The Implementation Evaluation of the Teaching Factory Learning Model in the Bread Production Unit at SMKN 4 Garut

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ABSTRACT

A Teaching Factory (TeFa) is a production or service-based learning model that refers to industry standards and procedures to align educational qualifications with the qualifications required in business and the industrial world. Evaluation needs to be done to determine the suitability between the real conditions and the ideal conditions of TeFa. This study aimed to evaluate the implementation of the TeFa learning model at SMKN 4 Garut, especially in the bread industry APHP. The research model used is the CIPP evaluation model, which includes context, input, process, and product. The subjects of this study are parties that are involved in the implementation of the TeFa learning model, including the principal, the person in charge of TeFa, an expert teacher in the field of processing, the XII students who are majoring in APHP at SMKN 4 Garut, and product consumers. Data was collected through questionnaires, interviews, observations, and documentation. The results showed that the application of the TeFa learning model was based on the CIPP evaluation model, namely (1) Evaluation of the context with respondents from school principals and those in charge of TeFa obtained a percentage of 84.38% which is included in the very appropriate category; (2) Evaluation of inputs with respondents in charge of TeFa and teachers obtained a percentage of 74.58 which is included in the appropriate category; (3) Evaluation of the process with the respondent as the person in charge of TeFa and the teacher obtained a percentage of 86.17% and students of 83.00% who are included in the very appropriate category; (4) Evaluation of products with respondents in charge of TeFa and teachers obtained a percentage of 82.74%, students of 87.96%, and consumers of 83.44% which are included in the very appropriate category. The TeFa learning model based on the CIPP evaluation model has generally been implemented well but still requires improvement in cooperative relations, resource management, infrastructure, product quality, and marketing.

Keywords: Bread Production Unit, CIPP, Evaluation, Learning Model, Teaching Factory.

1. INTRODUCTION

The needs of the industrial world for workers are increasingly complex [1], so collaboration between industry and the world of education is needed to support programs that can improve student competency so that they are able to produce graduates who are competent according to industry criteria [2][3]. Teaching Factory commonly abbreviated as TeFa is a production or service-based learning model that refers to standards and procedures that apply in the industry and is carried out in an atmosphere similar to what is happening in the industry [4]. The standard conditions for implementing TeFa include human resources, learning aspects, facilities, practical activities, cooperation networks,

products/services, and financial governance [5]. In the learning aspect, the learning system uses block and continuous schedules and an assessment system based on the TeFa learning model. The human resource aspect includes students, teachers, non-educational staff, and other support personnel who are involved in implementing the TeFa learning model. In terms of facilities, schools need to meet a 1:1 ratio between students and equipment and need to manage space and equipment according to industrial conditions using a management system in the form of Standard Operating Procedures (SOP). In terms of practical activities, it is necessary to apply industrial culture, namely applying product quality standards, time targets, production process efficiency, work rotation (shifts), clear work

products, practice results being a source of income, clear functions, and responsibilities. In the aspect of cooperation networks, there needs to be cooperation between schools and the industrial world to support the successful implementation of the TeFa learning model. In terms of product, it is necessary to carry out good preparations and processes to produce products with industrial quality standards. As Aspects of financial governance, it is necessary to record financial transactions by standard accounting procedures covering recording activities, such as bookkeeping of financial transactions, special journals, and ledgers, to the final report.

Evaluation needs to be done to find out the suitability between the real conditions and the ideal conditions of the ongoing implementation of the TeFa learning model. Evaluation is a systematic way of collecting, compiling, processing and analyzing information, facts and data to produce a conclusion about the benefits and success of a program implemented [6]. According to [7], the evaluation can help show the extent to which performance has been carried out so that it can identify what needs to be improved, corrected, or maintained in a program based on the evidence obtained. In this way, the results of the evaluation are expected to provide input or recommendations to related parties to develop TeFa implementation.

SMK Negeri 4 Garut is one of the vocational schools that has implemented the TeFa learning concept in the Agricultural Product Processing Agribusiness Expertise Program (APHP) by building several production units, including bread, noodles, and coffee. Bread is one of the products that consumers want to develop and become a superior product and is most in demand by consumers compared to other products. The TeFa learning model has been implemented since 2017, but until now there has been no evaluation of its implementation.

This study aims to determine the extent to which the TeFa learning model is implemented at SMKN 4 Garut, especially in the APHP bread production unit. With an evaluation process, an overview of the implementation of each component can be identified, so that decisions can be made to maintain components that have been implemented well or to improve those that have not been implemented properly [8].

2. METHOD

The research method used is an evaluative research method with the CIPP evaluation model. CIPP evaluation is an evaluation process that is carried out as a whole through four aspects which include context, input, process, and product. The evaluation of the CIPP model is an evaluation concept offered by Stufflebeam

in 1965 as a result of its efforts to evaluate the ESEA (the Elementary and Secondary Education Act) [7]. The CIPP evaluation model diagram can be seen in Figure 3.1.
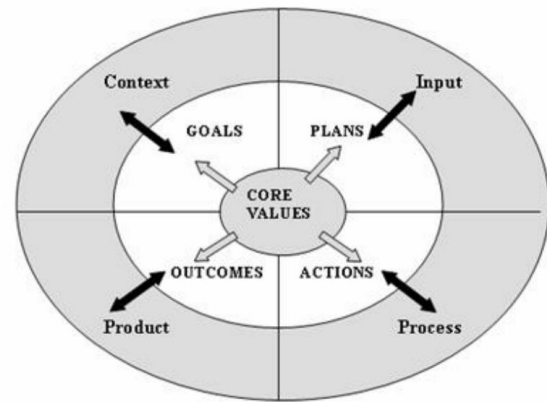

Figure 1. CIPP Evaluation Model Diagram

This research was conducted at SMK Negeri 4 Garut in the Agricultural Product Processing Agribusiness Expertise Program (APHP). The samples used in this study were school principals as policyholders and those in charge of implementing TeFa, one person in charge of TeFa, one expert teacher in the field of processing in bread production as a TeFa implementer, one productive subject teacher of Vegetable Product Processing Production, six students of class XII APHP who were carrying out TeFa learning in a bread production unit as many as 1 groups, and 10 consumers of bread products produced by APHP's TeFa expertise program. Data collection was carried out through questionnaires, interviews, observation, and documentation.

3. RESULTS AND DISCUSSION

The data obtained is divided into four parts in terms of the CIPP components which include the Context, Input, Process, and Product components. Quantitative data were analyzed descriptively, and the results of processing the respondent's assessment data were presented in the form of a Quality Achievement Score (QAS) table. Meanwhile, qualitative data was analyzed using data reduction techniques and data presentation in the form of data triangulation from the research results obtained to produce conclusions on each aspect of CIPP being evaluated [9].

3.1. Context Evaluation

Evaluation of the implementation of the TeFa learning model in terms of the context component was obtained from the results of a questionnaire with principal respondents and those in charge of TeFa at SMKN 4 Garut. This questionnaire consists of 16

questions. The quality achievement score of TeFa in terms of the context component can be seen in Table 1.

Table 1. The Quality Achievement Score of TeFa in Terms of The Context Component

Number of Respondents	Number of Questions	Total Score	QAS	Percentage (%)
2	16	108	54	84.38

Based on Table 1, it can be seen that the suitability of the implementation of the TeFa learning model at SMKN 4 Garut in terms of the context component is included in the very appropriate category with the Quality Achievement Score (QAS) of 54 with a percentage of 84.38%.

The questionnaire consists of 4 indicators. The quality achievement score of each indicator with a scale of 4 can be seen in Table 2.

Table 2. The Quality Achievement Score of TeFa for Each Indicator in Terms of The Context Component

No	Indicator	Score	Category
1	The basic principles and relevance of the implementation of the TeFa learning model with the school's vision and mission	3.50	Very Appropriate
2	Availability of supporting documents	3.25	Appropriate
3	Understanding and support of the school for the implementation of TeFa	3.40	Appropriate
4	The relationship between school and industry	3.38	Appropriate

Based on Table 2, it can be seen that the indicators of basic principles and the relevance of the implementation of the TeFa learning model with the school's vision and mission have the highest level of conformity. This shows that there is relevance to the implementation of the TeFa learning model with the vision and mission of SMKN 4 Garut. This is by the results of the interview which stated that the implementation of the TeFa learning model was by the school's vision and mission. The vision of SMK Negeri 4 Garut is to produce graduates who are smart, ready to work, productive, competitive and have an entrepreneurial spirit. Broadly speaking, the specified vision is in line with the objectives of implementing learning in SMK listed in the Law of the Republic of Indonesia number 20 of 2003 concerning the National Education System Article 15 explained that vocational education is secondary education that can prepare

students especially to work in certain fields. The implementation of the TeFa learning model, can provide competence and build work character that is by the demands of the business world and the industrial world. The implementation of the TeFa learning model is an effort made by vocational education to create a link and match of educational qualifications with qualification needs in the world of business and industry [10].

3.2. Input Evaluation

Evaluation of the implementation of the TeFa learning model in terms of the input component was obtained from the results of a questionnaire with the person in charge of TeFa, an expert teacher in the field of processing, and subject teachers at SMKN 4 Garut. This questionnaire consists of 40 questions. The quality achievement score of TeFa in terms of input components can be seen in Table 3.

Table 3. The Quality Achievement Score of TeFa in Terms of The Input Component

Number of Respondents	Number of Questions	Total Score	QAS	Percentage (%)
3	40	358	119	74.58

Based on Table 3, it can be seen that the suitability of the implementation of the TeFa learning model at SMKN 4 Garut in terms of input components is included in the category according to the Quality Achievement Score (QAS) of 119 with a percentage of 74.58%.

The questionnaire consists of 9 indicators. The quality achievement score of each indicator with a scale of 4 can be seen in Table 4.

Table 4. The Quality Achievement Score of TeFa for Each Indicator in Terms of The Input Component

No	Indicator	Score	Category
1	Product equipment and raw materials	2.7	Appropriate
2	Financial management and inventory	3.2	Appropriate
3	SOP performance and workflow	2.5	Appropriate
4	Organizational structure and job desk	2.2	No Appropriate
5	Implementation of Maintenance, Repair, and Calibration (MRC) activities	2.5	Appropriate
6	Practice room	3.4	Appropriate
7	Practice room layout	3.0	Appropriate
8	Teacher competency	3.2	Appropriate
9	Student competency	3.7	Very Appropriate

Based on Table 4 it can be seen that the student competency indicators have the highest suitability level.

This shows that the implementation of the TeFa learning model can form competent students. The implementation of the TeFa learning model in schools can create an atmosphere and activities similar to those in the real industry so that these activities can produce competent graduates, have an entrepreneurial spirit, and have a work culture character through production activities, both in the form of goods or services that have standard planning, procedures and industrial quality control, so that they are suitable for marketing to consumers [11].

3.3. Process Evaluation

Evaluation of the implementation of the TeFa learning model in terms of the process component was obtained from the results of a questionnaire with the respondents in charge of TeFa, expert teachers in the field of processing, subject teachers, and 6 students at SMKN 4 Garut. This questionnaire consists of 2 types, namely for teachers and students. The questionnaire for teachers consisted of 44 questions and 17 questions for students. The quality achievement score of TeFa in terms of the process component with teacher and student respondents can be seen in Table 5.

Table 5. The Quality Achievement Score of TeFa in Terms of The Process Component with Teacher and Student Respondents

Respondent	Number of Respondents	Number of Questions	Total Score	QAS	Percentage (%)
Guru	3	44	455	152	86.17
Siswa	6	17	337	56	83.00

Based on Table 5, it can be seen that the suitability of the implementation of the TeFa learning model at SMKN 4 Garut in terms of the process component with both teacher and student respondents included in the very appropriate category with the Quality Achievement Score (QAS) of 152 with a percentage of 86.17% and 56 with a percentage of 83.00%.

The questionnaire created for teachers and students consists of 4 indicators. The quality achievement score of each indicator with a scale of 4 can be seen in Table 6.

Table 6. The Quality Achievement Score of TeFa for Each Indicator in Terms of The Process Component with Teacher and Student Respondents

No.	Indicator	Teacher Respondents		Student Respondents	
		Score	Category	Score	Category
1	Entrepreneurial activity	3.7	Very Appropriate	3.7	Very Appropriate
2	Teacher activity	3.6	Very Appropriate	3.3	Appropriate
3	TeFa learning activities	3.3	Appropriate	3.3	Appropriate
4	Implementation of marketing and promotion plans	3.2	Appropriate	2.9	Appropriate

Based on Table 6 it can be seen that the indicator of entrepreneurial activity has the highest level of conformity, both from teacher and student respondents. This shows that the implementation of the TeFa learning model can foster an entrepreneurial spirit in students. This is by the results of interviews which state that the implementation of entrepreneurship is carried out in an integrated manner in the implementation of the TeFa learning model which starts from receiving orders, preparing tools and raw materials for production, carrying out production and selling products to consumers. That way, the application of the TeFa learning model can form and develop an entrepreneurial spirit in students, so that students become trained to work in industry or work independently or in entrepreneurship. This is in line with the objectives of SMK to produce graduates who can be absorbed in the world of work or can become graduates who are ready to work independently or become entrepreneurs [12].

Furthermore, the teaching activity indicator has the highest level of conformity only from the teacher respondents. This shows that teachers who play a role in implementing the TeFa learning model have the appropriate abilities, so they can carry out their duties properly. This is based on the results of interviews which state that the teachers in charge of implementing the TeFa learning model always provide motivation, guidance, and support to students, both morally and materially. Teachers have an important role in shaping the quality of education to create quality graduates. Therefore, teachers need to have special skills, namely they must be able to know and apply several teaching principles to carry out tasks professionally, including as information presenters, motivators, facilitators, and mentors [13].

3.4. Product Evaluation

Evaluation of the implementation of the TeFa learning model in terms of product components was obtained from the results of questionnaires with respondents in charge of TeFa, processing expert teachers, subject teachers, 6 students, and 10 consumers at SMKN 4 Garut. This questionnaire consists of 3 types, namely for teachers, students, and consumers. The questionnaire for teachers consisted of 14 questions, 9 questions for students and 8 questions for consumers. The quality achievement score of TeFa in terms of product components with teacher, student, and consumer respondents can be seen in Table 7.

Table 8. The Quality Achievement Score of TeFa for Each Indicator in Terms of The Product Component with Teacher, Student and Consumer Respondents

No	Indicator	Teacher Respondents		Student Respondents		Consumer Respondents	
		Score	Category	Score	Category	Score	Category
1	Market acceptance	3.2	Appropriate	3.3	Appropriate	-	-
2	Product quality	3.1	Appropriate	3.6	Very Appropriate	3.3	Appropriate
3	Product innovation	3.3	Appropriate	3.7	Very Appropriate	-	-
4	Student competency	3.7	Very Appropriate	3.5	Very Appropriate	-	-

Table 7. The Quality Achievement Score of TeFa in Terms of The Product Component with Teacher, Student, and Consumer Respondents

Respondent	Number of Respondents	Number of Questions	Total Score	QAS	Percentage (%)
Teacher	3	14	139	46	82.74
Student	6	9	190	32	87.96
Consumer	10	8	267	27	83.44

Based on Table 7, it can be seen that the suitability of the implementation of the TeFa learning model at SMKN 4 Garut in terms of the product component with teacher, student, and consumer respondents, all three are included in the very appropriate category with the Quality Achievement Score (QAS) of 46 with a percentage of 82.74%, 32 with a percentage of 87.96%, and 27 with a percentage of 83.44%.

The questionnaire made for teachers and students consisted of 4 indicators, while for consumers only 1 indicator. The quality achievement score of each indicator with a scale of 4 can be seen in Table 8.

Based on Table 8 it can be seen that the student competency indicators have the highest level of conformity, both from teacher and student respondents. This shows that the implementation of the TeFa learning model can foster work character education in the business and industrial world. The target for achieving student competency after following the TeFa learning model is to develop character education, namely the character needed in the business and industrial world [1]. Student character development according to the Direktorat Pembinaan SMK includes 3 things, namely motor skills (skills), cognitive abilities (knowledge), and affective abilities (attitude). Motoric ability is related to the quality of the work or practice carried out by students. Cognitive abilities are related to the development of thoughts that build creativity that can create innovation. Affective ability can foster a character of integrity in students which includes discipline, reliability, independence, diligence, openness, empathy, fostering a social spirit, leadership spirit, and entrepreneurship. According to the results of interviews

with respondents, it was stated that the implementation of the TeFa learning model was able to improve students' ability to work so that students were able to achieve the minimum passing criteria in subjects that applied the TeFa learning model.

Furthermore, product quality indicators have the highest level of conformity only from student respondents. This shows that the bakery products produced have almost met quality standards. This is based on the results of interviews which stated that the bread products produced by the APHP study program as a whole were of fairly good quality but still needed to be improved. The resulting bakery products have an attractive physical appearance, yellowish brown color, soft and elastic texture, and delicious taste. The drawback is that it does not have a uniform shape and size. Good quality bread can be seen from its physical appearance which includes the color of the bread crust which is yellowish brown, the texture of the crust is thin and dry, the volume of the bread is large, the shape is symmetrical, the grains are fine, the texture is smooth, soft and elastic, the crumb structure is even, smells good of wheat and yeast with good taste and shelf life [14]. The packaging used is still very simple and not equipped with complete information. Innovation needs to be done in the packaging used, namely by adding labels using color and attaching product images so that the packaging looks more attractive. In addition, it is necessary to add important information on the packaging related to the product as a means of promotion. Labels on product packaging must be made as attractive as possible to lure potential consumers to buy the product [15]. It is better to include a contact number that can be contacted by consumers to facilitate communication between consumers and producers when ordering products.

4. CONCLUSION

The results showed that the application of the TeFa learning model was based on the CIPP evaluation model, namely:

a) Evaluation of the context with respondents from school principals and those in charge of TeFa obtained a percentage of 84.38% which is included in the very appropriate category.

b) Evaluation of inputs with respondents in charge of TeFa and teachers obtained a percentage of 74.58 which is included in the appropriate category.

c) Evaluation of the process with the respondent as the person in charge of TeFa and the teacher obtained a percentage of 86.17% and students of 83.00% who are included in the very appropriate category.

d) Evaluation of products with respondents in charge of TeFa and teachers obtained a percentage of 82.74%, students of 87.96%, and consumers of 83.44% which are included in the very appropriate category.

The TeFa learning model based on the CIPP evaluation model has generally been implemented well but still requires improvement in cooperative relations, resource management, infrastructure, product quality, and marketing.

AUTHORS' CONTRIBUTIONS

The first author contributed to writing the article, editor, and translator. The second author contributed to data collection and data processing as well as writing the article. The third author contributed by providing research themes and reviewers.

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