The Evaluation of Teaching Factory Implementation in Pika Industrial Wood Working School Semarang by Using Cipp Approach

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Article Info	Abstract
	The Teaching Factory (TeFa) learning model is a learning model used in a production or service-based vocational school that refers to standards, procedures, and an industry-like atmosphere (companies). PIKA Industrial Wood Working School Semarang is one of the vocational schools that implements the TeFa learning model. The implementation of ongoing TeFa learning requires evaluation so that the program can run according to the expected goals. The evaluation of the TeFa learning implementation used the CIPP evaluation model which consists of four aspects; they are Context, Input, Process, and Product (CIPP). This study aims to determine the extent of the implementation of TeFa learning in terms of the four aspects by using questionnaires, interviews, observations, and documentation. The observation results of the teachers and industry representatives in terms of Context, Input, Process, and Product aspect showed that the implementation of TeFa learning was considered in the very good category in accordance with the standards set by the Directorate of Vocational Education of Indonesian Ministry of Education, Culture, Research, and Technology with the achievement result of 93% context, 96.2% inputs, 91.4% process, and 84.6% product. The results also showed that the implementation of TeFa learning, according to the teacher, in terms of Context, Input, Process, and Product aspects was included in the very good category, with the respective achievements of 91.8%, 95%, 92.9% and 93.4%. In addition, according to the students, the implementation of TeFa learning in terms of Context, Input, Process, and Product aspect was included in the very good category, with the achievements of 82.8%, 89%, 89%, and 93.8% respectively.

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INTRODUCTION

Vocational High School is part of the National Education System which has an important role in preparing and developing human resources. The school was established to prepare the needs of middle-level workers who are ready to work with the skills they have after attending education and training. Provision of skills in the form of certain competencies is strengthened in the Government Regulation of the Republic of Indonesia number 29 of 1990 Chapter I article 3 which states "Vocational secondary education is education at the secondary education level that prioritizes the development of students' abilities to carry out certain types of work". This statement is further strengthened in Chapter II article 3(2) which states "Vocational secondary education prioritizes preparing students to enter the workforce and develop professional attitudes". The statement confirms that vocational high school graduates must have competencies in accordance with the chosen skill program and are ready to compete in the world of work.

According to Prosser in Atmawati (2017: 2), it is stated that vocational schools must help their students to get jobs, maintain these jobs and move forward in their careers, vocational schools in question are vocational high schools that provide lessons for various types of jobs that exist in industry.

The presence of vocational high school is currently considered to be lacking in preparing graduates as ready-to-work workers. According to the study of Callan, VJ, (2003) and Clarke, M, (2007) in Dani Wardani (2011: 2), it is stated that there is still a gap between the world of education and the world of work. The world of education views the best graduates as those who graduate with high scores in a short period of time, while the industrial world wants high competence graduates with technical abilities and good attitudes.

According to G. Chryssolouris, the concept of industrial learning (TeFa) appears in medical disciplines, especially in the paradigm of hospital education, i.e. medical schools that run parallel to hospitals. Tefa aims to combine learning and work environments from which realistic and relevant learning experiences emerge (2016: 45). According to Sudira, TeFa is a production/service-based and work competency-based vocational learning model (2018: 183). P. Stavropoulos also stated that TeFa is a promising paradigm for adapting theoretical knowledge, research, and innovation into industrial practice. At this point the definition of a Teaching Factory (industry) should be given to clarify in distinguishing it from a learning factory (2018:124).

The concept of TeFa in vocational learning is considered to be successful if the graduates of the school can be absorbed by the industry based on the program and the competence of their expertise. A syllabus or curriculum that is oriented towards competence and the demands of the world of work is an effective means of implementing TeFa.

PIKA Industrial Wood Working School Semarang is one of the vocational schools that implements the TeFa learning by integrating the world of production unit education based on pure business. The success of TeFa in the world of education can be achieved if in its implementation it has a high quality achievement value in terms of various aspects. The vocational practice learning that is supported by industry makes the success of the school curriculum adapting to the workforce needs required by the industry.

The industry that accepts vocational school graduates will be satisfied if the graduates competence can fulfil their expectation. When our consumers encounter problems with our services, we must be ready to overcome them with the best service (Fatihudin, D., & Firmansyah, A., 2019:26). Cooperation and partnerships that exist between vocational high school and industry in the long term will improve mutually beneficial relationship between the two institutions.

The implementation of TeFa in the school environment needs to be evaluated to improve and to align the school curriculum with the needs of industry to the needs of graduates. According to M. Chabib Toha in Rizky Yanda Shagira, evaluation is a prepared activity that evaluates the condition of objects using instruments and the results are compared with certain standards to obtain conclusions (2021:2).

Based on the explanation described above, the implementation of TeFa learning model carried out at the PIKA Industrial Wood Working School Semarang needs to be evaluated by using the Context, Input, Process, and Product (CIPP) approach to find out how far the implementation of TeFa has been so far.

The objectives of this study are (1) to evaluate the implementation of TeFa at the PIKA Industrial Wood Working School Semarang in terms of context aspect; input aspect; process aspect, and product aspect and to evaluate the implementation of TeFa at the PIKA Industrial Wood Working School Semarang in terms of context, input, process, and product aspects as a whole.

METHOD

The research method used in this study was evaluative method applying the CIPP model. The approach used in this study was a quantitative descriptive approach. It is called a quantitative method because the research data is in the form of numbers and the analysis uses statistics (Sugiyono, 2012:13). This research was conducted at PIKA Industrial Wood Working School Semarang, where the unit of analysis of this research was the implementation of TeFa learning. The data sources and the research samples were: 1) School Principal; 2) Head of Interior Design and Furniture Engineering Expertise Program; 3) Vice Principal of Public Relations; 4) Practice Teachers (Instructors); 5) Business and Industry party; 6) Students of the academic year 2020/2021 (grade 13) PIKA Industrial Wood Working School Semarang.

To collect the data, the instruments used in this study were observation sheets, questionnaires, and interviews. Observation sheets were given to the teachers and the industry respondents, while the questionnaires were given to the teachers and the students. The instruments were determined by the level of validity and reliability. The test of the instrument is intended to determine the validity and reliability of the instrument, so that it can be found whether or not the instrument is appropriate to use in collecting research data. The research instrument that would be tested was the TeFa implementation instrument at PIKA Industrial Wood Working School Semarang by using the CIPP approach.

The validity of the teacher and industry observation sheets was tested using the CVR formula. Based on the test results, it can be conveyed that there were 8 items that failed, they were point 17 for the context aspect; point 4, 5, 6, 27, 28, 29 for the process aspect; and point 5 for the product aspect. The reliability of the observation sheet for teachers and industry was tested using the ICC formula. Based on the test results, it can be conveyed that the items that pass or do not fail have an ICC coefficient of 0.825.

Table 1. Classification of Instrument Reliability Coefficient

ICC Value	Interpretation
0.00 – 0.50	Poor reliability
0.51 – 0.75	Moderate reliability
0.76 – 0.90	Good reliability
0.91 – 1.00	Excelent reliability

Reference: Portney & Watkins, 2009

The validity of the teacher's questionnaire was tested by using the formula for the relationship between the items and the total with the Product Moment correlation. Based on the test results, it can be seen that there were 82 items that failed. The validity of the student's questionnaire was tested by using the formula for the relationship between the items and the total with the Product Moment correlation. Based on the test results, it can be seen that there were 17 items that failed.

The reliability of the teacher's questionnaire was tested using the Cronbach Alpha formula. Based on the test results, it can be found that the items that pass (do not fail) have a whole valid coefficient of 0.963, which is included in the very strong category. The reliability of the students' questionnaire was tested using the Cronbach Alpha formula. Based on the test results, it can be found that the items that pass (do not fail) have a whole valid coefficient of 0.973 which is included in the very strong category.

The data analysis used in this study was categorical descriptive. The formula developed by Sukarjo (2008: 101) was used to categorize the CIPP aspects both partially or individually. Each aspect of context, input, process, and product was analyzed for its average score, which could then be qualitatively put into categories ranging from very poor to very good scale.

Table 2. Criteria for the Five Scale Score

Score Interval	Criteria
X > 4.21	Very good
3.40 < X ≤ 4.21	Good
2.60 < X ≤ 3.40	Fair
1.79 < X ≤ 2.60	Poor
X ≤ 1.79	Very poor

(Sukarjo, 2008: 101)

The categories developed by Sukarjo are as presented in the table above. The analysis was done by implementing as follows: (1) Context aspect was analyzed for the mean score and the results were matched with the table above. The results obtained could then be put qualitatively into categories ranging from very poor to very good. The same analysis treatment was done also for the aspect of Input, Process, and Product. (2) The data analysis of the whole aspects of CIPP to determine the effectiveness of the implementation of TeFa learning at PIKA Industrial Wood Working School Semarang used the Glickman quadrant.
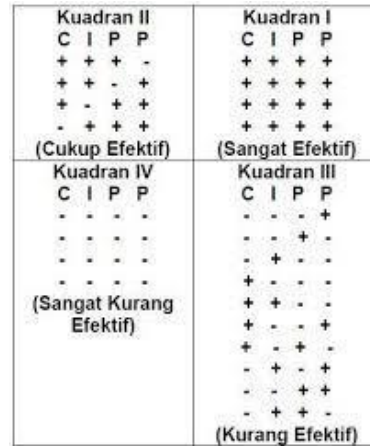

Figure 1. Glickman Quadrant Prototype
(Source: Ni Luh Karnita Dewi, 2015:6)

The effectiveness measurement of the evaluation of Teaching Factory learning implementation is carried out by analyzing the aspect of context, input, process, and product as the variables through quadrant analysis of the Glickman model which is divided into four quadrants. If the data analysis results show all variables are effective (+), it will be in quadrant I which means very effective. On the contrary, if the data analysis results show all variables are not effective (-), it will be in quadrant IV which means very ineffective. If the data analysis shows the three variables have effective results, it will be in quadrant II, which means they are quite effective. Meanwhile, if the data analysis results show two or one variable(s) have(s) negative results, it will be in quadrant III which means less effective.

RESULTS AND DISCUSSION

1. The Evaluation Result of CIPP Aspect from the Teachers and Industry.
   The observation result shows:

Table 3. The Score of the CIPP Achievement Level of the Teachers and Industry Respondents

Aspect	Number of Respondent	Number of Question	Total Score	Mean	Score (%)
Context	4	29	539	4.65	93
Input	4	54	1040	4.81	96.2
Process	4	44	805	4.57	91.4
Product	4	15	254	4.23	84.6

Source: The study results (2021)

The result of the Context aspect calculation is categorized as very good because it has an average interval score of 4.65 (x>4.21), Input aspect 4.81 (x>4.21), Process aspect 4.57 (x>4.21), and the Product aspect 4.23 (x>4.21). Based on these data, it can be concluded that the implementation of TeFa learning model at PIKA Industrial Wood Working School Semarang in terms of the Product aspect has done very well.

2. The Evaluation Result of CIPP Aspect from the Teachers

The questionnaire of the teacher respondents shows the following results:

Table 4. The Score of the CIPP Achievement Level of the Teacher Respondents

Aspect	Number of Respondent	Number of Question	Total Score	Mean	Score (%)
Context	12	9	496	4.59	91.8
Input	12	19	1086	4.76	95
Process	12	39	2175	4.65	92.9
Product	12	4	224	4.67	93.4

Source: The study results (2021)

The result of the Context aspect calculation is categorized as very good because it has an average interval score of 4,59 $(x>4,21)$, Input aspect 4,76 $(x>4,21)$, Process aspect 4,65 $(x>4,21)$, dan Product aspect 4,67 $(x>4,21)$. Based on these data, it can be concluded that according to the formula developed by Sukarjo, the implementation of TeFa learning model at PIKA Industrial Wood Working School Semarang in terms of the Product aspect has done very well.

The Evaluation Result of CIPP Aspect from the Students

The questionnaire of the student respondents shows the following results:

Table 5. The Score of the CIPP Achievement Level of the Student Respondents

Aspect	Number of Respondent	Number of Question	Total Score	Mean	Score (%)
Context	46	15	2859	4.14	82.8
Input	46	20	4078	4.47	89
Process	46	20	4078	4.47	89
Product	46	4	863	4.69	93.8

Source: The study results (2021)

The result of the Context aspect calculation is categorized as good because it has an average interval score of 4.14 $(4.14 < X \leq 4.21)$, Input aspect 4.47 $(x>4.21)$, Process aspect 4.47 $(x>4.210)$, and Product aspect 4.69 $(x>4.21)$. Based on these data, it can be concluded that according to the formula developed by Sukarjo, the implementation of TeFa learning model at PIKA Industrial Wood Working School Semarang in terms of Context, Input, Process and Product aspect has done very well.

The Result of overall Aspects Evaluation using the Glickman Quadrant

The results of the overall CIPP aspect analysis from the teacher respondents by using the Z score test and T score are as follows:

Table 6. Teacher Evaluation Results for Overall CIPP Aspect

No	Variable	Positive	Negative	Result
1	Context	7	5	+
2	Input	7	5	+
3	Process	7	5	+
4	Product	7	5	+
Category				Very Effective

Source: The study results (2021)

The evaluation of the overall CIPP aspect showed very effective results, however, there were 18 items of the aspect context, 34 items of the process aspect, and 11 items of product aspect that was found to be invalid in the instrument validity test. For the context aspect, the school needs to cooperate with the industry intensively. The involvement of the partnership industry is able to develop vocational practice learning, especially in the development of science and technology. For the input aspect, the teachers need to plan vocational practical learning for a whole year and to ensure the readiness of working drawings for the grade level. For the process aspect, the students need to be active to ensure the communication and coordination in order to reduce errors in their vocational practices implementation so that their work can be more productive and efficient. For the product aspect, the school needs to improve the soft skill competence (character) of the students especially when they are involved in an industrial field practice. The students' ability to carry out their responsibilities during the internships becomes the preference for the companies that need a workforce who is really ready with both hard skill and soft skill competencies.

The Results of the Questionnaire Analysis from the student respondents for the overall CIPP aspect by the Z score and T score test can be synthesized in the table below.

Table 7. The Evaluation Result of the Overall CIPP Aspect

No	Variable	Positive	Negative	Result
1	Context	22	24	-
2	Input	27	19	+
3	Process	25	21	+
4	Product	30	16	+
Category				Effective

Source: The study results (2021)

The evaluation results of the overall CIPP aspect were included in the effective category. However, there were 4 (four) items of the context aspect, 1 (one) item of the process aspect, and 12 (twelve) items of the product aspect that were found to be invalid in the instrument validity test. Regarding the context aspect, the school needs to evaluate the vision and mission by involving the school committee and relevant stakeholders, such as the industry that becomes their partner in developing the quality of education especially vocational practice learning. Regarding the process aspect, the school needs an image bank to enrich the varied product models and designs. Regarding the product aspect, the school needs to improve the learning quality of entrepreneurship subjects to encourage the students in improving their product quality and work productivity.

CONCLUSIONS

Based on the results and discussion above, it can be concluded that:

a. The evaluation results of the TeFa learning implementation at PIKA Industrial Wood Working School Semarang from the teachers respondents for the CIPP aspect showed a very good category.

b. The evaluation results of the TeFa learning implementation at PIKA Industrial Wood Working School Semarang from the students respondents showed negative result for the aspect of Context. Meanwhile the aspect of Input, Process, and Product showed positive results. Overall, it was categorized as good.

c. The results of the overall CIPP calculation using the Z score test and the T score from the teachers respondents showed that the implementation of TeFa learning at SMK PIKA Semarang was categorized as very effective because all aspect of CIPP as a whole showed positive results.

d. The results of the overall CIPP calculation using the Z score test and the T score from the students respondents showed that the implementation of TeFa learning at SMK PIKA Semarang was categorized as effective with a single negative result from the aspect of Context.

e. The satisfaction questionnaires for the customers that become the school's partners in implementing the TeFa learning in Industrial Work Practices can be used as a feedback and evaluations regarding the extent of vocational students' participation in the company. The result of customer satisfaction questionnaires showed there were 7 (seven) industrial companies stated that they still needed the students for the internships.

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