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Evaluating fuel-injection motorcycle service training effectiveness using the CIPPO model

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ABSTRACT

This study evaluated the Fuel-Injection Motorcycle Service Training Program at UPTD BLK Pasaman Barat using the CIPPO model. A qualitative evaluation design was employed through observations, semi-structured interviews, and document analysis involving program managers, instructors, participants, and industry stakeholders. Data were analyzed through reduction, display, and conclusion verification. The program was relevant to community needs and supported by a competency-based curriculum and qualified instructors, although training facilities remained limited. All 16 participants (100%) completed the training, 11 (68.75%) obtained BNSP competency certification, and 6 graduates (37.5%) entered employment or entrepreneurship. The program was generally effective, but improvements are required in training facilities, certification access, industry partnerships, and graduate employment support.



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Introduction

Effective vocational training should extend beyond the acquisition of theoretical knowledge to the development of occupational competencies that can be directly applied in employment and entrepreneurship (Budaya, 2026; Sidik et al., 2017; Zamora & Arwizet, 2025). This requirement has become increasingly important as technological transformation continuously changes occupational standards and the competencies expected by employers. A mismatch between training outcomes and workplace requirements may limit graduates' readiness to enter the labor market, particularly when training institutions do not sufficiently involve industry in curriculum development and competency assessment. Strong collaboration between training providers and industry is therefore essential for identifying occupational competencies, adapting training content to technological developments, and improving the transition from training to employment (Delaney et al., 2024; Nakstad et al., 2009). Within this framework, competency-based training provides a strategic mechanism for connecting learning outcomes with occupational standards and workplace performance.

The automotive service sector illustrates this challenge because motorcycle maintenance has increasingly shifted from conventional mechanical systems toward electronically controlled fuel-injection systems incorporating sensors, electronic control units, electrical components, and diagnostic technologies. Consequently, motorcycle technicians require not only conventional maintenance and repair skills but also competencies in system inspection, fault diagnosis, electrical analysis, troubleshooting, and the use of modern diagnostic equipment (Salsabilla et al., 2026). Training institutions must therefore provide sufficient practical exposure to technologies and equipment that reflect contemporary workshop conditions. Industry involvement

is particularly important because technical competence alone may be insufficient when graduates are also expected to demonstrate customer communication, workshop management, and adaptability to technological change (Almukhlifi et al., 2025; Kinsman & Jaffe, 2015). Evaluating fuel-injection motorcycle service training must therefore consider not only curriculum implementation but also instructor competence, facility adequacy, practical learning opportunities, competency recognition, and alignment with current industry requirements.

In Pasaman Barat Regency, the Regional Technical Implementation Unit of the Vocational Training Center (UPTD BLK) provides a Fuel-Injection Motorcycle Service Training Program to strengthen community competencies and expand opportunities for employment and entrepreneurship. The Training Need Analysis identified fuel-injection motorcycle servicing as an occupational competency required by the local community, providing an institutional basis for implementing the program. The training adopts a competency-based approach and a curriculum referring to the Indonesian National Work Competency Standards; however, several conditions indicate that program implementation alone cannot be considered sufficient evidence of effectiveness. Training effectiveness must also be examined in relation to the adequacy of facilities and diagnostic equipment, opportunities for intensive practical learning, access to competency certification, industry involvement, and graduates' transition into employment or entrepreneurship. These dimensions are important because successful training completion does not necessarily indicate that participants have obtained externally recognized competencies or successfully entered the labor market (Brown et al., 2023; Zamani-Alavijeh et al., 2010). A comprehensive evaluation is therefore necessary to determine where the program performs effectively and where substantive improvements are required.

Program evaluation provides a systematic basis for examining these interconnected dimensions. The Context, Input, Process, and Product (CIPP) framework evaluates the relevance of program needs and objectives, adequacy of resources and strategies, quality of implementation, and achievement of immediate results (Jaman & Abdulrohman, 2019; Munzel, 2001). Its strength lies in supporting both accountability and continuous improvement rather than limiting evaluation to final program outputs. The addition of Outcome extends this framework into CIPPO by examining whether immediate training achievements generate sustainable effects beyond program completion. Previous evaluations have demonstrated the importance of examining vocational programs through multiple dimensions rather than relying solely on completion or immediate competency indicators. Nugent et al. (2019), for example, highlights the importance of performance-related assessment, while broader evaluation evidence demonstrates that training effectiveness is influenced by the interaction among program resources, implementation quality, competency development, and subsequent outcomes. Thus, CIPPO offers an appropriate framework for connecting institutional conditions and training processes with immediate products and longer-term consequences.

Despite these developments, an important research gap remains in the evaluation of specialized fuel-injection motorcycle service training. Previous evaluation studies have predominantly examined vocational programs at broader institutional or work-practice levels, providing limited evidence regarding how Context, Input, Process, Product, and Outcome interact within specialized automotive-service training (Brown et al., 2023; Chim & Lau, 2004). More importantly, evaluations that concentrate on program completion or immediate competency achievement may overestimate effectiveness when certification and labor-market outcomes are not examined simultaneously. This limitation is particularly relevant because technical competence developed during training may not automatically lead to formal competency recognition, employment, or entrepreneurship without adequate facilities, industry exposure, certification opportunities, workplace networks, and post-training support (Blomberg et al., 2013; Kinsman & Jaffe, 2015). Accordingly, an evaluation framework is required that traces program effectiveness from identified competency needs and institutional readiness through training implementation and competency achievement to certification and graduates' transition into the labor market.

To address this gap, the present study applies the CIPPO (Context, Input, Process, Product, and Outcome) model to comprehensively evaluate the Fuel-Injection Motorcycle Service Training Program at UPTD BLK Pasaman Barat. Rather than treating Outcome merely as an additional evaluation component, this study establishes an integrated evaluation pathway linking local competency needs (Context), curriculum, instructors, facilities, and institutional resources (Input), competency-based training implementation (Process), training completion and competency certification (Product), and subsequent employment, entrepreneurship, and industry linkage (Outcome). This approach enables the study to identify potential discontinuities between successful training completion, formal competency recognition, and actual labor-market transition, thereby extending evaluation beyond immediate instructional achievement (Huertas-Leyva et al., 2019; Ndile et al., 2020). The study therefore aims to evaluate the program across the five CIPPO dimensions and identify strategic areas for strengthening its relevance, resource readiness, implementation quality, competency recognition, industry alignment, and contribution to sustainable workforce development in Pasaman Barat.

Method

Research Design and Evaluation Framework

This study employed a qualitative program-evaluation design to assess the implementation and effectiveness of the Fuel-Injection Motorcycle Service Training Program at the Regional Technical Implementation Unit of the Vocational Training Center (UPTD BLK), Pasaman Barat Regency, Indonesia. A qualitative approach was selected because it enables an in-depth examination of program implementation within its natural institutional setting and facilitates the exploration of stakeholders' experiences, perceptions, and interpretations. The evaluation was guided by the CIPPO model, comprising five interrelated dimensions: Context, Input, Process, Product, and Outcome. Context evaluation examined community training needs and alignment with labor-market and industry requirements; Input evaluation assessed the curriculum, instructor competence, facilities, learning resources, and institutional support; Process evaluation examined training implementation, instructional practices, participant engagement, and monitoring; Product evaluation focused on immediate competency attainment and certification; and Outcome evaluation examined post-training employment, entrepreneurship, and the broader contribution of the program to workforce development. The study was conducted at UPTD BLK Pasaman Barat from August 2025 to January 2026.

Participants and Data Sources

Participants and informants were selected using purposive sampling based on their direct involvement in, knowledge of, and relevance to the training program and the five CIPPO evaluation dimensions. The informants included UPTD BLK management or the person responsible for the training program, fuel-injection motorcycle service instructors, training participants, and relevant stakeholders associated with the Business, Industry, and Employment Sector (DUDIKA). The purposive strategy ensured that information was obtained from individuals who possessed first-hand knowledge of program planning, implementation, competency development, and post-training relevance. Primary data were obtained through direct field observations and interviews, whereas secondary data consisted of institutional records and training documents. These included the training curriculum, learning modules, participant attendance records, training implementation reports, activity photographs, program documentation, and relevant regulations or institutional policies. Secondary sources were used both to establish the factual characteristics of the program and to corroborate information obtained from observations and interviews.

Data Collection and Research Instruments

Data were collected through non-participant observation, semi-structured interviews, and document analysis. During non-participant observations, the researcher acted as an external observer without direct involvement in training activities. Observations focused on instructional delivery, participant involvement in practical activities, instructor-participant interaction, utilization of training facilities and equipment, and the overall implementation of theoretical and practical sessions. Semi-structured interviews were conducted using predetermined open-ended questions aligned with the CIPPO indicators while allowing additional probing questions to explore emerging issues in greater depth. The interviews investigated program implementation, perceived benefits, constraints experienced during training, competency improvement, and the relevance of the program to employment and industry requirements. Documentary analysis was undertaken systematically to examine institutional records and to verify evidence obtained through observations and interviews. The researcher served as the primary instrument, supported by an observation guide and field notes, a semi-structured interview protocol, and a document-analysis checklist. Before field implementation, these supporting instruments underwent expert validation involving academic supervisors, experts in vocational education and training, and vocational-training practitioners to assess the clarity, relevance, and correspondence of the indicators with the research objectives and CIPPO dimensions. Instruments were subsequently revised in accordance with the experts' recommendations.

Data Analysis

Data analysis was conducted concurrently with and following data collection using an iterative qualitative procedure consisting of data reduction, data display, and conclusion drawing and verification. During data reduction, field notes, interview information, and documentary evidence were reviewed, selected, coded, categorized, and organized according to the five CIPPO dimensions. Relevant statements and observations were grouped into thematic categories representing community needs and program relevance (Context), resource readiness (Input), program implementation (Process), immediate competency achievements (Product), and longer-term effects (Outcome). The reduced data were subsequently displayed in descriptive narratives, matrices, and tables to facilitate comparison across informants, data sources, and evaluation dimensions. Conclusions were developed iteratively by identifying recurrent patterns, convergent evidence, inconsistencies, and relationships among the categories. Preliminary interpretations were continuously reviewed against the original data before final conclusions regarding program effectiveness were established.

Trustworthiness of the Findings

Several procedures were applied to strengthen the credibility, consistency, and confirmability of the findings. First, methodological triangulation was performed by comparing evidence obtained from observations, semi-structured interviews, and documentary analysis, while source triangulation was used to compare information across different stakeholder groups. Second, emerging interpretations were examined through peer debriefing to identify potential analytical bias and strengthen the logical consistency of the findings. Where necessary, preliminary interpretations were reconfirmed against information provided by participants and supporting documentation. Finally, confirmability was maintained through systematic documentation of the research process, including field notes, interview records, reflective notes, analytical decisions, and supporting institutional documents. These procedures ensured that the final interpretation of the CIPPO dimensions was grounded in convergent empirical evidence rather than solely in the researcher's subjective judgment.

Results and Discussions

The results were organized according to the five dimensions of the CIPPO evaluation model Context, Input, Process, Product, and Outcome to provide a systematic assessment of the Fuel-Injection Motorcycle Service Training Program at the Regional Technical Implementation Unit of the Vocational Training Center (UPTD BLK), Pasaman Barat Regency. The findings were derived from the triangulation of field observations, in-depth interviews with program stakeholders, and official program documentation. This multi-source approach enabled the evaluation to capture not only the implementation of the training program but also the alignment between community needs, institutional resources, training delivery, immediate competency attainment, and post-training outcomes. The documentary evidence included the Training Need Analysis (TNA), training program documents, Competency-Based Training reports, participant competency records, certification data, and graduate employment records.

Context Evaluation

Table 1. Results of the Context Evaluation of the Fuel-Injection Motorcycle Service Training Program

Evaluation Indicator	Main Findings	Evidence	Evaluation
Community competency needs	Community competency in servicing fuel-injection motorcycles remained relatively low, particularly in comparison with conventional carburetor-based motorcycle maintenance skills.	Observation, interviews, and TNA documentation	High training need
Relevance to technological development	The increasing use of fuel-injection motorcycles has created a growing demand for technicians capable of diagnosing, maintaining, and repairing modern motorcycle systems.	Observation and interviews	Highly relevant
Community demand for training	Training was required not only by school graduates but also by traditional mechanics seeking to upgrade their technical competencies.	TNA documentation and interviews	High demand
Employment and entrepreneurship needs	Participants required competencies that could support employment in automotive workshops as well as the establishment of independent motorcycle-service businesses.	Interviews and TNA documentation	Relevant
Alignment with DUDIKA needs	The program addressed basic occupational requirements, but closer alignment with current industry practices, modern technology, customer communication, and workshop management was still required.	Observation and interviews	Partially aligned
Overall context assessment	The program responded to an identifiable regional competency gap and was relevant to local workforce-development needs.	Triangulation of findings	Strong justification for program continuation

The context evaluation demonstrated a clear rationale for implementing the training program. The Training Need Analysis identified fuel-injection motorcycle mechanics as one of the vocational competencies required

across most areas of Pasaman Barat Regency, while employment opportunities were expected to arise through independent workshop development or employment outside the region. The findings further indicated that the competency gap extended beyond basic mechanical knowledge to the use of modern diagnostic equipment, electrical systems, and electronic diagrams. Although the program was therefore highly relevant to community needs, its alignment with the Business, Industry, and Employment Sector (DUDIKA) remained incomplete because industry stakeholders expected broader competencies, including customer communication, workshop management, and mastery of emerging automotive technologies. Consequently, the context dimension provides strong evidence for the continuation of the program while indicating the need for stronger industry involvement in defining future competency requirements.

Input Evaluation

Table 2. Results of the Input Evaluation of the Fuel-Injection Motorcycle Service Training Program

Evaluation Indicator	Available Input	Main Finding	Identified Limitation	Evaluation
Training curriculum	SKKNI-based and Competency-Based Training (CBT/PBK) curriculum	Curriculum was systematically structured around nationally recognized competency units	Periodic updating is required to accommodate technological change and industry needs	Adequate
Training duration	280 training hours: 79 hours of knowledge-based instruction and 201 hours of skills/practical training	Practical learning constituted the major component of the curriculum	Effective implementation depended on equipment availability and sufficient hands-on access	Adequate
Instructors	Two instructors with relevant undergraduate qualifications, BNSP methodological and technical certification, and 2–3 years of experience	Formal instructor qualifications met program requirements	Further exposure to recent automotive technologies is needed	Adequate
Training facilities	Workshop, general and special service tools, motorcycles, and supporting equipment	Basic training requirements were available	Only two motorcycle units were reported as fully suitable for practice, while modern diagnostic equipment remained limited	Partially adequate
Funding	Government funding supported operational training activities	Core program activities could be implemented	Limited funding constrained equipment modernization and expansion of training packages	Limited
Overall input assessment	Essential human, curricular, and physical resources were available	Program inputs supported basic competency development	Modernization and stronger industry support remain necessary	Adequate with improvement required

The input evaluation showed that the program possessed the essential resources required for competency-based vocational training, although several constraints affected its capacity to reproduce contemporary industrial working conditions. The curriculum was based on the Indonesian National Work Competency Standards (SKKNI) and comprised 280 training hours, including 79 hours devoted to knowledge and 201 hours to skills development; the competency component alone accounted for 252 hours, including 56 hours for operating diagnostic tools. Instructor capacity was also a notable strength: the two instructors held relevant undergraduate qualifications and BNSP methodological and technical competency certifications, with three and two years of work experience, respectively. However, the physical learning environment remained a constraint. Although basic workshop equipment was available, access to modern diagnostic technology and sufficient practice units was limited, potentially restricting participants' exposure to technologies commonly encountered in

contemporary automotive workshops. These findings indicate that the input dimension was generally adequate for basic competency development but requires systematic modernization to strengthen industry relevance.

Process Evaluation

Table 3. Results of the Process Evaluation of the Fuel-Injection Motorcycle Service Training Program

Evaluation Indicator	Implementation Findings	Strength	Limitation	Evaluation
Program implementation	Training was implemented according to the predetermined schedule, structure, and competency sequence	Implementation was generally consistent with the training plan	Technical constraints affected some activities	Good
Training participants	16 participants attended the program	Training activities could be organized within a defined cohort	Limited equipment reduced individual hands-on opportunities	Adequate
Learning sequence	Basic theory → basic practice → advanced diagnosis and repair	Structured progression supported competency development	Some competencies could not be explored in sufficient depth	Good
Teaching methods	Combination of theoretical instruction and hands-on practice under the PBK approach	Practice-oriented learning supported occupational skill development	Practical time was constrained by limited facilities and working units	Adequate
Practical learning	Included inspection, measurement, maintenance, troubleshooting, and repair activities	Participants received direct technical experience	Access to equipment was not equally intensive for all participants	Partially optimal
Monitoring and evaluation	Classroom visits, practical activity checks, attendance monitoring, and program supervision were conducted	Routine monitoring mechanisms were available	Monitoring remained predominantly administrative rather than focused on instructional quality	Needs strengthening
Overall process assessment	Training was implemented broadly in accordance with the planned competency-based framework	Structured and practice-oriented delivery	Practice intensity and quality-oriented monitoring require improvement	Good but not fully optimal

The process evaluation indicated that the training program was generally implemented according to the planned schedule, structure, and competency-based learning sequence. Instruction progressed from fundamental concepts of fuel-injection systems to direct practice in inspection, measurement, routine maintenance, troubleshooting, and repair. The integration of theory and practice was consistent with the Competency-Based Training approach; nevertheless, the practical component was constrained by the limited number of working units, available facilities, and allocated practice time, resulting in unequal opportunities for participants to perform every technical task independently. Monitoring was conducted routinely through classroom visits, observation of practical activities, and attendance supervision, but its depth remained limited and primarily emphasized administrative compliance. Thus, the process dimension can be characterized as operationally sound but not yet fully optimized for intensive competency acquisition and continuous instructional quality improvement.

Product Evaluation**Table 4.** Results of the Product Evaluation of the Fuel-Injection Motorcycle Service Training Program

Product Indicator	Result	n	Percentage	Evaluation
Participants completing the training	Passed	16/16	100.0%	Very good
Basic competency attainment	Competencies achieved at the expected basic level	16/16	100.0%	Good
Participants obtaining BNSP competency certification	Certified	11/16	68.75%	Good, but incomplete
Participants not obtaining BNSP competency certification	Not certified	5/16	31.25%	Requires follow-up
Internal recognition	Participants received institutional training recognition after completing the required stages	16/16	100.0%	Achieved
Overall product assessment	Training successfully produced graduates with the expected basic competencies, although universal external certification was not achieved			Effective at the immediate-output level

The product evaluation revealed positive immediate results. All 16 participants successfully completed the training and were declared to have passed, indicating a 100% program completion and internal competency-achievement rate. Documentary records further showed that 11 of the 16 participants obtained competency certification from the National Professional Certification Agency (BNSP), corresponding to a certification rate of 68.75%, whereas five participants (31.25%) did not obtain BNSP certification. Participant-level records confirm the distribution of training completion and certification status across the cohort. The findings therefore indicate that the program was effective in producing the intended immediate training outputs, particularly basic occupational competencies. Nevertheless, the difference between the 100% training completion rate and the 68.75% external certification rate identifies an important area for improvement, particularly in expanding participants' access to formal competency assessment and certification.

Outcome Evaluation**Table 5.** Results of the Outcome Evaluation of the Fuel-Injection Motorcycle Service Training Program

Outcome Indicator	Result	Quantitative/Qualitative Evidence	Evaluation
Graduate employment/entrepreneurship	Six graduates were recorded as having obtained employment or established economic activities after training	6 of 16 graduates (37.5%) documented within 6–12 months	Positive but limited
Employment destinations	Graduates entered workshops and other employment settings	Graduate tracer/feeder data	Positive
Entrepreneurship	Some graduates established independent motorcycle workshops	Two graduates were recorded as workshop owners in participant-level records	Positive entrepreneurial effect
Contribution to employability	Training improved participants' technical readiness and confidence to enter employment or self-employment	Interview, observation, and documentation	Positive

Outcome Indicator	Result	Quantitative/Qualitative Evidence	Evaluation
BLK–DUDIKA linkage	Formal collaboration with industry/workplace stakeholders had begun, including arrangements supporting internships and employment opportunities	Observation and institutional evidence	Established but requires strengthening
Graduate follow-up	Employment outcomes were identified, but systematic placement and post-training assistance remained limited	Documentation and interviews	Needs improvement
Overall outcome assessment	The program generated observable labor-market and entrepreneurial benefits, but the transition from training to employment was not yet comprehensive		Positive outcome with substantial scope for improvement

The outcome evaluation demonstrated that the benefits of the program extended beyond training completion and certification, although labor-market transition remained partial. Official feeder data recorded six graduates obtaining employment within six to twelve months after completing the program, equivalent to 37.5% of the 16-person cohort. Participant-level records also identified graduates working as employees and two graduates operating workshops as owners, demonstrating that the program contributed to both wage employment and entrepreneurship. In addition, institutional collaboration with DUDIKA had begun to provide a formal basis for internships, placement, and employment opportunities, although these partnerships had not yet produced comprehensive graduate absorption. The outcome findings therefore indicate a positive but still developing impact: the training generated demonstrable employment and entrepreneurial benefits, while the relatively limited documented transition into work underscores the importance of stronger graduate placement mechanisms, post-training entrepreneurship assistance, and sustained industry partnerships.

The context evaluation demonstrates that the Fuel-Injection Motorcycle Service Training Program is highly relevant to the competency needs of the Pasaman Barat community, particularly in response to the technological transition from conventional carburetor systems to electronically controlled fuel-injection systems. This finding is consistent with evidence that vocational training must continuously adapt to technological development and changing labor-market requirements (Kharel et al., 2025; Olson et al., 2023; Sidwell et al., 2017). However, the findings also reveal a substantive gap between the competencies currently emphasized in the program and those expected by DUDIKA. Industry stakeholders require not only technical servicing skills but also competence in modern diagnostic technologies, customer communication, workshop management, and entrepreneurship. This partial alignment indicates that high community demand alone is insufficient to establish program relevance; relevance must also be demonstrated through correspondence between training content and actual occupational requirements. Therefore, systematic industry involvement in curriculum review and competency mapping is necessary to ensure that future training reflects both technological change and broader workplace expectations.

The input evaluation indicates that the program has an appropriate competency-based foundation but that the adequacy of physical resources remains a critical constraint. Of the 280 training hours, 201 hours were allocated to practical skills and 79 hours to theoretical instruction, while two instructors possessed relevant technical and methodological BNSP certifications. Nevertheless, only two fully functional motorcycles were available for 16 participants, producing an approximate participant-to-practice-unit ratio of 8:1. This condition is particularly important because a curriculum dominated by practical hours does not necessarily provide intensive practical experience when participants must share limited equipment. Insufficient access to functional motorcycles and contemporary diagnostic technologies may reduce opportunities for repeated troubleshooting, independent task performance, and mastery of procedures under authentic workshop conditions. This interpretation is consistent with the principle that competency-based vocational education requires adequate tools, equipment, and workplace-relevant technologies to translate curriculum intentions into demonstrable occupational competence (Braver et al., 2007; Riley, 2000; Spivak, 1999). Thus, modernization of practical facilities should be considered a core requirement for improving training quality rather than merely an infrastructural improvement.

The process evaluation further demonstrates that compliance with the planned training structure did not automatically ensure optimal competency development. Training progressed systematically from theoretical instruction to maintenance, diagnosis, troubleshooting, and repair, with 201 of the 280 hours formally allocated to practical activities. However, limited equipment and shared practice units reduced opportunities for each participant to perform technical procedures independently, making the nominal allocation of practical hours an insufficient indicator of actual hands-on learning intensity. In addition, monitoring focused predominantly on attendance, schedule compliance, and administrative implementation rather than individual competency progression, formative assessment, and corrective feedback. Effective vocational learning requires participants to repeatedly demonstrate occupational tasks, receive performance-based feedback, and undergo assessment under conditions that approximate actual workplace demands (Abdulkadir et al., 2022; Matthew & Ede, 2010; Olayinka & Oyenuga, 2010; Poripo, 2025). Therefore, process improvement should prioritize individual practical exposure, competency-based formative assessment, structured feedback, and monitoring mechanisms that evaluate learning quality rather than administrative compliance alone.

The product evaluation reveals a clear distinction between successful program completion and externally recognized competency attainment. All 16 participants completed the training and achieved the expected internal basic competency requirements, whereas only 11 participants (68.75%) obtained BNSP competency certification, leaving five participants (31.25%) without external certification. Although these results demonstrate strong immediate program completion, the 31.25-percentage-point gap between internal completion and external certification suggests that completion should not be interpreted as equivalent to nationally recognized occupational competence. Formal certification remains important because it provides standardized evidence of technical competence and may strengthen graduates' credibility, occupational mobility, and employability (Idris & Abutu, 2019; Ohwojero & Ede, 2013; Shehu et al., 2022; Yalams, 2023). However, the available findings do not establish whether the five uncertified participants were constrained by competency performance, access to assessment, certification procedures, or other institutional factors. Consequently, future program evaluation should document the causes of non-certification and treat the proportion of graduates obtaining external competency recognition as a distinct performance indicator rather than relying primarily on internal completion rates.

The outcome evaluation provides the most critical indication of the program's long-term effectiveness because immediate training achievements were only partially translated into documented labor-market outcomes. Within 6–12 months, six of the 16 graduates (37.5%) were recorded as employed or engaged in entrepreneurial activities, including two graduates who operated their own workshops. The progression from 100% training completion to 68.75% BNSP certification and subsequently to 37.5% documented employment or entrepreneurship demonstrates a substantial discontinuity between training participation, formal competency recognition, and labor-market transition. This finding supports previous evidence that vocational qualifications alone may be insufficient to secure employment without job matching, workplace exposure, industry networks, and sustained post-training support (Anisah et al., 2021; Handepi & Maksum, 2025; Kiram et al., 2025; Salsabilla, 2024). Nevertheless, the status of the remaining ten graduates was not fully documented; therefore, the 37.5% figure should be interpreted as documented employment or entrepreneurship rather than definitive evidence that all remaining graduates were unemployed. Strengthening systematic tracer studies, DUDIKA partnerships, apprenticeship and placement mechanisms, entrepreneurship mentoring, and post-training follow-up is therefore essential both to improve graduate transition and to provide more reliable evidence of the program's long-term effectiveness.

Conclusions

This study concludes that the Fuel-Injection Motorcycle Service Training Program at UPTD BLK Pasaman Barat was generally effective across the five CIPPO dimensions. The program was relevant to community and industry needs, supported by a competency-based curriculum and qualified instructors, and implemented systematically despite limitations in training facilities. All 16 participants (100%) completed the training, 11 (68.75%) obtained BNSP competency certification, and 6 graduates (37.5%) entered employment or entrepreneurship. Further improvement should focus on modernizing training facilities, expanding certification access, strengthening DUDIKA partnerships, and improving graduate employment and entrepreneurship support.

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