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CIPP-Based Evaluation of the Learning Process in Vocational High Schools: Student and Teacher Perspectives

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Abstract
This research evaluates the learning process in vocational high schools (SMK) using all four components of the CIPP (Context, Input, Process, Product) evaluation model from the perspectives of students and teachers. A descriptive-evaluative approach was employed involving 120 students and 25 teachers at SMK Negeri 1 Painan, selected through purposive sampling. Data were collected using validated questionnaires comprising 66 items for students and 59 items for teachers, structured around all four CIPP components, with particular depth on four Process sub-components: Teaching Strategy (P1), Media and Technology Use (P2), Student Interaction (P3), and Assessment Process (P4). The Context component received the highest scores from both groups (students: 76.4%; teachers: 83.2%), while the Product component scored the lowest among students (70.2%). The Process component was rated 72.5% by students and 80.2% by teachers overall, with Student Interaction (P3) as the strongest sub-component and Media and Technology Use (P2) as the most critical area for improvement. A consistent perception gap averaging 7.7 percentage points was identified across all components, with teachers rating program implementation more favorably than students throughout. These findings reveal systemic challenges in technology integration, assessment practices, and resource provision in vocational learning, and provide evidence-based recommendations for policy and instructional improvement in Indonesian vocational education.

Keywords
CIPP model; learning evaluation; process evaluation; SMK; vocational education.

INTRODUCTION

Vocational high schools play a central role in Indonesia's effort to produce skilled, work-ready graduates capable of meeting industry demands. As stipulated in Government Regulation No. 17 of 2010, SMK is designed to equip students with specific vocational competencies through practical, applied, and industry-aligned learning (Ministry of

Education and Culture, 2020). However, persistent gaps between curriculum intentions and actual learning outcomes continue to challenge vocational education quality across institutions and regions (Hidayat & Sukardi, 2022).

Program evaluation is a systematic process of gathering and analyzing evidence to judge the merit and effectiveness of an educational program (Stufflebeam & Coryn, 2014). Among the various frameworks available, the CIPP (Context, Input, Process, Product) model is widely recognized as one of the most comprehensive tools for educational evaluation (Zhang et al., 2011). The CIPP model enables evaluators to assess not only learning outcomes (Product) but also the institutional conditions shaping them: the background context (Context), available resources and plans (Input), and the actual implementation of learning activities (Process). The conceptual framework of this study is presented in Figure 1.

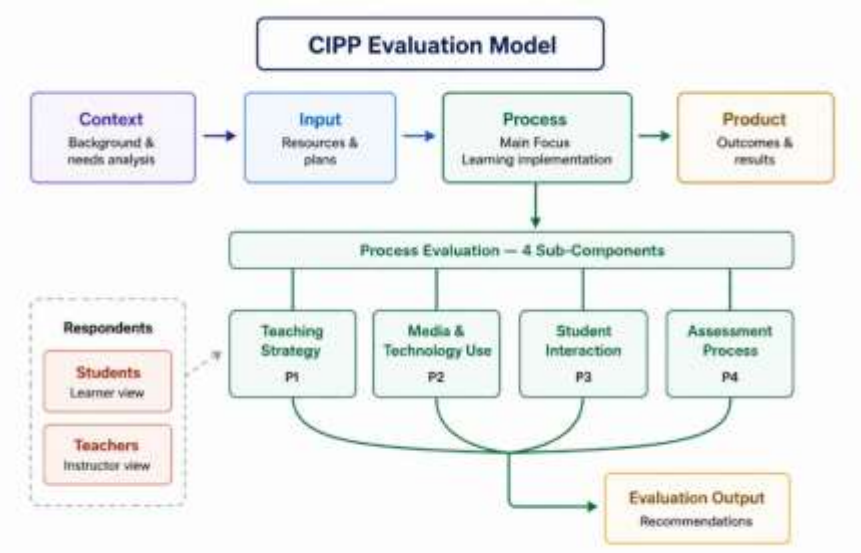

Figure 1. Conceptual Framework: CIPP Evaluation Model Applied to Vocational High School Learning Process Evaluation

Of the four CIPP components, the Process component is considered the most direct determinant of student achievement and competency development (Stufflebeam & Coryn, 2014). It encompasses how teaching is delivered, how media and technology are integrated, how students interact and engage, and how assessment is conducted. Research has consistently demonstrated that the quality of the learning process in vocational education significantly influences students' technical competency and employability outcomes (Baartman et al., 2011; Cedefop, 2020). Nevertheless, effective process implementation cannot be understood in isolation; it is shaped by contextual conditions

and input adequacy, and it directly determines the quality of learning products and outcomes. A comprehensive evaluation across all four CIPP components is therefore necessary to generate a complete and actionable diagnostic picture of program quality.

Despite the importance of comprehensive program evaluation, empirical studies systematically examining all four CIPP components in Indonesian vocational schools from both student and teacher perspectives simultaneously remain limited. Most existing evaluations focus on learning outcomes or curriculum compliance without capturing the full evaluation picture across context, input, process, and product dimensions (Wirawan, 2020). A few researchers have applied single-component or partial CIPP evaluations, yet none have triangulated student and teacher perceptions across all four components simultaneously in the vocational context. The novelty of this research lies in its comprehensive, dual-respondent CIPP approach: by evaluating all four components from student and teacher perspectives simultaneously, this research produces a holistic and diagnostically precise evaluation that prior single-perspective or outcome-focused studies have not achieved. Therefore, this study aims to evaluate the learning process at SMK Negeri 1 Painan using the full CIPP model across all four components, with particular analytical depth on four Process sub-components, namely Teaching Strategy (P1), Media and Technology Use (P2), Student Interaction (P3), and Assessment Process (P4), and to compare student and teacher perspectives as the basis for targeted improvement recommendations.

THEORETICAL SUPPORT

CIPP Evaluation Model

The CIPP model, developed by Daniel Stufflebeam in 1971, is a decision-oriented evaluation framework designed to serve educational improvement rather than simply prove program worth (Stufflebeam & Coryn, 2014). Its four components operate as an integrated system: Context defines the mission and environmental needs; Input assesses the resources and strategies in place; Process monitors implementation fidelity; and Product evaluates the extent to which intended outcomes are achieved (Zhang et al., 2011). The systemic nature of the CIPP model means that weaknesses in one component have cascading implications for subsequent components; inadequate context definition undermines input planning, input deficiencies constrain process quality, and process weaknesses limit

product outcomes. This study applies all four components comprehensively, with particular analytical depth on the Process component, which Stufflebeam describes as the most actionable domain because it captures what is actually happening during program delivery and can inform real-time instructional corrections (Tayibnapis, 2008).

Learning Process in Vocational Education

The learning process in SMK is governed by the Competency-Based Curriculum and the Merdeka Belajar framework, which emphasize contextual, project-based, and industry-integrated learning (Direktorat PSMK, 2018; Mulyasa, 2013). Effective vocational learning requires clear instructional strategies, meaningful media use, collaborative student interaction, and authentic assessment practices (Majid, 2014). These four dimensions constitute the Process sub-components investigated in this study and are grounded in Constructivist learning theory (Vygotsky, 1978), which emphasizes that knowledge is actively constructed through social interaction and contextually embedded experience, and the Cognitive Theory of Multimedia Learning (Mayer, 2009), which establishes that well-designed media integration enhances information processing and learning retention.

TPACK Framework

In the context of technology-integrated vocational learning, the Technological Pedagogical Content Knowledge (TPACK) framework (Mishra & Koehler, 2006) provides a critical lens for understanding teachers' capacity to meaningfully integrate technology into subject-specific instruction. TPACK describes the intersection of three knowledge domains: technological knowledge, pedagogical knowledge, and content knowledge. Effective technology-enhanced teaching requires not the mastery of each domain in isolation, but the dynamic integration of all three simultaneously. Given that Media and Technology Use (P2) is a core sub-component of this study, TPACK is particularly relevant as a theoretical lens: low scores on technology integration may reflect not merely infrastructure deficits but also gaps in teachers' TPACK competency, specifically their ability to select and deploy technology in ways that are pedagogically appropriate and contextually aligned with vocational subject matter (Mishra & Koehler, 2006). The three theoretical frameworks, namely the CIPP model, Constructivism, and TPACK, are

therefore complementary and collectively provide the conceptual foundation for the evaluation design and interpretation of findings in this research.

METHOD

This research employed a descriptive-evaluative design, appropriate for systematically assessing the current condition of an educational program and generating evidence-based recommendations (Wirawan, 2020; Mardapi, 2017). The full CIPP model served as the overarching evaluation framework, encompassing all four components: Context, Input, Process, and Product. The research was conducted at SMK Negeri 1 Painan in Pesisir Selatan, West Sumatra, Indonesia, during the 2024/2025 academic year. Participants were selected using purposive sampling, comprising 120 students from Grades X to XII across three study programs and 25 subject teachers, totaling 145 respondents. Data were collected using two sets of validated questionnaires, one for students (66 items) and one for teachers (59 items), structured around all four CIPP components as shown in Table 1. Items were rated on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree).

Table 1. Instrument Structure: CIPP Components and Number of Items

Component	Sub-Component	Items (Students)	Items (Teachers)
Context	Institutional needs and program goals	8	7
Input	Resources, curriculum, and teacher readiness	10	9
Process	Teaching Strategy	10	9
	Media & Technology Use	10	9
	Student Interaction	10	9
	Assessment Process	10	9
Product	Learning outcomes and competency achievement	8	7
	Total	**66**	**59**

Content validity was confirmed by two expert validators (Content Validity Index/CVI = 0.86). Internal consistency was assessed using Cronbach's alpha (alpha = 0.84 for students; alpha = 0.87 for teachers), both exceeding the accepted threshold of 0.70 (Fraenkel et al., 2012). Descriptive statistics including mean, percentage, and standard deviation were computed for each component and sub-component. Scores were converted to percentages and categorized using adequacy criteria adapted from Stufflebeam &

Shinkfield (2007): Very Good (85% and above), Good (70 to 84%), Adequate (55 to 69%), Poor (40 to 54%), and Very Poor (below 40%).

RESULT AND DISCUSSION

Overview of CIPP Component Scores

The evaluation of all four CIPP components was conducted from the perspectives of students and teachers using validated questionnaires. To provide a comprehensive picture of program implementation across all components, Table 2 presents the percentage scores, adequacy categories, and perception gaps from both respondent groups.

Table 2. Overview of CIPP Component Scores: Students vs. Teachers

Component	Sub-Component	Students (%)	Category	Teachers (%)	Category	Gap
Context	Institutional needs and program goals	76.4	Good	83.2	Good	6.8
Input	Resources, curriculum, and teacher readiness	72.8	Good	80.5	Good	7.7
Process	Teaching Strategy (P1)	73.2	Good	81.5	Good	8.3
	Media and Technology Use (P2)	68.4	Adequate	76.8	Good	8.4
	Student Interaction (P3)	76.8	Good	83.2	Good	6.4
	Assessment Process (P4)	71.5	Good	79.4	Good	7.9
Product	Learning outcomes and competency achievement	70.2	Good	77.8	Good	7.6

Figure 2 presents a comparative visualization of scores across all four CIPP components to enable a cross-component comparison of student and teacher ratings.

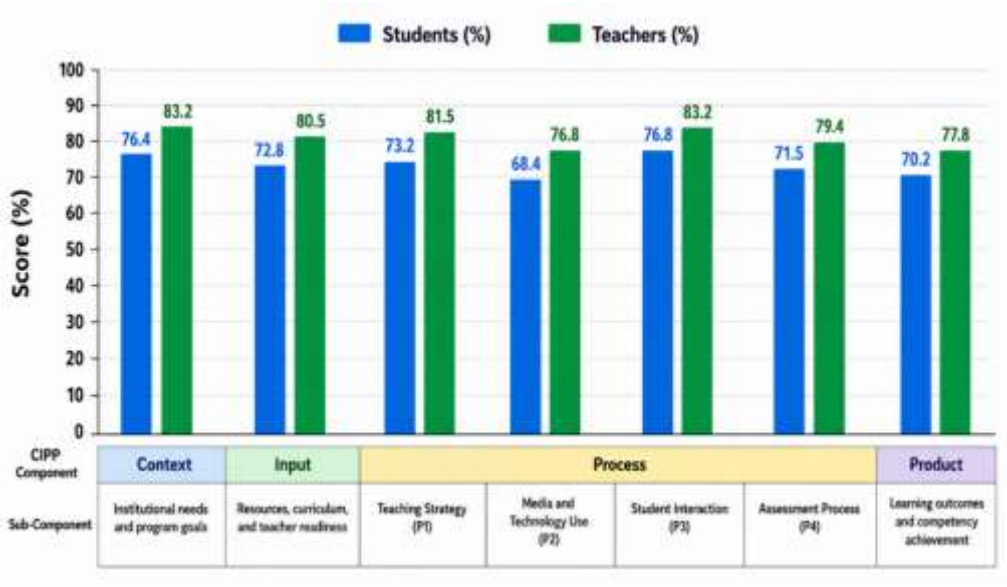

Figure 2. Evaluation Scores Across All CIPP Components: Students vs. Teachers

As shown in Table 2 and Figure 2, the Context component received the highest scores from both groups (students: 76.4%; teachers: 83.2%), indicating that institutional goals, program relevance, and environmental conditions are perceived as relatively well-defined. The Input component scored 72.8% by students and 80.5% by teachers, reflecting that available resources and curriculum plans are generally adequate but require improvement, particularly in facility provision and teacher competency development. The Process component received the lowest teacher score (80.2%) and the second-lowest student score (72.5%), confirming that learning implementation is the most critical area for improvement among all components. The Product component scored the lowest among students (70.2%), indicating that students perceive learning outcomes and competency achievement as not fully meeting expected standards. This perception asymmetry across all components is consistent with previous CIPP-based vocational evaluations, where teachers tend to assess planned activities more favorably than students who experience them directly (Tayibnapis, 2008; Wirawan, 2020).

Context Component

As presented in Table 2, the Context component scored 76.4% among students and 83.2% among teachers, both categorized as Good. These scores indicate that institutional goals, community needs, and program relevance to industry are sufficiently defined and communicated at SMK Negeri 1 Painan. Students recognized the alignment between their vocational program and workforce demands, while teachers perceived the institutional environment as supportive of program delivery. Student scores below 80% indicate that alignment between curriculum content and current industry practices requires further strengthening (Stufflebeam & Coryn, 2014). The 6.8 percentage point gap suggests that teachers have greater awareness of institutional planning frameworks, while students evaluate context primarily through the relevance and applicability of daily learning content to real-world vocational demands.

Input Component

As presented in Table 2, the Input component scored 72.8% among students and 80.5% among teachers, both categorized as Good. Student ratings reflect concerns regarding the adequacy of physical facilities, learning materials, and teacher professional

development opportunities. Teachers rated input more favorably, likely because they have greater visibility into institutional resource planning and curriculum preparation processes. The 7.7 percentage point gap suggests that students experience resource limitations more directly in their daily learning activities. These findings align with Hidayat and Sukardi (2022), who identified resource gaps as a persistent challenge in Indonesian vocational schools, particularly in non-urban areas. Adequate input conditions are a prerequisite for effective process implementation; therefore, deficiencies at this component level have cascading implications for the Process and Product components identified in subsequent findings.

Process Sub-Component Results

The Process component evaluation examined four sub-components of learning implementation: Teaching Strategy (P1), Media and Technology Use (P2), Student Interaction (P3), and Assessment Process (P4). Table 3 presents the sub-component scores from both respondent groups.

Table 3. Process Sub-Component Scores: Students vs. Teachers

Sub-Component	Code	Students (%)	Cat.	Teachers (%)	Cat.	Gap (pp)
Teaching Strategy	P1	73.2	Good	81.5	Good	8.3
Media & Technology	P2	68.4	Adequate	76.8	Good	8.4
Student Interaction	P3	76.8	Good	83.2	Good	6.4
Assessment Process	P4	71.5	Good	79.4	Good	7.9
Overall		72.5	Good	80.2	Good	7.7

Figure 3 presents a radar chart visualizing the relative scores of all four Process sub-components from both student and teacher perspectives simultaneously.

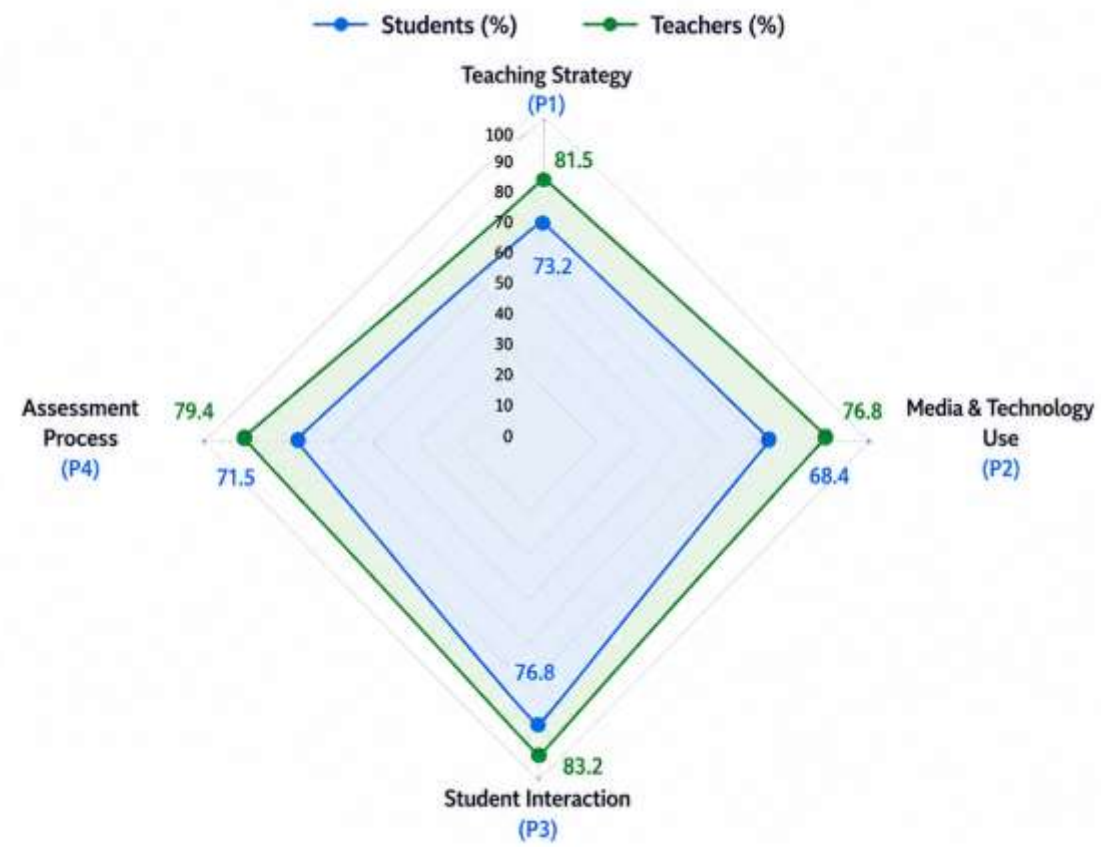

Figure 3. Process Evaluation Scores by Sub-Component and Respondent Type

The Process component yielded an overall score of 72.5% among students and 80.2% among teachers. As shown in Table 3 and Figure 3, Student Interaction (P3) received the highest scores from both groups (students: 76.8%; teachers: 83.2%), making it the only sub-component that exceeded the 75% threshold from the student perspective. Media and Technology Use (P2) recorded the lowest scores from both groups (students: 68.4%; teachers: 76.8%) and is the only sub-component rated Adequate by students, identifying it as the most critical area for development. Teaching Strategy (P1) and Assessment Process (P4) scored 73.2% and 71.5% respectively among students, both below the 75% threshold. The consistent perception gap across all sub-components, ranging from 6.4 to 8.4 percentage points, indicates that teachers systematically rate process implementation more favorably than students across all dimensions of learning delivery (Tayibnapis, 2008; Wirawan, 2020).

To examine specific strengths and weaknesses within each Process sub-component, Table 4 presents indicator-level scores for all four sub-components from both respondent groups.

Table 4. Detailed Process Sub-Component Indicator Scores

Sub-Component	Indicator	Students (%)	Teachers (%)	Gap (pp)
P1: Teaching Strategy	Variety of methods	74.2	82.5	8.3
	Alignment with objectives	72.5	80.2	7.7
	Contextual relevance	71.8	81.0	9.2
	Student engagement	74.3	82.3	8.0
P2: Media and Technology	Media availability	70.2	78.5	8.3
	Ease of use	68.5	75.2	6.7
	Relevance to content	67.8	76.8	9.0
	Technology integration	67.1	76.7	9.6
P3: Student Interaction	Teacher-student dialogue	78.5	84.2	5.7
	Peer collaboration	76.2	82.5	6.3
	Feedback from teacher	75.8	83.0	7.2
P4: Assessment Process	Assessment clarity	72.5	80.5	8.0
	Feedback timeliness	70.2	78.2	8.0
	Competency relevance	71.8	79.5	7.7

Figure 4 presents a comparative bar chart of P1 and P2 indicators against the 75% adequacy threshold, highlighting indicators that fall below the required standard.

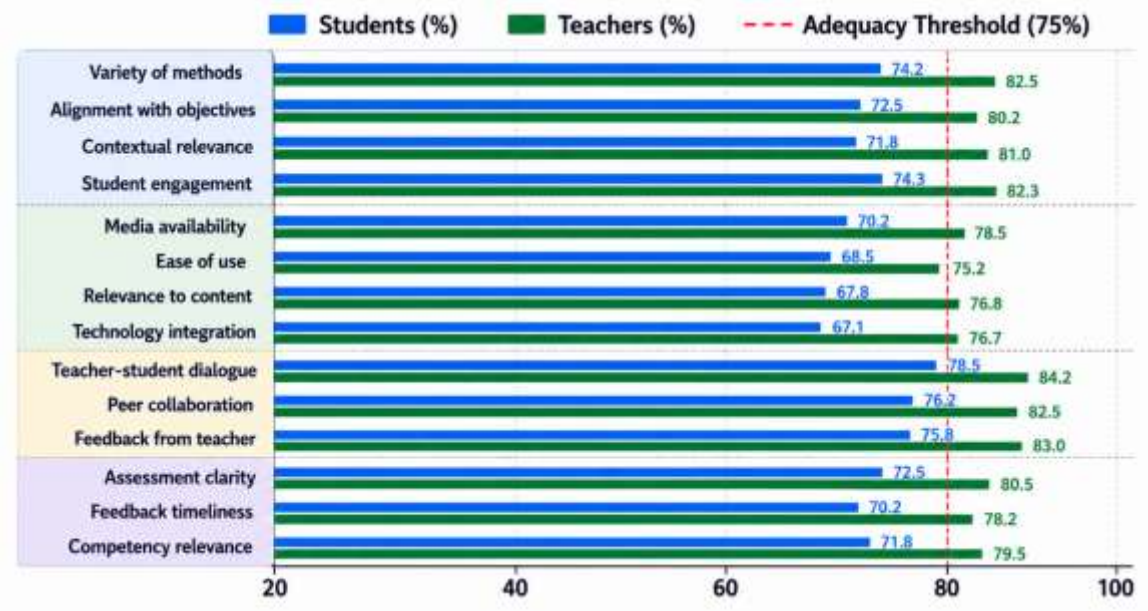

Figure 4. Detailed Scores of P1 and P2 Sub-Component Indicators

As shown in Table 4 and Figure 4, all four P1 indicators fell below the 75% threshold in student responses, with contextual relevance scoring lowest (71.8%) and producing the widest perception gap among P1 indicators (9.2 percentage points). This pattern suggests that while teachers apply a range of instructional strategies, these strategies are not consistently perceived by students as contextually relevant to real-world

vocational scenarios. This finding echoes Hamalik's (2011) argument that effective vocational pedagogy requires continuous contextual adaptation of instructional methods to industry-relevant problem scenarios, not merely the application of formally prescribed strategies.

All four P2 indicators fell below the 75% threshold for students, with technology integration scoring the lowest (67.1%) and producing the widest perception gap across all indicators in this study (9.6 percentage points). Low student ratings on media availability (70.2%), ease of use (68.5%), relevance to content (67.8%), and technology integration (67.1%) reflect structural infrastructure challenges including limited ICT equipment and inconsistent internet connectivity, particularly in schools outside major urban centers (Hamid et al., 2017; Rusman, 2012). The widest overall perception gap on P2 (8.4 percentage points) suggests that teachers make media selection decisions without fully experiencing the access barriers students encounter daily. From the TPACK perspective (Mishra & Koehler, 2006), these scores indicate a need to strengthen teachers' technological pedagogical content knowledge, as effective technology integration requires both adequate infrastructure and the competency to deploy technology in pedagogically meaningful ways.

All three P3 indicators surpassed the 75% threshold in student responses: teacher-student dialogue (78.5%), peer collaboration (76.2%), and feedback from teacher (75.8%). This indicates that collaborative and interactive learning elements are well embedded in vocational learning practice, consistent with Constructivist learning theory (Vygotsky, 1978) and research on active collaborative methods in vocational contexts (Baartman et al., 2011; Mulyasa, 2013). The relatively smaller perception gap on P3 indicators (5.7 to 7.2 percentage points) further suggests that interactive learning activities are experienced more similarly by both groups compared to other sub-components.

All three P4 indicators fell below the 75% threshold in student responses, with feedback timeliness scoring the lowest (70.2%). Assessment clarity (72.5%) and competency relevance (71.8%) also fell short of the threshold, indicating that while assessment instruments may be formally adequate, the formative feedback loop connecting assessment to student learning is not operating optimally. Authentic assessment in competency-based vocational education requires not only valid instruments but also

actionable and timely feedback that enables students to monitor and improve their performance (Majid, 2014; Permendikbud No. 53, 2015).

Product Component

As presented in Table 2, the Product component scored 70.2% among students and 77.8% among teachers, both categorized as Good. Student scores below the 75% threshold indicate that learning outcomes and competency attainment do not fully meet expected standards from the learner perspective. This finding is directly linked to the weaknesses identified in the Process component, particularly in Media and Technology Use (P2) and Assessment Process (P4): inadequate technology integration and weak formative feedback are contributing factors to suboptimal competency development outcomes (Stufflebeam & Coryn, 2014; Zimmerman, 2000). These results reinforce the systemic interconnection among CIPP components, where deficits in Input and Process predictably translate into lower Product scores, underscoring the importance of addressing all components as part of an integrated improvement strategy.

The consistent perception gap averaging 7.7 percentage points across all components indicates that current program implementation meets minimum standards but falls short of optimal quality from the student perspective. Students are the primary beneficiaries of the program, and their perception of institutional support, instructional quality, media access, and assessment fairness directly shapes their motivation and competency development (Zimmerman, 2000). These findings collectively demonstrate that the full CIPP model provides a holistic diagnostic framework enabling targeted identification of implementation challenges at each level of the educational program (Stufflebeam & Coryn, 2014).

CONCLUSION

This study evaluated the learning process at SMK Negeri 1 Painan using the CIPP model from the perspectives of 120 students and 25 teachers. The findings indicate that the Context component achieved the highest scores, demonstrating that institutional goals and program relevance to industry needs are generally well established. The Input component was assessed as adequate, although students identified limitations in learning facilities and instructional resources. Within the Process component, Student Interaction emerged as the

strongest aspect, whereas Media and Technology Use received the lowest ratings from both students and teachers, indicating persistent challenges in technology-integrated learning practices. The Product component obtained the lowest score from students, suggesting that weaknesses in instructional processes, particularly technology utilization and formative assessment practices, have influenced competency achievement. In addition, a consistent perception gap was found across all components, with teachers tending to evaluate implementation more positively than students. Based on these findings, schools should prioritize strengthening ICT infrastructure, expanding access to learning resources, and implementing continuous professional development programs focused on technology-integrated pedagogy. Teachers are also encouraged to improve the quality of formative assessment through more transparent, timely, and constructive feedback mechanisms to support student learning outcomes. At the policy level, CIPP-based evaluation results should be systematically incorporated into vocational school quality improvement planning to ensure that improvements in Context, Input, Process, and Product components are implemented in an integrated manner. This study contributes to the literature by demonstrating the usefulness of the CIPP model as a comprehensive evaluation framework for vocational education and by providing empirical evidence of the relationship between process-related factors, particularly technology integration and assessment practices, and learning outcomes. Future research is recommended to employ mixed-methods approaches involving classroom observations and interviews to complement perception-based data, investigate the influence of teachers' TPACK competencies on technology integration effectiveness, and conduct longitudinal and multi-site studies to examine the sustainability and generalizability of CIPP-based quality improvement initiatives in vocational education settings.

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