



Evaluation of Competency-Based Learning at Vocational High School Using the CIPP Model

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Received: June 24, 2026

Revised: August 21, 2026

Accepted: August 27, 2026

Published: August 31, 2026

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DOI: [10.29303/jppipa.v12i8.15824](https://doi.org/10.29303/jppipa.v12i8.15824)

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Abstract: This study evaluates the implementation of competency-based learning at SMKN 5 Solok Selatan using the Context, Input, Process, and Product (CIPP) evaluation model. An evaluative mixed-methods approach was employed involving 50 students, 12 teachers, three key informants, three observation sessions, and 18 school documents. Data were collected through questionnaires, interviews, observations, and document analysis. The instruments demonstrated high validity (0.86–0.88) and reliability, with Cronbach's Alpha coefficients of 0.955 and 0.904 for student and teacher instruments, respectively. The findings indicate that competency-based learning was moderately effective, with mean scores of 3.00 for students and 3.20 for teachers. Context obtained the highest rating, while input was the weakest component, particularly due to limitations in facilities, equipment, and practical materials. Process evaluation identified weaknesses in learning strategy variation, practical activity intensity, and assessment follow-up. Product evaluation revealed a 17.56-point gap between internal and external Vocational Competency Test (UKK) results, indicating inconsistent competency attainment. The findings highlight the need to strengthen learning inputs and processes, align internal assessment with external competency standards, and enhance industry collaboration to improve vocational competency outcomes.

Keywords: CIPP model; Competency-based learning; Learning evaluation; Vocational education

Introduction

Changes in the direction of vocational education policy in recent years have had significant consequences for how schools design and implement instruction. The Merdeka Curriculum, which prioritizes competencies, requires schools to focus not only on delivering content but also on ensuring that students acquire practical skills that prepare them to enter the workforce. Within this framework, competency-based education emphasizes the integration of attitudes, knowledge, and skills through contextual learning, relevant practical experiences, authentic assessments, and collaboration with industry (Sari et al., 2026; Arwizet et al., 2026). Consequently, the success of curriculum implementation is largely determined by the extent to which schools are able to translate these policies into meaningful learning practices.

Vocational high schools (SMK) play a strategic role in preparing graduates who not only master technical competencies but also possess the soft skills required by industry (Arwizet et al., 2026). However, achieving these goals does not happen automatically. Many factors determine their success, ranging from internal factors related to the students themselves to external factors such as family support, the school environment, and the education system. At the school level, the learning process is the most critical factor because that is where the curriculum is translated into students' learning experiences (Dahlback et al., 2020).

Learning in vocational high schools is essentially a system consisting of interrelated inputs, processes, and outputs. If one of these elements does not function properly, the final learning outcomes are also affected (Risna et al., 2026). This situation is also evident at State Vocational High School No. 5 in South Solok, where

How to Cite:

Virnindo, A., Yustisia, H., Hidayat, H., Hidayat, N., & Desky, A. H. A. (2026). Evaluation of Competency-Based Learning at Vocational High School Using the CIPP Model. *Jurnal Penelitian Pendidikan IPA*, 12(8), 104–113. <https://doi.org/10.29303/jppipa.v12i8.15824>

various indicators suggest that the ongoing learning process is not yet fully optimal. Several issues such as inconsistent use of learning media, underutilization of practical facilities, and a limited variety of learning strategies remain challenges that need to be addressed seriously Table 1 (Mardiana et al., 2026).

Table 1. Results of the vocational competency test at state vocational high school

School Year	Number of Students	Average External Final Exam Score	Average Internal Final Exam Score
2023/2024	81 Students	60.06	77.27
2024/2025	72 Students	60.91	78.82

Based on Table 1, the average scores on the external UKK for two consecutive years (60.06 and 60.91) were below the minimum threshold of 61, thus falling into the “not yet competent” category. On the other hand, the internal UKK scores were 77.27 and 78.82 (competent), while the vocational theory scores were 76.68 and 77.83 (competent). The significant gap between the internal and external assessment results suggests that the learning taking place at the school has not yet fully produced stable competencies when tested against external standards (Iriani & Soeharto, 2015).

In addition, data on the distribution of students in the local area Table 2 show that the number of junior high school students choosing vocational high schools has tended to be lower than that of those choosing academic high schools over the past three years.

Table 2. Distribution of junior high school students to academic and vocational high schools in Koto Parik Gadang Diatch Subdistrict

Year	Junior High	Enter High School	Enter Vocational High School
2023	395	225	125
2024	366	238	62
2025	387	286	89

The data in Table 2 show a decline in the number of students choosing vocational high school (SMK) from 125 students (2023) to 62 students (2024), followed by a slight increase to 89 students (2025). This phenomenon is not isolated; public perceptions of the quality of vocational education and the quality of instruction very likely influence these choices. In addition, school data show that 20 students failed to advance to the next grade in the 2023–2024 school year and 19 students in 2024–2025, with an average student attendance rate per semester of about 75%. These conditions indicate that an evaluation of the learning process is an urgent necessity (Siddiq et al., 2021).

Evaluation is needed not merely to assess whether a program has been implemented, but to identify which

aspects are working well and which are not yet effective. In this study, the CIPP model is considered relevant because it enables a comprehensive evaluation of the program from four perspectives: context, input, process, and product (Sari & Hamdi, 2021). The CIPP model allows researchers to examine school needs and the relevance of learning objectives context, assess the readiness of teachers, teaching materials, and facilities and infrastructure input, evaluate the actual implementation of instruction process, and measure students’ competency achievements through UKK scores and other success indicators product (Desky et al., 2025a).

Although several previous researchers have evaluated learning using the CIPP model in vocational high schools, research that specifically examines the gap between external and internal final assessments as a product indicator, accompanied by multi-source data triangulation in the context of vocational high schools in remote areas, remains very limited. Based on this description, the study titled “Evaluation of Competency-Based Learning Processes at SMKN 5 Solok Selatan Using the CIPP Model” is important to conduct (Ningsih et al., 2025).

Literacy, numeracy, and PKL experience as external factors do not always translate directly into work readiness. In practice, some students who possess adequate technical knowledge and work experience still display hesitancy and low confidence when confronted with real workplace situations, suggesting the presence of an internal psychological mechanism that mediates the relationship between competence and readiness. Self-efficacy an individual’s belief in their capacity to organize and execute the courses of action required to attain a given level of performance (Sudianti et al., 2025) is widely regarded as this mechanism. Students with high self-efficacy tend to be more willing to make technical decisions, more persistent in the face of difficulty, and better prepared to enter the workforce (Mutiarra et al., 2024).

Method

Research Design

This study employed an evaluative research design using a mixed-methods approach to comprehensively assess the implementation of competency-based learning at SMKN 5 Solok Selatan. The evaluation was conducted using the Context, Input, Process, and Product (CIPP) model, which examines program relevance, resource adequacy, implementation quality, and learning outcomes. Qualitative data were collected through interviews, observations, and document analysis to gain an in-depth understanding of the learning process and stakeholder perspectives, while

quantitative data were obtained through questionnaires administered to teachers and students. The qualitative data were analyzed using data reduction, data display, and conclusion drawing techniques, whereas the quantitative data were analyzed using descriptive statistics, including frequencies, percentages, and mean scores. Furthermore, data triangulation was employed to enhance the validity and credibility of the findings by comparing information from multiple sources and data collection methods. The integration of qualitative and quantitative findings provided a comprehensive evaluation of competency-based learning implementation and served as the basis for formulating recommendations to improve educational quality at SMKN 5 Solok Selatan (Irfan et al., 2025).

Research Location and Time

The study was conducted at SMKN 5 Solok Selatan, located in Pakan Rabaa Tengah, Koto Parik Gadang Diatesh Subdistrict, Solok Selatan Regency, West Sumatra Province. This school was selected due to its relevance to the research topic and indications of disparities in the quality of competency-based learning. Data collection took place over three months (March–May 2026) during the 2025–2026 school year.

Research Subjects and Sample

The population consists of all students and teachers involved in competency-based learning at SMKN 5 Solok Selatan. Using purposive sampling and the Slovin formula ($e = 0.1$), a sample of 50 students was selected from a total population of 106 active students in vocational programs (Electrical Installation Technology, Mechatronics Technology, Software Engineering, Computer and Network Technology, and Electronics Technology) as well as 12 teachers of vocational competency subjects. In addition, three key informants (the principal, the vocational program coordinator, and the practical training instructor) were interviewed in depth.

Research Variables and Instruments

The research variables encompass the four components of the CIPP model: a Context: clarity of competency-based objectives, analysis of student and DU/DI needs, and the school climate; b Input: instructional materials, teacher competencies, facilities and infrastructure, and student readiness; c Process: communication of objectives, implementation of active learning, monitoring, feedback, and remedial instruction; d Product: cognitive and psychomotor achievements, work attitudes, and readiness for the UKK. The instrument rubric is presented in Table 3.

Table 3. Evaluation rubric for competency-based learning

Variable	Sub variable	Number of Items	Instrument
CIPP	Context	10	Student & Teacher Survey
	Input	16	Student & Teacher Survey
	Process	12	Surveys, Observations, Interviews
	Product	8	Survey, UKK Documentation

The research instruments included: 1 student and teacher questionnaires (46 items, 1–5 Likert scale, covering components C1–C10, I1–I16, P1–P12, O1–O8); 2 classroom observation sheets (22 indicators); 3 a semi-structured interview guide; and 4 a document analysis sheet (18 types of documents). The composition of the research data sources is shown in Table 4.

Table 4. Composition of research data sources

Data Source	Total	Instruments
Students	50 people	Student Survey
Guru	12 people	Teacher Survey
Key informants	3 people	In-depth interview
Observations	3 sessions	Observation sheet 22 indicators
School documents	18 type	Documentation Study Sheet

Data Analysis Techniques

Quantitative data were analyzed using descriptive statistics with SPSS, including mean, standard deviation, minimum, and maximum values to describe the effectiveness of competency-based learning implementation across the Context, Input, Process, and Product (CIPP) dimensions. Assessment categories were determined based on average scores, namely ineffective (1.00–1.79), less effective (1.80–2.59), moderately effective (2.60–3.39), effective (3.40–4.19), and highly effective (4.20–5.00).

In addition, students’ competency achievement was evaluated using Competency Skills Examination (UKK) scores and compared with the standards established by the Ministry of Education, Culture, Research, and Technology, namely not competent (< 61), sufficiently competent (61–74), competent (75–90), and highly competent (91–100). Qualitative data collected through interviews, observations, and documentation were analyzed using thematic analysis to identify patterns, themes, and factors influencing the implementation of competency-based learning. To ensure the validity and credibility of the findings, source and method triangulation were conducted by comparing data obtained from questionnaires, interviews, observations, and documentation. The integration of quantitative and qualitative findings provided a comprehensive evaluation of competency-based learning implementation and served as the basis for assessing

program effectiveness and formulating recommendations for improvement (Deviana et al., 2025).

Result and Discussion

Instrument Validation and Reliability

Expert validation of all research instruments yielded highly satisfactory results. A summary of the validation results is presented in Table 5.

Table 5. Summary of expert validation of the instrument

Instruments	Aspects Evaluated	Validation Value	Category
Student and Teacher Survey	7 aspect	0.86	Very valid
Observations and interviews	6 aspect	0.87	Very valid
Documentation study	4 aspect	0.88	Very valid

Table 5 shows that all research instruments were classified as highly valid. The student and teacher questionnaires received a validity score of 0.86, the observation and interview instruments 0.87, and the documentation study sheet 0.88. Minor revisions to the wording of the questionnaires did not alter the substance of the instruments; therefore, all instruments were deemed suitable for use in the data collection phase (Fiona et al., 2025; Ermawalis et al., 2025).

The reliability test of the student questionnaire (n = 50) yielded an overall Cronbach’s Alpha value of 0.955,

with details for each CIPP component presented in Table 6.

Table 6. Summary of student questionnaire validity and reliability

Component	Valid item	CITC Min	CITC Max	Cronbach's Alpha
Context	10	0.381	0.644	0.829
Input	16	0.395	0.640	0.881
Process	12	0.420	0.746	0.882
Product	8	0.426	0.668	0.838
Total CIPP	46	0.328	0.690	0.955

Based on Table 6, all CIPP components in the student questionnaire showed a minimum CITC value above 0.30 and a Cronbach’s Alpha above 0.80, indicating excellent validity and reliability. The teacher questionnaire (n = 12) yielded an overall Cronbach’s Alpha of 0.904, with components of context (0.829), input (0.904), process (0.848), and product (0.615). The lower “product” score on the teacher questionnaire can be explained by the homogeneity of responses due to the small number of respondents; therefore, the teacher questionnaire data needs to be triangulated with observations and UKK documentation (Khaerunnisa, 2025).

Student Survey Results Based on CIPP Components

Descriptive statistics for the student survey results based on CIPP components are presented in Table 7.

Table 7. Descriptive statistics of the student questionnaire based on the CIPP components

Components	Number of Items	Mean	Std. Dev.	Minimum	Maximum	Category
Context	10	3.14	0.387	2.10	4.00	Quite effective
Input	16	2.93	0.368	1.81	3.50	Quite effective
Process	12	2.99	0.425	1.67	3.83	Quite effective
Product	8	2.98	0.442	1.88	4.00	Quite effective
Total CIPP	46	3.00	0.360	1.85	3.74	Quite effective

Table 7 shows that the average total score on the student questionnaire was 3.00 (fairly effective). The “context” component received the highest score (3.14), indicating that students relatively understood the direction and objectives of the learning process. High scores on items C1 (the teacher explains the learning objectives: mean = 3.38) and C3 (objectives are clear and easy to understand: mean = 3.34) reflect that the teacher has done a fairly good job of conveying the learning objectives. The input component received the lowest score (2.93), indicating limitations in the support provided by learning facilities. Items I12 (practical materials available as needed: mean = 2.68), I13 (supportive classrooms/laboratories: mean = 2.72), and I14 (access to learning media/technology: mean = 2.74)

were the three items with the lowest scores. These findings are consistent with the actual conditions in schools facing limitations in vocational practice facilities (Bajuri, 2025).

The process component scored 2.99, with weaknesses in items P10 (remedial instruction: mean = 2.78), P8 (variety of strategies: mean = 2.84), and P6 (discussion and Q&A: mean = 2.88). Meanwhile, the product component recorded a score of 2.98, with item O3 (readiness for competency assessments/exams: mean = 2.84) as the lowest (Dianto et al., 2025).

Teacher Survey Results Based on CIPP Components

Descriptive statistics of the teacher questionnaire responses, categorized according to the four

components of the CIPP evaluation model Context, Input, Process, and Product are presented in Table 8. The analysis provides an overview of teachers’ perceptions regarding the implementation of the evaluated learning program across each CIPP component (Putri et al., 2023).

Table 8. Descriptive statistics for the teacher questionnaire based on the CIPP components

Components	Number of Items	Mean	Std. Dev.	Minimum	Maximum	Category
Context	10	3.23	0.503	2.20	4.00	Quite effective
Input	16	3.18	0.399	2.69	4.00	Quite effective
Process	12	3.08	0.380	2.58	3.75	Quite effective
Product	8	3.41	0.288	3.00	3.88	Quite effective
Total CIPP	46	3.20	0.356	2.63	3.91	Quite effective

Table 8 shows that the average total score on the teacher questionnaire was 3.20 (fairly effective). The “product” component received the highest score (3.41, in the “effective” category), reflecting that teachers assessed students’ learning outcomes as relatively good based on daily observations and internal assessments. In contrast, the process component received the lowest score (3.08), with the main weaknesses in: P12 (follow-up on assessment results to improve learning: mean = 2.83), P3 (emphasis on practice and application: mean = 2.92), and P8 (active student engagement: mean = 2.92). In the input component, the lowest-scoring items were I11 (practical facilities available to meet basic needs: mean = 2.83), I5 (relevance of learning resources to real-world work: mean = 2.92), and I12 (suitability of practical tools and materials: mean = 2.92). These findings are consistent with students’ perceptions, which also identified facility support as a weak indicator (Desky et al., 2026b).

Comparison of Student and Teacher Survey Results

Table 9 shows that teachers’ scores were consistently higher than students’ scores across all components. The largest difference was found in the “product” component (0.421), where teachers rated it as “effective” while students rated it as only “sufficiently

effective.” This difference is reasonable because teachers assess achievement based on general classroom observations, whereas students assess their own experiences and readiness for competency-based assessments. An important similarity between the two groups of respondents is the emergence of indicators that both need to be strengthened: readiness for the UKK, the availability of practical resources and materials, and the analysis of students’ initial needs (Desky et al., 2026a).

Table 9. Comparison of average student and teacher survey scores

Components	Student Mean	Mean Teacher	Difference (Teacher-Student)
Context	3.14	3.23	0.089
Input	2.93	3.18	0.246
Process	2.99	3.08	0.088
Product	2.98	3.41	0.421
Total CIPP	3.00	3.20	0.201

Results of Classroom Observations

Classroom observations were conducted using 22 indicators covering instructional readiness, competency-based core instruction, assessment and follow-up, as well as classroom climate and facilities. A summary of the observation results is presented in Table 10.

Table 10. Summary of learning observation results

Observation Aspects	Number of Indicators	Mean	Category	Relatively Low Indicator
Preparation/Opening	4	3.17	Quite effective	OBS4; OBS3
Core Implementation	10	3.07	Quite effective	OBS12; OBS8
Evaluation/Follow-up	4	3.00	Quite effective	OBS15; OBS16
Climate/Facilities	4	2.83	Quite effective	OBS20; OBS21

Table 10 shows that all aspects of the observation fell into the “fairly effective” category. The “environment/facilities” aspect received the lowest score (2.83), while the “preparation/opening” aspect received the highest score (3.17). The observation results confirm that competency-based learning is already evident in the form of goal setting, demonstrations, practice, two-way interaction, and an emphasis on standard operating procedures (SOPs). However, there

is still room for improvement in the variety of strategies (OBS8), the intensity of hands-on practice, remedial follow-up (OBS15–16), and the utilization of resources (OBS20–21) (Jiang & Liu, 2021).

The data on products were confirmed through UKK documents and vocational theory records from the past two years (Table 11). These data serve as objective indicators that are not based on perception but rather on external assessment standards.

Table 11. Summary of UKK results and vocational theory

School Year	Number of Students	External UKK	Category	Internal UKK	Internal External Gap
2023/2024	81	60.06	Not Yet Competent	77.27	17.21
2024/2025	72	60.91	Not Yet Competent	78.82	17.91

Table 11 shows that the external UKK scores for the 2023/2024 academic year were 60.06 and for the 2024/2025 academic year were 60.91 – both fall into the “not yet competent” category (< 61). Meanwhile, the internal UKK scores were 77.27 and 78.82 (competent), and the vocational theory scores were 76.68 and 77.83 (competent). The average internal-external gap of 17.56 points indicates that internal assessments do not yet fully reflect students’ competency performance when evaluated against more objective standards. These UKK data serve as important evidence that the learning outcomes are not yet stable, even though teachers rate them as effective and students rate them as fairly effective (Desky et al., 2025b).

Of the 18 types of documents reviewed in the documentation study, 15 were available in full, while 3 were partially available (consistent practical assessment rubrics, DU/DI synchronization documents, and academic supervision notes). This situation explains why the questionnaire and observation data indicate that the process falls into the “fairly effective” category but has not yet had a strong impact on the learning outcomes.

Triangulation of Findings

Triangulation of findings was conducted to provide a more comprehensive understanding of the research results by combining all data sources. A summary of the triangulation is presented in Table 12.

Table 12. Triangulation of findings based on CIPP

Components	Cross-Data-Source Findings	Evaluative Meaning
Context	Both students and teachers agreed that the learning objectives were clear enough. Teachers gave higher scores for school policy support.	The context is relatively strong, but the initial analysis of student needs and the synchronization of learning materials and learning activities need to be more systematic.
Input	Both students and teachers identified facilities, equipment, practical materials, and media as areas needing improvement.	Improvements to the input should focus on the suitability of tools, the adequacy of practical materials, and the use of learning technologies.
Process	Observations and surveys indicate that hands-on learning is taking place, but remedial instruction, the use of varied strategies, and follow-up assessment are not yet consistent.	Processes are a key component that must be strengthened so that inputs can result in better products.
Product	The survey of senior teachers (effective), the student survey is fairly effective, but the external final assessment scores are still low (not yet competent).	The product is not yet stable; internal assessments need to be aligned with external UKK standards and DU/DI standards.

Discussion

The research results indicate that competency-based learning at SMKN 5 Solok Selatan is generally classified as moderately effective. This finding aligns with the study by Alanshori et al. (2025), which confirms that the CIPP model can help evaluate competency-based learning comprehensively because it not only examines final outcomes but also assesses contextual appropriateness, readiness of inputs, quality of the process, and achievement of outcomes (Ernawati, 2022).

Regarding the context aspect, both students and teachers assessed the learning objectives as sufficiently clear. However, aspects related to adapting to student characteristics and relevance to the workforce still need to be strengthened. This is consistent with Algassem & Hassan (2024), who explain that one of the main challenges in TVET is the mismatch between vocational education programs and labor market needs. Budiyanto

& Suyanto (2020) also found that the principles of competency-based learning may be present in policy documents but have not yet been fully and uniformly implemented in school practices (Wahyuni, 2021).

Regarding inputs, the lack of practical facilities was a consistent finding across all data sources. Misbah et al. (2020) state that facilities and infrastructure influence the quality of learning in vocational high schools (SMK). In vocational education, facilities are not merely supplementary but a core component of the competency-building process. Desky & Yulastri (2026) explain that truly competency-based vocational programs must incorporate core job tasks, meaningful vocational situations, the integration of knowledge, skills, and attitudes, and periodic assessments as integral parts of the instructional design.

Regarding the process aspect, the findings indicate that the implementation of instructional strategies,

remedial activities, and assessment follow-up actions has not been consistently carried out. This finding is consistent with Alessandra et al. (2019), who argued that authentic assessment in vocational education should bridge academic knowledge with real workplace situations. Similarly, Morselli (2024) emphasized that competency assessment in Vocational Education and Training (VET) should be positioned as a formative process that enables students to understand, practice, and gradually demonstrate their competencies. From a theoretical perspective, the weaknesses identified in the process component can be explained through Biggs (1996) principle of constructive alignment, which states that learning objectives, learning activities, and assessment practices must be aligned to ensure that students engage in activities that genuinely lead to the intended learning outcomes.

Regarding the product aspect, the discrepancy between the internal competency test (UKK) results (mean score = 78.05) and the external competency test results (mean score = 60.49), with an average gap of 17.56 points, emerged as the most significant finding. Supriyadi et al. (2024) demonstrated that assessment in vocational high schools should be viewed through the perspectives of assessment for learning, assessment as learning, and assessment of learning. Consequently, assessment should function not only as a tool for determining final achievement but also as a mechanism for improving the learning process. Tananda et al. (2026) argued that competency measurement is inadequate when based on a single assessment method. Instead, competencies should be evaluated through a comprehensive assessment program that integrates multiple assessment methods and quality criteria.

The findings from observations and document analysis further reinforced the questionnaire results. Taali et al. (2024) found that the implementation of teaching factory learning and work readiness significantly contributes to vocational students' perceptions of their future careers. Therefore, if schools aim to improve learning outcomes, strengthening the learning process should not be limited to content delivery alone. It should also involve the development of authentic practice environments that closely resemble real workplace settings and the implementation of measurable project-based learning activities that foster competency development.

Based on these findings, the primary challenge of competency-based learning at SMKN 5 Solok Selatan does not lie in the absence of programs, but rather in the lack of consistency in their implementation. The context component generally provides adequate support; however, it needs to be more closely aligned with students' needs and industry requirements. The input component is available but remains insufficient to

ensure intensive practical training opportunities. The process component has been implemented, yet inconsistently. As a result, the product component remains unstable, as reflected in the considerable gap between internal and external competency test outcomes. Therefore, improvement efforts should focus on aligning objectives, resources, instructional processes, and assessment practices so that all CIPP components function as an integrated and mutually reinforcing system.

Conclusion

Based on the evaluation of competency-based learning at SMKN 5 Solok Selatan using the CIPP model, the findings reveal significant challenges across all four components. The context aspect is moderately effective, with clear learning objectives and supportive school environment, although initial needs analysis and curriculum alignment require strengthening. The input aspect, however, presents a more critical situation than its "moderately effective" label suggests; facilities, practical tools, learning media, and technology utilization remain substantial obstacles that place infrastructure in a critical zone requiring immediate intervention. The process aspect is moderately effective but suffers from inconsistent implementation of varied strategies, practice intensity, feedback provision, and remedial follow-up. Regarding the product aspect, conclusions are drawn exclusively from valid and reliable data sources external and internal UKK documentation excluding the unreliable teacher perception data (Cronbach's Alpha = 0.615). The findings reveal a persistent competency gap of 17.56 points between internal and external assessments, with external UKK scores remaining below the competency threshold for two consecutive years, indicating that learning has not yet produced stable competencies measurable against external industry standards. To address these specific problems, the following concrete recommendations are proposed. First, the school must conduct systematic initial competency mapping before instruction begins and develop structured remediation programs for students lacking foundational skills. Second, immediate priority should be given to providing facilities and practical materials for competencies with the highest weight in the external UKK, while actively establishing concrete industry collaborations through teacher internships, CSR equipment donations, guest teaching programs, and shared facilities via public-private partnerships. Third, all lesson plans and assessment rubrics must be revised to directly adopt external UKK standards, eliminating the 17.56-point assessment gap. Fourth, external UKK

results should serve as reflective data to continuously improve teaching materials, practical processes, and learning strategies. Finally, active learning strategies must be operationalized through clearly defined procedures, scheduled implementation timelines, and designated responsible parties. These evidence-based recommendations are designed to directly address the root causes of competency gaps identified at SMKN 5 Solok Selatan, rather than offering generic or normative suggestions.

Acknowledgements

Thank you to the Dean of FT UNP, Chair of the Master of Education and Kejuruan Study Program, lecturers and students of Electrical Engineering Education at Universitas Negeri Padang and all parties so that this research can be carried out well.

Author Contributions

Algusri Virnindo designed and planned this study, collected and analyzed the data, and drafted the original manuscript. Henny Yustisia, Hendra Hidayat, Nuzul Hidayat, and Abdul Habib Arrasyidi Desky supervised the research process, validated the methodology, and reviewed the manuscript. All authors have read, revised, and approved the final version of the manuscript.

Funding

This research received no external funding.

Conflicts of Interest

There is no conflict of interest.

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