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# Evaluation of the Teaching Factory Program Using the CIPP Evaluation Model (Context, Input, Process, Product)

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## ABSTRACT

The high demand for labor in the industrial sector and the open unemployment rate in Indonesia, which reaches 5.32% of the total workforce, indicate that the quality of Indonesian Human Resources is still relatively low and requires serious attention. To address these issues, the Directorate of Vocational School Development encourages the implementation of the teaching factory program as an innovative strategy to enhance students' competencies to better align with the dynamic and competitive demands of the industrial world. This research aims to evaluate the implementation of the teaching factory program in the competencies of Interior Design and Furniture Engineering at Vocational School 52 Jakarta using the CIPP evaluation model (Context, Input, Process, Product). This research uses a mixed-methods approach with an evaluative method. Data collection was carried out using questionnaire instruments, in-depth interviews, direct field observations, and relevant documentation studies. All the data obtained were analyzed descriptively and narratively to gain a comprehensive and in-depth understanding of the program's implementation. The evaluation results show that in all aspects of the evaluation, most indicators have met the established criteria. However, several improvements are still needed, such as involving education experts in the preparation of curriculum documents, refining learning documents like MoUs and jobsheets, and enhancing job placement and continuous development for graduates. This recommendation is expected to serve as a basis for policy-making to optimize the implementation of the teaching factory so that it can produce graduates who are truly job-ready and adaptable to changes in the industrial world.

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## 1. INTRODUCTION

The high demand from the industry today makes Vocational Schools the focal point in the world of education (Stenly Akyuwen et al., 2023). Therefore, a relevant learning process is needed, in this case, a curriculum that has been adjusted to the business and industrial world, because in the research (Perdana, 2018), only about 30% of vocational schools have collaborated with the industry in the effort to jointly develop the curriculum. By continuously synchronizing the curriculum and involving external parties, namely the business and industrial sectors in learning activities, schools will not be left behind by technological developments and business management activities (Ubaidah et al., 2021; Fathin, 2023). Based on the report from the Central Statistics Agency of Indonesia, the open unemployment rate in August 2023 was recorded at 5.32%, or approximately 7.86 million out of a total workforce of 147.71 million. This is likely due to the still low quality of human resources in Indonesia or the limited job market that cannot accommodate all graduates from educational institutions. If examined based on the level of education, the highest unemployment rate is found among graduates of Senior High Schools/Vocational Schools, reaching 4.29 million.

Following up on this issue, the Indonesian government has implemented policies to improve the quality of human resources through the expansion of job opportunities and providing education that aligns with industry needs, as well as instilling an entrepreneurial spirit at every level of education. This makes Vocational Schools have an important role in producing competent graduates (Mukhtar et al., 2022). The Directorate of Vocational Schools plays a role in enhancing competencies and instilling an entrepreneurial spirit among Vocational School graduates. One of the learning methods implemented in Vocational Schools to align with the needs of the business and industrial world is "teaching factory"-based learning (Tjiptadi & Yoto, 2019; Wahjisaputri & Bunyamin, 2022; Suciani, 2023).

A teaching factory is a learning concept that connects the industrial world, educational institutions, and the government to produce quality graduates who are ready to compete in the workforce (Aryana et al., 2023). In this case, at Vocational School 52 Jakarta, which has implemented the teaching factory program since 2019 in the fields of Interior Design and Furniture Engineering through learning activities that resemble an industrial atmosphere, as well as the production and sale of furniture made by the students.

In the process of implementing teaching factory learning in the DITF skill competency at Vocational School 52 Jakarta, the lack of teachers with the appropriate competencies becomes an obstacle in the teaching factory learning process. In addition, the lack of teaching factory training for students becomes a separate obstacle, because the lack of training for students can reduce their motivation during the teaching factory learning process. Program evaluation is a series of activities conducted to obtain information related to the implementation of a policy. These activities are conducted continuously within an organization and involve several parties to support the decision-making process (Rukmana et al., 2021).

The implementation of the teaching factory in schools can proceed if all aspects of its execution have good quality in accordance with the regulations, provisions, and main objectives outlined in the teaching factory program implementation guidelines. The implementation of the teaching factory will be evaluated using the CIPP evaluation model, which includes the context, input, process, and product aspects (Mubai et al., 2021).

The context aspect includes the foundational policies that support it. The input aspect encompasses activity planning, the preparation of learning materials, teacher readiness, student readiness, industry mentor qualifications, funding, and facilities and infrastructure. The process aspect includes the scheduling of the teaching factory, teacher performance, teacher and student activities, as well as monitoring activities by expert teams. The product aspect includes student skills, student absorption in the industrial world, product quality, and student graduation rates. Stufflebeam holds the view that the most important goal of evaluation is improvement, not proof (Bagaskara et al., 2023).

The CIPP evaluation model is a consistent evaluation model focused on improvement, with the main emphasis on directing planning and implementation (Sopha & Nanni, 2019; Prasloranti et al., 2021). The CIPP evaluation model can assist an ongoing program by providing accountability information to see how far the program has progressed from all aspects and comprehensively (Pradhana & Roesminingsih, 2022), identifying obstacles that need to be anticipated, and taking appropriate actions to advance the existing program (Nurhayati et al., 2022). In this context, the importance of evaluating the implementation of the teaching factory becomes crucial in ensuring the success of the teaching factory to remain relevant and aligned with industry needs in order to create human resources ready to face the business and industrial world.

## 2. METHOD

This research uses a mixed approach with an evaluative method that applies the CIPP evaluation model (Context, Input, Process, Product). This research was conducted on the interior design expertise competency at Vocational School 52 Jakarta. Data were collected through documentation study, interviews, scales, and observations. Before being used, the instrument was validated by 3 evaluation experts and 3 teaching factory experts. The results of the instrument validation were calculated using the Iken V formula, with the calculations yielding a valid result of v = 0.92 for teaching factory experts and v = 0.83 for evaluation experts. The instrument is said to be valid if the validity value (V) is above 0.75 (Nabil et al., 2022). The reliability of the instrument is conducted by experts to assess the dependability of the instrument that will be used.

The parties involved in data collection include the principal or their representative, teachers of interior design and furniture engineering competencies, and 12th-grade students of interior design and furniture engineering competencies who have participated in the teaching factory program. In this study, the data analysis technique used is narrative descriptive, where the data collected from various tested instruments is presented, described, analyzed, and conclusions are drawn based on the established criteria.

The use of decision-making statistics based on the analysis scale, such as the average value, is intended to make it easier to compare the obtained quantitative data with the evaluation criteria and categorize it as Good, Sufficient, or Poor. Categorization of good for an average score >3.66 – 5, sufficient for an average score >2.33 – ≤3.66, and poor for an average score ≤2.33 (Arthur, 2018). Thus, how suitable is the teaching factory program for the competencies of Interior Design and Furniture Engineering at Vocational School 52 Jakarta when viewed from the aspects of context, input, process, and product?

## 3. RESULT AND DISCUSSION

### 3.1 Context Aspect

The assessment of the context aspect aims to identify the extent of readiness and systemic support for the implementation of the teaching factory program in schools. The evaluation is conducted by examining important components such as the curriculum, implementation guidelines, and competency standards that serve as the operational foundation for learning activities. In the context aspect, several criteria have been successfully identified and summarized as shown in the following **Table 1.**

**Table 1.** Evaluation Criteria Aspect Context

| Component | Criteria |
|---|---|
| **Curriculum** | 1. The involvement of schools, industry, and experts in curriculum development. Proven with work meeting documents (minutes, attendance list, invitations, and notes).<br>2. The availability of cooperation between schools, industry, and experts. Proven by the availability of MoU.<br>3. Availability of the basic policy framework for the teaching factory program. There are 3 supporting policies (including the Ministry of Education and Culture policy, the local government policy, and the school principal's policy). |
| **Guide** | 1. The availability of a clear teaching factory program guide. Proven with supporting documents (including SOP documents, attendance lists, scheduling, graduation, and assessment). |
| **Competence** | 1. The availability of learning graduation standards, the graduation standard is taken from the established KKM value, which is a minimum score of 75. |

Based on **Table 1**, in the curriculum component with the criteria of curriculum synchronization and school-industry collaboration, the documentation study results only obtained the minutes of the curriculum synchronization working meeting with the partner industry (PT. Graha Mobilia Kreasindo) and have collaborated with the industry partners (PT. Graha Mobilia Kreasindo, PT. Adiva Karya Abadi, PT. Panasonic Manufacturing Indonesia, and PT. Astra Daihatsu Motor). However, there is no involvement of experts in those two criteria. In this case, experts in the field of education. The experts can provide a comprehensive

perspective so that the synchronization of the curriculum to be implemented is not only aligned with the technical needs of the industry but also with the development and thinking processes of the students. This is in line with the opinion of (Rochanah, 2021) that the curriculum review process, aligned by education or curriculum experts, aims to evaluate the suitability of the concepts and foundations used.

The teaching factory program is also based on policies that underpin the teaching factory program, starting from ministerial policies, departmental policies, to school principal policies. The study results are documented in the teaching factory program policy guidebook, namely Law Number 20 of 2003 concerning the national education system, Minister of Education, Culture, Research, and Technology Regulation No. 13 of 2022, which is an amendment to Minister of Education and Culture Regulation No. 22 of 2020 concerning the 2020-2024 tactical plan related to efforts to improve vocational school work competencies to be more prepared for labor market changes by developing the teaching factory program in vocational schools.

The results have shown that the implementation of the teaching factory program at Vocational School 52 Jakarta has a clear legal basis from ministerial regulations, departmental directives, and the principal's recommendations in applying the teaching factory program. Guidance component, there is a handbook that serves as a reference for Vocational School 52 Jakarta in implementing the teaching factory program. The handbook used is published by the Ministry of Education, Culture, Research, and Technology, which includes organization and assessment standards as well as monitoring and evaluation of the teaching factory. In the competency component, the documentation study results do not include the Minimum Completeness Criteria document, which serves to ensure that the assessment process is clear and transparent. Therefore, in the future, it is necessary to prepare the KKM document so that the output from the teaching factory learning can be clearly measured.

Overall, the evaluation results of the teaching factory program implementation at Vocational School 52 Jakarta in the context aspect have met and complied with the established criteria. However, the need for the Minimum Completeness Criteria document and the involvement of experts in establishing cooperation and synchronization with industry partners in the future should be considered (Barnawi, 2020; Farhana & Setiawan, 2022).

### 3.2 Input Aspects

The input aspect includes various important components that affect the readiness and feasibility of implementing the teaching factory program in schools. Evaluation is conducted on the curriculum, implementation guidelines, and learning tools to ensure the integration between the education sector and industry. The assessment also includes teacher competence, industry involvement, facility availability, and the completeness of supporting documents that facilitate the program's implementation. In the input aspect, several criteria have been successfully identified and summarized as shown in the following **Table 2.**

**Table 2.** Criteria for Evaluating Input Aspects

| Component | Criteria |
|---|---|
| **Curriculum** | 1. The alignment of learning material preparation with the curriculum developed by the school, industry, and experts. 80% of the learning material is in accordance with the developed curriculum.<br>2. Availability of collaboration with the industrial world. At least 2 collaborations with different industrial parties.<br>3. The availability of clear teaching factory learning objectives, including general and specific objectives. |
| **Guide** | 1. The availability of the unit's work plan before the implementation of the teaching factory program. Proven with supporting documents (unit work plan documents).<br>2. The suitability of teacher competencies includes a minimum education of a bachelor's degree in a relevant field, at least 1 year of teaching experience, experience in the industry, and having participated in training or guidance on managing a teaching factory program.<br>3. Availability of industry mentors involved in the teaching factory program. At least 90% of mentors have certification or a minimum of 1 year of industry experience.<br>4. Conduct training for teaching factory instructors with a minimum of 1 training session each year.<br>5. Conducting student briefings related to teaching factory learning and the materials to be studied. At least once per semester.<br>6. Availability of funds for the implementation of the teaching factory program in the form of working capital, teacher incentives, and supporting learning costs. Can be fulfilled 100% every year.<br>7. The availability of adequate facilities and infrastructure that can support teaching factory learning. With 90% of the facilities and infrastructure in usable condition. |
| **Competence** | 1. The work steps/jobsheet used were compiled by 3 different teachers (school teacher, industry teacher, and expert).<br>2. The work steps/jobsheet that have been prepared are validated by an expert team. |

Based on **Table 2**, the curriculum component of the learning material criteria is in accordance with the synchronized curriculum, where 83.3% of teachers stated that the material is in line with the curriculum synchronization results. Additionally, the school has also established cooperation with four industrial partners with different focuses, either on the design process (PT. Graha Mobilia Kreasindo) or on the manufacturing process (PT. Adiva Karya Abadi). This result is evidenced by the MoU documents between the school and the industrial partners. Furthermore, the objectives of the teaching factory program at Vocational

School 52 Jakarta refer to the objectives of the teaching factory program outlined in the handbook without any specific or distinct objectives for the implementation of the teaching factory at Vocational School 52 Jakarta that can be adjusted to the competencies available at Vocational School 52 Jakarta. Guidance components, documentation study results include a work unit plan found in the five-year business strategy plan document for the period 2022-2026. Within this document, there are strategic guidelines to achieve educational goals relevant to the needs of students, the industrial world, and national education policies.

In addition, the teacher readiness resources based on the scale with teacher respondents obtained results with three indicators: the level of teacher education, which received an average score of 4.67, falling into the good category; the relevant field of expertise, which received an average score of 3.83, also falling into the good category; and teaching experience, which received an average score of 4.67, again falling into the good category. Other resources, such as the availability of mentors, also received a scale score of 4.16, which falls into the good category. This is reinforced by the interview results with the head of the Interior Design and Furniture Engineering expertise at Vocational School 52 Jakarta, who stated, "Yes, there are industry mentors." Usually, we create a program each semester inviting industry mentors who are experts (have certifications) and experienced (more than one year).

On the teacher training criteria, the scale results with teacher respondents obtained a score of 4.1, which falls into the good category, and this was reinforced by the interview results with the head of the Interior Design and Furniture Engineering department at Vocational School 52 Jakarta, who stated, "Yes, there is training for teachers. Related to the learning and the products that will be made, and usually every semester we always conduct training for teachers by inviting guest teachers from outside." In the student preparation criteria, the scale results with student respondents obtained a score of 3.31, which falls into the sufficient category. Therefore, more attention is needed for the teaching factory program preparation for students so that they can understand the teaching factory program they are currently implementing, thereby increasing student motivation in learning.

The criteria related to funding from the teacher's scale results in a score of 3.83 for the working capital indicator, then 3.67 for teacher incentives, and 4 for supporting learning costs. All three indicators fall into the good category. In line with the interview results from the head of the Interior Design and Furniture Engineering program at Vocational School 52 Jakarta, who stated, "Yes, the funding is met." Because it has been proposed during the product planning phase, and there is indeed a budget allocated for it each year." The readiness of facilities and infrastructure is an important aspect in the teaching factory learning process. Observations found that the workshop room has an area of 800m2, and the spaciousness of the room provides freedom for students during the learning process in the workshop. The lighting in the workshop room is considered good. The types of production tools can be used well, but some static tools such as the static drill and spindle machine are already quite old and no longer have a sharp level of precision. However, these tools are still usable and worth using.

The shortcomings observed during the process include the absence of information boards related to Occupational Health and Safety, regulations, and teaching tools such as teacher's desks, whiteboards, markers, and erasers, which could be useful for explaining the projects worked on by students in the workshop. The competency component with the criteria for job sheet preparation and validation of job sheets from the study of job sheet documentation that has been compiled still does not involve experts for validation. This result is supported by the teacher scale results, which received a score of 3.5 for the job sheet preparation criterion and 3.5 for the job sheet validation criterion.

Overall, the implementation of the teaching factory program at Vocational School 52 Jakarta from the input aspect has mostly met the criteria. However, there is a need for improvement in several criteria, such as optimizing the teaching factory program for students and validating the jobsheets prepared by experts. This statement is in accordance with the research (Salah et al., 2019; Damayati & Rusimamto, 2020; Suciani, 2023), which states that the learning process introduces students to the industrial world.

### 3.3 Process Aspects

The process aspect in the implementation of the teaching factory emphasises how learning is designed, conducted, and supervised systematically to achieve the established learning objectives. Assessment in this aspect includes the appropriateness of teaching materials, industry involvement in the learning process, the effectiveness of implementing project-based learning strategies, and the active participation of teachers and students. Additionally, the process aspect also evaluates the sustainability of fieldwork practices, the availability of laboratory equipment, and periodic supervision of learning and production activities. In the Process aspect, several criteria have been successfully identified and summarized as shown in the following **Table 3.**

**Table 3.** Evaluation Criteria for the Process Aspect

| Component | Criteria |
|---|---|
| **Curriculum** | 1. The learning materials that have been prepared can be delivered to students with 90% adherence to the teaching module.<br>2. The form of cooperation between the school and industry in the form of teaching materials, learning media, and teaching aids is 80% in accordance with the needs.<br>3. Availability of laboratory equipment that meets the needs. With a minimum ratio of 1:15 between practical tools and students.<br>4. The form of cooperation between schools and industry in the form of internship/Field Work Practice programs with 50% of students able to carry out internships/Field Work Practice at industry partners.<br>5. The learning process refers to the teaching factory learning objectives, with 80% of the teaching factory learning objectives being achieved during the learning process. |

| Component | Criteria |
|---|---|
| **Implementation** | 1. The scheduling of teaching factory learning should consider the synchronization of teaching factory learning and classroom learning, and the teaching factory learning should be conducted continuously. ≥ 70% of the schedule should be synchronized.<br>2. Teacher performance in the learning process, including the availability of teaching modules, student worksheets, jobsheets, and assessment tools. 90% of the learning documents are complete.<br>3. Teacher activities in the learning process that apply the PjBL (Project-based Learning) syntax. 90% in accordance with the PjBL syntax. These include: (1) determining the essential question; (2) designing the project; (3) scheduling; (4) monitoring project progress; (5) assessing results; (6) evaluating the experience. In the learning process.<br>4. Student activities in the learning process. Where students carry out work procedures, use materials and tools, maintain cleanliness, and responsibly use equipment (Health, safety, and security). 85% of the students follow the established points.<br>5. There is monitoring or supervision of the learning and production processes, with monitoring conducted at least 4 times during one semester by the management team. |
| **Competence** | 1. Students can follow the work steps/job sheet in the product creation process, 85% of students can follow the work steps well.<br>2. There is an improvement in students' abilities, 85% of students show an improvement in their abilities during the learning process.<br>3. Achievement of teaching factory learning objectives. 70% of teaching factory learning objectives were achieved. |

Based on **Table 3**, the evaluation results on the process aspect show that the curriculum components for delivering learning materials are in accordance with the prepared teaching modules and are delivered using appropriate teaching materials and media as needed, supported by adequate facilities and infrastructure where workshop tools have a sufficient ratio, with hand tools having an almost 1:1 ratio, but for static machines, some still have only one unit in the workshop. Nevertheless, the learning process is still considered smooth because the use of these static machines is relatively quick and efficient.

Moreover, the majority of students in the Interior Design and Furniture Engineering program at Vocational School 52 Jakarta also undertake a 10-month internship program with industry partners in collaboration with the school. This aligns with the opinion of (Perdana, 2018), who stated that one form of school-industry collaboration is through the provision of internship programs for students. The evaluation results also indicate that the learning process in the Interior Design and Furniture Engineering competencies at the Vocational

School 52 Jakarta has adhered to the objectives of the teaching factory program.

Implementation components, the scheduling system, still do not use the block scheduling system that is applied when implementing the teaching factory program to maximize teaching factory learning. This is in accordance with the statement (Stenly Akyuwen et al., 2023; Suzuki & Sunada, 2020) that learning activities between theory and practice must be separated using a block scheduling system. Supporting learning documents are also considered incomplete, such as the absence of job sheets documents and assessment tools, which hinder the teacher's performance criteria. However, during the learning process, the teacher's activities have implemented the syntax of the Project-Based Learning model. In addition to the teachers' activities, the students' activities also show positive results where the students follow work procedures, use materials and tools, maintain cleanliness, use safety equipment, and take responsibility for the projects they are working on. In addition, the monitoring process of the teaching factory activities at Vocational School 52 Jakarta is conducted quite frequently to ensure the program's implementation is well supervised.

The competency components and jobsheets prepared by the teachers can be followed by most students during the learning process, but even though the jobsheets can be followed, students still request additional explanations from the teachers regarding the projects to be undertaken. Next, 92% of students feel that their abilities have improved after participating in the teaching factory learning. And 83% of teachers stated that the objectives of the teaching factory have been met in practice. Thus, overall, the implementation of the teaching factory program at Vocational School 52 Jakarta from the process aspect has mostly met the criteria. However, there needs to be consideration for scheduling lessons using a block system and supporting learning documents such as LKS and assessment tools so that the learning process can run optimally and measurably. In line with the research (Marsa & Desnita, 2020; Rustamana et al., 2023) which states the importance of supporting learning documents in the implementation of education.

### 3.4 Product Aspects

The product aspect focuses on the tangible results produced from the teaching factory's learning process, both in terms of students' competency achievements and contributions to the workforce. Evaluation in this aspect includes the absorption rate of graduates in the industry, the quantity and quality of innovative products produced by students, and the graduation percentage that meets the established competency standards. In the Product aspect, several criteria have been successfully identified and summarized as shown in the following **Table 4.**

**Table 4.** Evaluation Criteria for the Product Aspect

| Aspects | Component | Criteria |
|---|---|---|
| **Product** | Curriculum | 1. The absorption rate of graduates in the workforce. At least 50% of graduates obtain relevant jobs within 6 months after graduation. |

| | | |
|---|---|---|
| | Competence | 1. The products produced by students with a minimum of 2 innovative products produced each year.<br>2. The graduation rate and student competency achievement can reach 85% graduating with the expected competencies. |

Based on **Table 4,** the curriculum component criteria for the absorption rate of graduates in the Interior Design and Furniture Engineering vocational program at Vocational School 52 Jakarta show that 68.75% of the 2023 graduates have been declared employed, but only 25% of the total graduates recorded as employed have jobs relevant to and in line with the Interior Design and Furniture Engineering program. The results are in line with the interview with the head of the Interior Design and Furniture Engineering department, who stated, "Some are absorbed by industry partners, but from what I know, more of them start their own businesses, and many also choose to continue their studies."

On the competency component, the observation of student products found that each year students produce more than two products, whether they are products from learning or ordered products. The products produced are diverse, ranging from study chairs and tables, nightstands, hanging shelves, and other wooden items. In line with the interview results with the head of the Interior Design and Furniture Engineering department, who said, "Yes, more than 2. Because it depends on the number of orders that come in each year or even each semester, but it is guaranteed at least 3 orders a year." On the graduation rate criteria, after participating in the teaching factory program for one year, 86% of students were declared to have graduated with the expected competencies. This result is reinforced by the student scale results, which received a score of 4.03, falling into the good category.

Overall, the implementation of the teaching factory program at Vocational School 52 Jakarta from the process aspect has mostly met the criteria. However, in the recording of graduate data (Tracer study), it would be better if the recording of graduates were more detailed regarding the jobs obtained by students, and the school should organize activities such as job fairs, job exchanges, and alumni mentoring for the graduates of Vocatioanl School 52 Jakarta to improve the absorption of alumni. In line with the research (Santoso et al., 2023; Yelia, 2023) which states the importance of organizing job fairs and other activities that support Vocational School graduates to compete in the industrial world.

## 4. CONCLUSION

The implementation of the teaching factory program in the Interior Design and Furniture Engineering departments at Vocational School 52 Jakarta, when viewed from the aspects of context, input, process, and product, has broadly met the evaluation criteria. However, there are shortcomings in each aspect that need to be addressed, such as in the context aspect, curriculum synchronization documents have not involved educational experts. In the input aspect, student training has not been maximally implemented, and the prepared jobsheets have not been validated by experts. In the process aspect, the learning schedule system does not use block scheduling, and supporting documents like Student Work Sheets and

Assessment Tools are incomplete. In the product aspect, limited mentoring for graduates and unclear tracer study documents result in a low graduate absorption rate in the industry.

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