working on an order, an activity to do the work according to the demands of the job specifications have been generated from the analysis process orders, (Hi-dayat: 2011). The results of the analysis conducted in Table 1 on the indicator work order has a value of loading factor of 0.554. These results can be concluded that the ability of the students in good working order. This is consistent with research findings that students can do practical assignments in accordance with procedures and work standards have been determined. Besides the practice tasks students are able to comply with the rules applied in the workshop K3 well. But in the student's ability in doing the practice according to specifications provided by the teacher needs to be improved a bit more. In line with the findings [3] which states that in doing the work required within their specifications. In addition, students as workers must obey the prescribed work procedures and safety and measures properly so as to produce objects as you specify.

The next stage is to do quality control, namely students act as workers conduct an assessment of the workpiece has earned, (Hi-dayat: 2011). Table 1 indicates the indicators of quality control has a value of 0.466 so that the loading factor can be expressed students' ability to perform quality control is not good. The findings of researchers at this stage that students have good skills in checking the results of the work according to predetermined specifications, working on practical assignments honestly, be careful and meticulous. In addition, students believe that you have completed the work properly after checking. But students do not feel ready to present their work to the teacher. The findings of researchers in line with [3] the students are required

honesty, prudence, and thoroughness in conducting research workpiece had done. Through quality control students had confidence that the resulting workpiece has met the specifications, because students must demonstrate their work before giving orders.

The last stage is handed the order in which the form of the communication. Data from the analysis of Table 1 represent the value loading factor on indicators submit orders amounting to 0.501. It can be concluded the students' ability in delivering good order. In accordance with the findings of researchers that students have good skills in telling the teacher after completing practical tasks, in addition students can also convince teachers that the project work meets specifications. Students also feel confident on the results of work completed according to specifications. [3] also stated that in order to be able to communicate, students must have faith that the workpiece produced will be accepted by the grantor order because it has met specifications.

Overall, the tendency in the ability of students majoring in Engineering Construction Wood XII class teaching factory in the implementation of learning tends to be on preparedness capabilities working order. This is because the value obtained loading factor is higher than the student's ability in other indicators. However, the implementation of learning teaching factory in the Department of Construction Engineering Wood XII grade students performing well. These conclusions were supported by the results of research in which the ability of the students in these two indicators are very good, two is a good indicator, and two indicators are not good. The performance indicators in accordance with the results of research by Hi-dayat (2011).

### **The Effect of Teaching Factory Learning Implementation on Student Entrepreneurial Readiness**

Implementation of learning teaching factory has significant impact on students' entrepreneurial readiness. That is because based on data analysis that has been done in Figure 2 which states that teaching factory kepengaruhannya implementation of learning as much as 54.9%. So that means the implementation of learning teaching factory provided in school and performing well is part of the students' entrepreneurial readiness. Learning teaching factory conducted properly can have a direct impact on improving the readiness of student entrepreneurs.

Readiness of entrepreneurs in this discussion is the condition students to be able to practice skills in the field of wood construction and its entrepreneurial skills of learning teaching factory. There are several characteristics in self-employment readiness, among others that simply believing in yourself and optimistic, task-oriented and results, dare to take risks and challenged his leadership qualities, keorisinalitasan, and oriented towards the future, Geofrey [9]. Some of these characteristics can be realized with the implementation of teaching factory with good learning. In the discussion of the previous section concludes that the implementation of learning teaching factory in the Department of Mechanical Construction Timber XII class performing well. So in accordance with the results of the data analysis,

Student involvement in making the workpiece provide firsthand experience to students in entrepreneurship. This is also supported on the frequency of State Vocational High School 1 Sidoarjo received an order specifically related to wood construction. The existence of these experiences make students further improve their competence in the field of timber construction. In line with the research results [6] which states learning teaching factory has great influence to improve the entrepreneurial spirit of students. Learning teaching factory located in the school has a dual role includes learning activities, production processes, sales and marketing, after-sales and repair partnership [10].

The influence of learning teaching factory on the readiness of student entrepreneurs as much as 54.9%, and 45.1% were caused by other factors. As some of the factors that influence students' entrepreneurial readiness, including a) the physical, mental, and emotional; b) needs, motives, and goals; and c) the skills, knowledge, and understanding of others that have been studied [11]. The physical condition of the ability to perform physical activity, mental condition associated with intelligence and calm states of mind in a state that allows it to develop its full potential, whereas emotional conditions related primarily to the motivation and encouragement or interest. Needs and goals is a need to develop the potential of self-owned and motifs to create jobs.

#### IV. CONCLUSION

Implementation of learning teaching factory in the Department of Construction Engineering Wood State Vocational High School 1 Sidoarjo class XII considered good. This is based on: (a) the ability of students to receive order is very good (81.4%); (b) the ability of students to analyze orders is not good enough (30.4%); (c) the ability of students to declare order work readiness is very good (85.6%); (d) the ability of students to work on orders is good (55.4%); (e) the ability of students to perform quality control is not good enough (46.6%); and (f) the ability of students to deliver the order is good (50.1%).

Implementation of learning teaching factory significantly influence students' entrepreneurial readiness, with a percentage of 54.9%. Implementation of learning good teaching factory will have a direct impact on the readiness of student entrepreneurs.

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