

EVALUATING INDUSTRIAL WORK PRACTICE IN TVET: A MULTI-SITE KIRKPATRICK EVALUATION OF MOTORCYCLE ENGINEERING PROGRAMS IN INDONESIAN VOCATIONAL SCHOOLS

Yuda Prasetya^{1a*}, Widiyanti^{2b}, Yoto^{3c}, Arvieka Sabilla Putri Setiadi^{4d}

¹Universitas Negeri Malang, Malang, Jawa Timur, Indonesia

^{2,3,4}Universitas Negeri Malang, Malang, Jawa Timur, Indonesia

^aE-mail: yuda.prasetya.2405518@students.um.ac.id

(*) Corresponding Author

yuda.prasetya.2405518@students.um.ac.id

ARTICLE HISTORY

Received : 20-06-2026

Revised : 15-07-2026

Accepted : 31-07-2026

KEYWORDS

*Kirkpatrick
Evaluation Model;
Industrial Work
Practice; Work-Based
Learning; TVET;
Vocational
Education; School-
Industry Partnership;*

ABSTRACT

Industrial Work Practice (PKL) is a core component of vocational education aimed at improving learners' work readiness through learning experiences in the industrial world. However, previous studies have typically assessed Industrial Work Practice in isolation, focusing on participant satisfaction, competency gains, or graduate employment without offering a comprehensive evaluation across all levels of Kirkpatrick's framework. This study aims to evaluate the effectiveness of Industrial Work Practice in the Motorcycle Engineering Skill Program at Vocational Schools using the Kirkpatrick Four-Level Evaluation Model. The study used a qualitative approach with a multi-case study design at two Vocational Schools in Indonesia. Data were collected through in-depth interviews, structured observation, and document analysis involving alumni, supervising teachers, industry supervisors, workshop heads, and school management. Data analysis was conducted using the Miles and Huberman interactive model, while data validity was ensured through triangulation, member checking, and peer debriefing. The findings reveal that Industrial Work Practice is effective at all four levels of Kirkpatrick evaluation. The program provides authentic learning experiences that improve technical and professional competence, encourage behavioral change in the form of increased discipline, responsibility, and communication skills, and strengthen school-industry partnerships and graduate work readiness. Nevertheless, the evaluation system and feedback mechanism for Industrial Work Practice are still not optimally structured. This study's novelty lies in the comprehensive application of the Kirkpatrick Evaluation Model through a qualitative multi-case approach, producing empirical evidence that supports the development of the Industrial Work Practice evaluation system and the strengthening of school-industry partnerships in vocational education.

This is an open access article under the CC-BY-SA license.



INTRODUCTION

Vocational Education and Training or Technical and Vocational Education and Training (TVET) has become one of the strategic instruments in human resource development at the global level along with the transformation of the world of work due to the development of Industry 4.0 and the shift toward the Society 5.0 paradigm (World Economic Forum, 2023). This shift requires vocational education institutions to produce graduates who possess not only technical

competence but also the ability to adapt, communicate, collaborate, solve problems, and uphold professional ethics in accordance with the dynamics of industry needs (Jaedun et al., 2024). Therefore, improving the work readiness of TVET graduates has become a priority for various countries to strengthen workforce competitiveness while supporting sustainable economic development (ILO, 2022; OECD, 2023).

One approach widely applied to strengthen the linkage between vocational education and industry needs is Work-Based Learning (WBL) (Gunawan et al., 2023). This approach provides learners with the opportunity to gain direct learning experience in the world of work, so that the learning process takes place through real experience, not only in the classroom (Mahfud et al., 2025). Theoretically, WBL is based on experiential learning theory, which emphasizes the learning process through experience, reflection, conceptualization, and active experimentation (Kolb, 2014). In addition, situated learning theory posits that competence development is optimized when learners are directly engaged within a community of practice alongside experienced practitioners (Lave & Wenger, 1991). On this basis, industrial internship programs are regarded as the most widely implemented form of WBL within TVET systems across countries, as they provide an authentic learning environment that facilitates more effective transfer of knowledge and skills (Harun & Kamin, 2019).

In Indonesia, WBL is implemented through the Field Work Practice program (*Praktik Kerja Lapangan*, PKL), a compulsory component of the curriculum in Vocational High Schools (*Sekolah Menengah Kejuruan*, SMK). Under national policy, PKL is conducted over a period of three to six months with the aim of integrating competencies acquired in school into authentic work situations, thereby enabling learners to gain professional experience prior to entering the workforce (Kemendikbudristek, 2022). Through PKL, learners are expected not only to enhance their technical competence in their respective fields of expertise but also to develop professional attitudes, work discipline, communication skills, teamwork, and adaptability to the industrial environment.

The urgency of implementing PKL is particularly pronounced in the Motorcycle Engineering study program, given that Indonesia is one of the largest motorcycle markets in the world. This industry demands a workforce with diagnostic and mechanical competence, customer service skills, and effective problem-solving ability. Such conditions necessitate strong partnerships between schools and industry to ensure that the learning process and PKL implementation remain aligned with technological developments and prevailing competency standards (Choiri, 2025). School-industry partnerships are considered a fundamental foundation for the success of vocational education, as they generate feedback mechanisms for curriculum development while simultaneously improving graduate quality (Asiri, 2025). Human Capital Theory further explains that investment in competency development aligned with industry needs benefits graduates through improved employment opportunities while also benefiting businesses through reduced costs of training new employees (Caire & Becker, 1967). Consistent with this view, the competency-based education approach emphasizes the importance of aligning curricula with competency standards jointly formulated by educational institutions and industry partners, ensuring that graduates possess competencies relevant to labor market demands (Asiri, 2025; Gesi et al., 2025).

Various studies show that well-designed internship programs are able to improve technical competence, shape professional identity, strengthen work readiness, and increase graduates' employment opportunities (Gutiérrez-Pulido & Orozco-Rodríguez, 2025; Li et al., 2026; Pandey et al., 2025). Graduates who participate in a structured Work-Based Learning (WBL) program also tend to enter the world of work more quickly and obtain higher levels of employer satisfaction compared to graduates who only follow school-based learning (ILO, 2022). The success of such programs is greatly influenced by the quality of mentoring, the alignment of the curriculum with industry needs, learning opportunities in the workplace, and the effectiveness of school-industry partnerships (Sutiman et al., 2022). Findings from research in Southeast Asia and Indonesia show that structured mentoring, school supervision, and the quality of Industrial Work Practice implementation, including task authenticity, mentoring intensity, and competency coverage, play an important role in encouraging behavioral change in learners and increasing graduates' success in entering the world of work (Hoque et al., 2020; Preechawong et al., 2021; Rodhiah & Bravo, 2024; Sutikno, 2024). These findings confirm that the quality of Industrial Work Practice design and evaluation is an important factor in the success of vocational education.

Although Industrial Work Practice has become a mandatory policy in vocational education in Indonesia, the evaluation of its implementation effectiveness is still not comprehensive. Most studies only focus on participant satisfaction, competency improvement, or graduate absorption into the world of work (Sutikno, 2024), while changes in participant behavior after Industrial Work Practice and its impact on institutional strengthening and school-industry partnerships have not been widely studied. In the Motorcycle Engineering Skill Program, the evaluation process is also

still dominated by industry supervisor assessment and has not been optimally integrated with the school's quality assurance system, so the resulting information is not yet adequate as a basis for program improvement.

One model widely used to evaluate the effectiveness of training programs is the Kirkpatrick Four-Level Evaluation Model (Prihandono & Nurhadi, 2025). This model, developed by Donald Kirkpatrick, classifies training outcomes into four dimensions, namely reaction, learning, behavior, and results (Kirkpatrick & Kirkpatrick, 2006). In the context of Industrial Work Practice, these four dimensions are used to evaluate participant satisfaction, improvement in knowledge, skills and attitudes, behavioral change after participating in Industrial Work Practice, and the program's impact on schools, industry, and graduate success. With its comprehensive evaluation scope, the Kirkpatrick model is considered relevant for evaluating the effectiveness of Industrial Work Practice involving various stakeholders.

However, a review of prior studies indicates that the application of the Kirkpatrick model in vocational education has yet to be conducted comprehensively. Most studies have evaluated only participant satisfaction (Level 1), competency improvement (Level 2), or employment absorption rates as an outcome indicator (Level 4), while changes in participant behavior following program completion (Level 3) have rarely been the focus of research. Furthermore, the majority of studies employ quantitative approaches, which have not been able to comprehensively capture the processes, interactions, and contextual factors influencing the success of PKL implementation (Nadroh et al., 2026; Zamora et al., 2025). Qualitative research employing a multicase design that enables cross-school comparison also remains very limited, particularly within the context of vocational education (Sudarmini et al., 2025).

The novelty of this study lies in the comprehensive application of the Kirkpatrick Four-Level Evaluation Model to evaluate all dimensions of Industrial Work Practice effectiveness (reaction, learning, behavior, and results) through a qualitative multi-case study approach at two Vocational Schools with Motorcycle Engineering Skill Programs in Indonesia. Unlike previous studies that focused more on quantitative results or evaluated only some Kirkpatrick levels, this study integrates the perspectives of schools and industry to reveal the process of Industrial Work Practice implementation, changes in learner behavior, and its impact on strengthening school-industry partnerships. Thus, this study not only produces a more comprehensive program evaluation but also provides empirical recommendations for the development of the Industrial Work Practice quality assurance system in vocational education.

Based on these gaps, this study applies the Kirkpatrick Four-Level Evaluation Model to assess the effectiveness of Field Work Practice (PKL) implementation at two Vocational High Schools offering the Motorcycle Engineering study program in Indonesia, employing a qualitative multicase study approach (Yin, 2014). This study aims to evaluate participants' reactions to PKL implementation, analyze the development of technical and non-technical competencies during the program, identify behavioral changes among participants following the completion of PKL, and analyze the program's impact on schools and industry partners. Accordingly, this study is expected to make an empirical contribution to the development of PKL program evaluation, strengthen school-industry partnerships, and serve as a basis for formulating more effective vocational education policies in Indonesia.

METHODS

Research Design

This study employed a qualitative multiple case study design (Yin, 2018), selected for its capacity to generate rich, contextually situated insights into the processes and outcomes of PKL programs across institutional settings. The multiple case format enables replication logic: patterns converging across sites strengthen analytic confidence, while divergences illuminate the role of contextual factors in shaping outcomes (Yin, 2018). The Kirkpatrick model served as both the evaluative framework organizing data collection and the analytical scaffolding structuring cross-case synthesis.

Research Sites

Two public vocational high schools in Indonesia were purposively selected as research sites: SMK Negeri 1 Trenggalek, located in Trenggalek Regency, East Java Province, and SMK Negeri 1 Suruh, located in Semarang Regency, Central Java Province. Both schools maintain accredited Motorcycle Engineering (*Teknik Sepeda Motor*) programs and have established PKL partnerships with certified industry workshops. The selection of two geographically and administratively distinct sites was deliberate, enabling both within-case analysis and between-case comparative

examination of how contextual variation, including local industry ecosystem characteristics and school-specific management practices which influences PKL outcomes.

Participants

Participants were selected through purposive and snowball sampling strategies to ensure informational richness and stakeholder diversity. The participant group comprised: alumni who had completed PKL within the preceding two years ($n = 14$ across both sites), supervising teachers responsible for PKL coordination and monitoring ($n = 8$), industrial mentors from partner workshops ($n = 10$), workshop heads/service department managers ($n = 6$), and school management personnel including principals and vice-principals for curriculum ($n = 6$). In total, 44 participants provided data, ensuring multi-perspective triangulation across student, educator, industry, and institutional viewpoints. Recruitment of participants continued until data saturation was reached, marked by the absence of new codes, themes, or meaningful information emerging from subsequent interviews. Data saturation was monitored throughout the data collection process by comparing newly identified codes with the existing coding framework after each interview cycle. Therefore, the final sample consisting of 44 participants was considered sufficient because additional interviews no longer provided substantial conceptual variation among participant groups.

Data Collection

Data were collected through three primary methods. In-depth semi-structured interviews constituted the primary data source, with individual interview sessions lasting between 45 and 90 minutes. The interview protocol was prepared separately for each participant category, with questions structured based on the four Kirkpatrick levels. Level 1 (Reaction) explored participants' perceptions of the learning experience, the quality of mentoring, workplace facilities, and overall satisfaction with the Industrial Work Practice program. Level 2 (Learning) examined the acquisition of technical competence, knowledge of the workplace, problem-solving ability, and professional attitude. Level 3 (Behavior) investigated the application of the competencies acquired in the workplace environment, including discipline, teamwork, communication, and work responsibility. Level 4 (Results) explored the perceived impact of Industrial Work Practice on graduates' work readiness, competitiveness in the labor market, school-industry collaboration, and institutional outcomes. Before being administered, the interview guide was reviewed by two experts in the field of vocational education to ensure the relevance and clarity of its content.

All interviews were conducted in Bahasa Indonesia and recorded with participant consent before verbatim transcription and subsequent translation. Structured observation was conducted at both school workshops and two partner industry sites per school, focusing on the learning environment, mentoring interactions, and competency manifestations. Documentary analysis encompassed PKL monitoring logbooks, industrial training reports, student competency assessment records, school PKL policy documents, and partnership memoranda of understanding.

Data Analysis

Data analysis followed the interactive model proposed by Miles et al. (2018), which consists of data condensation, data display, and conclusion drawing/verification. The analysis began with verbatim transcription and repeated reading of interview transcripts to achieve an in-depth understanding of the data. During the data condensation stage, open coding was applied to meaningful text segments to generate initial codes. Similar codes were then grouped through focused coding into broader categories aligned with the four Kirkpatrick evaluation levels. NVivo 14 software was used to facilitate coding, organize categories, and systematically identify supporting evidence across the dataset. Data displays, including coding matrices and cross-case comparison tables, were then developed to identify similarities and differences between the two schools. Finally, conclusions were generated through repeated verification by continuously comparing findings from interviews, observations, and documentary evidence until coherent themes representing the implementation of Industrial Work Practice were established (Saldana, 2025).

Trustworthiness

Trustworthiness was established through multiple strategies aligned with Guba's (1981) criteria. Methodological triangulation combining interview, observation, and documentary data which strengthened credibility. Member checking was conducted with a subsample of participants ($n = 12$) who reviewed emerging thematic summaries for accuracy and interpretive fairness. Peer debriefing sessions with two external vocational education researchers provided critical interrogation of analytical claims. An audit trail was maintained documenting all analytical decisions, ensuring dependability and confirmability. Transferability was addressed through thick description of site contexts and participant characteristics.

Research Ethics

Ethical approval was obtained from the relevant institutional review board. All participants provided written informed consent. Institutional anonymization was not sought given the public nature of the participating schools and the absence of sensitive institutional data; however, individual participant identities were protected through pseudonymization throughout data management and reporting.

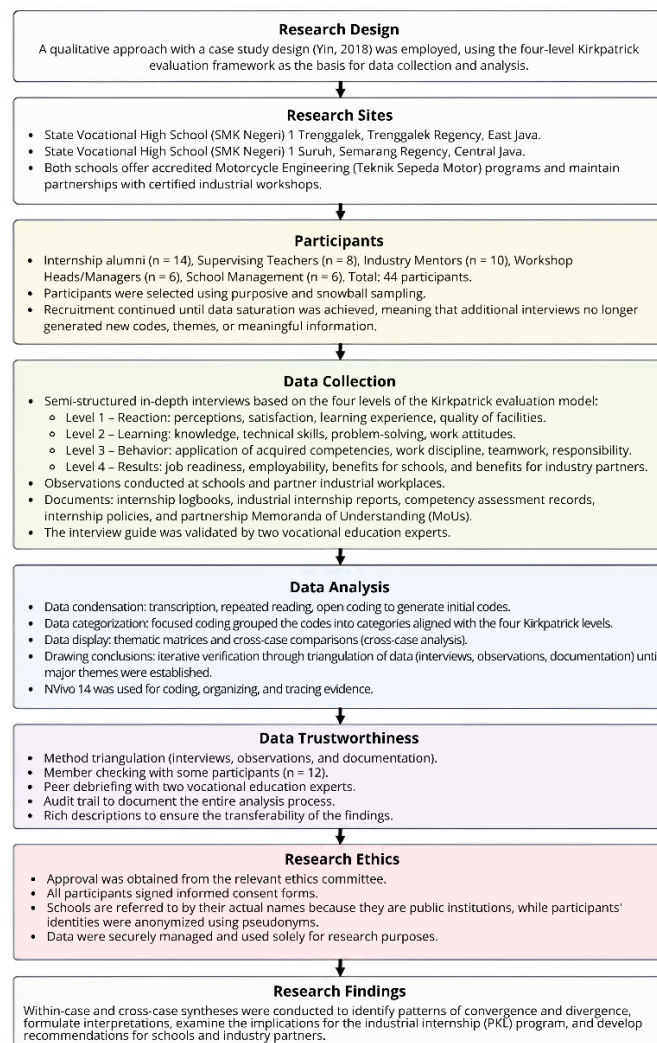


Figure 1. Research Procedure Diagram

RESULTS

Findings are organized according to the four levels of the Kirkpatrick evaluation model. Representative quotations translated from Bahasa Indonesia are presented to ground interpretations in participant experience. A comprehensive summary of findings appears in Table 1.

Table 1. Summary of Multi-Site Kirkpatrick Evaluation Findings for PKL in Motorcycle Engineering Programs

Kirkpatrick Level	Key Themes	SMK N 1 Trenggalek	SMK N 1 Suruh	Cross-Site Convergence
Level 1: Reaction	Student satisfaction; industry engagement; learning environment quality	High satisfaction with real-world exposure; positive mentor relationships	Strong industry alignment; students valued professional culture immersion	Both sites report high satisfaction; gap in structured feedback mechanisms
Level 2: Learning	Technical competency; soft skills; diagnostic proficiency; professional knowledge	Improved diagnostic and repair skills; enhanced tool handling and safety protocols	Accelerated technical learning; soft skills (punctuality, teamwork) visibly improved	Convergent gains in technical and professional competencies across both sites
Level 3: Behavior	Work discipline; professional responsibility; communication; ethical conduct	Sustained behavioral change in punctuality and workplace communication observed post-PKL	Alumni exhibited greater self-regulation and professional initiative after PKL	Transfer of learning confirmed; school environment constrains full behavioral application
Level 4: Results	Graduate employability; school reputation; industry partnership quality; institutional improvement	Strong alumni employment rates; deepened industry networks; curriculum feedback loops emerging	Notable industry partner retention; improved graduate readiness signals; school brand strengthened	PKL generates measurable institutional benefits; formal evaluation systems remain underdeveloped

Source: Compiled by the researcher

Level 1: Reaction — Participant Responses to PKL

Across both sites, participants consistently expressed positive reactions toward PKL, describing the experience as meaningful, relevant, and significantly different from classroom-based vocational instruction. Alumni at both SMK Negeri 1 Trenggalek and SMK Negeri 1 Suruh characterized industrial workplaces as stimulating learning environments offering exposure to real service volumes, professional customer interactions, and technically complex problems absent from school workshops.

One alumnus from SMK Negeri 1 Trenggalek articulated this as follows: *During PKL I worked on between eight and fifteen motorcycles per day. In school, we might work on one or two in a week. The pressure was real, but it made me realize what the job actually demands. It was hard, but I am grateful for it. (Alumni participant, SMK Negeri 1 Trenggalek)*

Industrial mentors across both sites similarly expressed satisfaction with PKL students' general attitude and adaptability, though several noted variabilities in students' initial technical preparation: *Some students arrive and they can already identify common faults. Others need two to three weeks to understand the rhythm of the workshop. We are patient, but we appreciate when the schools send students who have practiced the fundamentals. (Industrial mentor, SMK Negeri 1 Suruh)*

Supervising teachers noted that structured debriefing mechanisms, formal opportunities for students to process and reflect on industrial experience in dialogue with teachers which were inconsistently implemented. While monitoring visits occurred at most partner sites, these were often limited in duration and depth. Several teachers expressed awareness that stronger school presence in the industry would improve both student satisfaction and learning outcomes: *We visit each student at least twice during PKL, but the workshops are spread across several districts. Honestly, we cannot always give the support students need in the field. This is something we must improve. (Supervising teacher, SMK Negeri 1 Trenggalek)*

Workshop heads at partner industries generally reported satisfaction with the structural arrangements for PKL, including the documentation protocols and competency checklists, though they indicated that these instruments were not always completed rigorously. The overall reaction profile across both sites was strongly positive while simultaneously revealing structural gaps in feedback systematization, a pattern consistently observed across both research contexts.

Level 2: Learning — Competency Development During PKL

Level 2 findings documented significant learning gains in both technical and professional domains. Technical competencies most frequently cited as substantially developed during PKL included: motorcycle engine diagnostics, fuel system troubleshooting, brake system maintenance, electrical fault identification, and transmission repair. Participants across both sites described PKL as the primary context in which abstract classroom knowledge became operationally meaningful: *I had studied fuel injection systems in school, but I had never actually repaired one under time pressure with a customer waiting. PKL taught me to be fast and accurate at the same time. That combination you cannot learn from a book.* (Alumni participant, SMK Negeri 1 Suruh)

Industrial mentors confirmed and elaborated on these gains, emphasizing that PKL students typically demonstrated measurable improvement in diagnostic speed and accuracy over the placement period: *By the end of three months, students who started slowly were completing routine services without supervision. You can see the confidence building. The hands remember what the mind has learned.* (Industrial mentor, SMK Negeri 1 Trenggalek)

Beyond technical skills, PKL functioned as a critical site for soft skills development. Alumni at both sites identified improved communication with customers, punctuality, teamwork, and workplace communication as competencies substantially enhanced through PKL. These professional attributes often grouped under the rubric of ‘work readiness’ in the TVET literature were consistently reported as underemphasized in school-based instruction: *In the workshop I learned to explain the problem to a customer in simple language. The customer does not want technical words. They want to know if their motorcycle is safe and how much it will cost. This I learned completely during PKL.* (Alumni participant, SMK Negeri 1 Suruh)

School management participants at both sites acknowledged that PKL provided learning experiences beyond the school’s current instructional capacity, particularly concerning industry-standard tools, diagnostic equipment, and service management systems. This observation points to a productive complementarity between school and industry learning environments, consistent with situated learning theory’s emphasis on community of practice participation as the locus of authentic skill development.

Level 3: Behavior — Transfer of Learning and Professional Conduct

Behavioral changes following PKL completion were observed and reported across multiple dimensions, providing evidence of sustained learning transfer, the theoretically most significant and empirically most challenging evaluation level. Alumni, teachers, and industry mentors unanimously described discernible shifts in post-PKL students’ workplace conduct, professional attitudes, and self-regulation.

The most consistently reported behavioral changes concerned work discipline specifically punctuality, adherence to task protocols, and proactive workplace communication. Multiple alumni articulated a clear before/after contrast: *Before PKL, I was sometimes late to school and did not take the practical sessions very seriously. After PKL, I understood that in the real world, arriving late means losing customers and letting down your team. This changed how I behaved in school too. I became more serious.* (Alumni participant, SMK Negeri 1 Trenggalek)

Supervising teachers at both sites observed comparable changes in returning students’ classroom conduct, professional orientation, and peer leadership: *You can tell which students have completed PKL by how they behave in the workshop. They work more carefully, they clean up after themselves, they help the younger students. PKL matures them professionally in a way that classroom teaching alone does not.* (Supervising teacher, SMK Negeri 1 Suruh)

However, behavioral transfer was not without constraint. Several participants observed that the school workshop environment with its different time pressures, equipment standards, and social norms relative to industry did not always sustain the behavioral standards students had internalized during PKL. This contextual discontinuity between industrial and school settings partially attenuated behavioral transfer, a finding with direct implications for post-PKL curriculum design: *In the industry, you are always accountable. Every job is recorded, every error has consequences. Back in school, the pressure is less. Some students maintain their discipline but others relax back into old habits. We need to bridge this gap better.* (Supervising teacher, SMK Negeri 1 Trenggalek)

Professional ethics constituted another dimension of behavioral development strongly evidenced across both sites. Students reported developing clearer conceptions of occupational responsibility, customer confidentiality, workshop safety culture, and professional integrity through observed and coached practice during PKL. These ethical were rarely made explicit in school-based instruction but emerged as central behavioral outcomes of industrial placement (Boahin & Hofman, 2014).

Level 4: Results — Institutional and Organizational Outcomes

Level 4 findings addressed the broader organizational and institutional outcomes of PKL for both participating schools and their industry partners, revealing a range of measurable benefits alongside persistent developmental challenges. Graduate employability represented the most consistently cited institutional outcome. Data from both schools indicated that alumni who had completed PKL were absorbed into employment, frequently by PKL partner workshops themselves at substantially higher rates than alumni from periods predating the PKL requirement. Workshop heads articulated clear recruitment preferences for PKL alumni: *We have hired four students from SMK Negeri 1 Trenggalek over the last two years. They already know our systems, our standards, and our culture. We do not need to spend two months teaching them how we work. This is a direct benefit for us from PKL. (Workshop head, partner industry, Trenggalek)*

School reputation and institutional legitimacy were also identified as significant Level 4 outcomes. Both school management participants and supervising teachers described how strong PKL performance by students had enhanced their schools' standing within local industry ecosystems, facilitating the establishment of new partnerships and the deepening of existing ones: *When our students perform well during PKL, word spreads among industry partners. New workshops approach us asking to receive students. This reputation takes years to build but it is very valuable for our school's mission. (School management, SMK Negeri 1 Suruh)*

Industry-school partnership quality was also reported to have strengthened as a consequence of PKL. Partners described growing willingness to contribute to curriculum revision, provide equipment donations, and host joint training sessions for school teachers following positive PKL experiences. This reciprocal benefit dynamic aligns with the partnership co-investment model advocated in the TVET policy literature (Maclean & Pavlova, 2013; Tanaka et al., 2024). However, both sites exhibited underdeveloped formal evaluation systems at the results level. While anecdotal evidence of PKL's institutional benefits was abundant, systematic data collection on graduate employment trajectories, industry partner satisfaction, and long-term competency retention was absent. This constitutes a significant gap in both schools' quality assurance architectures, limiting their capacity to use PKL evidence for evidence-based program improvement.

DISCUSSION

Reactions as a Foundation for Program Alignment

The strongly positive participant reactions documented at Level 1 across both sites align with the broader internship literature confirming that authentic workplace exposure consistently generates higher learner satisfaction than simulated instructional environments. However, these findings should not be interpreted as evidence of uncritical participant endorsement. The persistent structural gap in systematized feedback collection at both sites, where monitoring visits were infrequent and student debriefing was uneven represents a quality assurance failure with potential cumulative effects on program development.

The variability in students' industrial preparation observed by mentors at both sites further points to a curriculum alignment challenge. Situated learning theory (Lave & Wenger, 1991) predicts that legitimate peripheral participation is most productive when novices possess sufficient prior knowledge to recognize and engage with the practices of the community into which they are entering. Students arriving at PKL without mastery of fundamental mechanical competencies are likely to experience frustration and diminished confidence, consequences that though manageable demonstrate suboptimal within the apprenticeship experience. This finding suggests a need for pre-PKL readiness assessment protocols, potentially co-designed with industry partners, as part of a reformed PKL quality framework.

These findings are in line with various previous studies showing that authentic work experience during PKL is able to increase learner satisfaction because they gain the opportunity to learn directly in real work situations (Harun & Kamin, 2019). However, unlike some previous studies that reported high satisfaction levels as an indicator of program success, this study found that participant satisfaction is not yet fully supported by a structured evaluation system. The absence of a systematically documented feedback mechanism causes schools to lose important information for continuous program improvement. This difference is likely influenced by variation in schools' quality management capacity and the intensity of coordination between schools and industry partners in carrying out Industrial Work Practice evaluation.

Learning Outcomes and the Situated Development of Competency

The substantial technical and professional learning gains documented at Level 2 provide robust support for PKL's central pedagogical rationale. Kolb's (2014) experiential learning cycle is clearly visible in participants' accounts: students encountered concrete motorcycle service challenges (concrete experience), reflected on their initial approaches (reflective observation), developed new conceptual understandings of fault diagnosis and repair logic (abstract conceptualization), and systematically applied and refined these understandings across repeated service encounters (active experimentation). The manufacturing facility in this instance operates as an excellent hands-on educational setting featuring multiple challenges realistic scenarios deadline-driven conditions and naturally contemplative through guided discussion

The documented gains in customer communication, punctuality, and teamwork are equally significant from an employability perspective. Suarta et al. (2017) and the World Economic Forum (2023) identify precisely these interpersonal and organizational competencies as among the most valued by employers yet most frequently underdeveloped in formal educational settings. The finding that PKL served as the primary site of soft skills development at both schools underscores a structural limitation in Indonesian vocational curricula, which remain heavily weighted toward technical content delivery. Curriculum developers should integrate explicit professional competency frameworks into PKL learning objectives, with corresponding assessment criteria developed in partnership with industry stakeholders.

The results of this study reinforce the findings of Suarta et al. (2017), which show that PKL contributes to improving technical competence as well as learners' work readiness. However, this study also shows that the benefits of PKL are not limited to improving technical skills alone, but also include the development of professional ethics, communication ability, and the ability to adapt to industrial work culture. These findings extend the results of previous research, which generally placed greater emphasis on the aspect of technical competence. This difference is presumed to be influenced by the quality of industry mentor guidance, the intensity of student interaction with the work environment, and the length of the learning process that takes place during PKL.

The observation that school workshops cannot replicate the learning conditions available in industry, in terms of equipment currency, task volume, and professional culture which resonates with Akkerman & Bakker (2011) analysis of boundary crossing between educational and workplace communities of practice. Rather than viewing this gap as a failure, TVET administrators might reframe it as a productive division of educational labor: schools develop foundational technical knowledge and safety competencies, while industry develops applied expertise, professional identity, and adaptive problem-solving. This reframing has implications for how school curricula are designed prior to PKL placement, potentially emphasizing conceptual and foundational preparation over premature practical specialization.

In addition, the results of this study show that the limitations of practice facilities in schools are not merely a weakness of the educational institution, but rather part of the division of roles between schools and the industrial world. This perspective differs from some previous studies that tend to view facility gaps as the main obstacle to PKL implementation. In this study, the gap instead becomes a factor that strengthens the importance of school and industry partnership because each has complementary learning functions.

Behavioral Transfer and the Post-PKL Contextual Gap

The behavioral changes documented at Level 3 enhanced discipline, professional responsibility, ethical conduct, and adaptive communication confirm that PKL generates durable learning transfer extending beyond the internship period. All three conditions were present in the PKL settings studied, contributing to the robust behavioral outcomes observed. However, the finding that school environments partially attenuated behavioral transfer with some students relaxing discipline standards upon return from industry which constitutes an important caution against assuming that internship learning automatically sustains itself in all post-training contexts. The relative permissiveness of school workshop environments compared to industrial workplaces creates a structural inconsistency that undermines transfer continuity. Practical interventions might include the introduction of 'industrial standards simulations' within school workshops, explicit behavioral contracting between students and supervising teachers following PKL return, and peer learning arrangements pairing PKL returnees with pre-PKL students to sustain professional socialization within the school setting.

This finding provides a somewhat different perspective compared to previous studies, which generally concluded that behavioral change after PKL would persist automatically once students returned to school. The results show that the sustainability of behavioral change is greatly shaped by the consistency of the learning environment after PKL. When the culture of discipline at school is not as strong as the work culture in industry, some students tend to revert to their previous

habits. Thus, the effectiveness of behavior transfer is shaped not only by the quality of PKL implementation, but also by the school's ability to maintain a professional culture after learners return from the industrial world.

The emergence of professional ethics as a behavioral dimension developed through PKL and relatively neglected in school curricula which invites deeper theoretical engagement. Competency-based education frameworks typically operationalize competency as a combination of knowledge, skills, and attitude; yet ethical disposition is frequently addressed superficially if at all (Asiri, 2025). Lave & Wenger's (1991) concept of legitimate peripheral participation illuminates why PKL is so effective in this regard: students observe and internalize the ethical norms of a functioning professional community through daily participation rather than didactic instruction. This provides a strong argument for extending PKL placement durations and ensuring that students are embedded in high-quality professional environments where ethical norms are explicitly enacted and discussed.

Institutional Results and the Partnership Development Imperative

Level 4 findings demonstrating enhanced graduate employability, strengthened industry partnerships, and improved school reputations at both sites confirm that PKL generates institutional returns extending well beyond individual student development. These findings resonate with human capital theory's (Caire & Becker, 1967) conceptualization of education-industry investment as mutually beneficial: industry partners receive workforce-ready graduates who reduce onboarding costs, while schools gain credibility, curricular intelligence, and resource access through deepened partnerships (Br Damanik & Rizky, 2025).

The emergence of industry partners as proactive PKL alumni recruiters, documented at both sites which represents a particularly significant results-level finding. Schools that leverage this dynamic explicitly which promoting PKL as a structured talent pipeline arrangement with industry partners which can convert informal recruitment patterns into formalized graduate placement pathways, strengthening institutional positioning and securing stable employment outcomes for alumni.

These results are in line with various TVET studies showing that strong partnerships between schools and industry contribute to increasing graduates' employment opportunities. However, this study found that such success is still based more on informal relationships between schools and industry partners than on a structured graduate monitoring system. This difference indicates that the strengthening of institutional cooperation needs to be followed by the development of a tracer study system and partnership evaluation so that the benefits of PKL can be measured more objectively and sustainably.

The systematic absence of formal data collection on institutional PKL outcomes at both sites is, nonetheless, a critical finding. Without longitudinal tracking of graduate employment trajectories, employer satisfaction data, or formal partnership evaluation protocols, schools are unable to demonstrate PKL's institutional value to policymakers, demonstrate quality assurance compliance, or systematically identify program weaknesses. This observation points to a policy-level intervention imperative: regional or national PKL monitoring systems, potentially coordinated through education ministry regional offices, could provide the infrastructure necessary for evidence-based quality assurance at scale (Rarasati et al., 2023).

An Integrated Evaluation Framework for Industrial Work Practice

Synthesis of the findings across the four evaluation levels shows that the effectiveness of PKL is influenced not only by the quality of program implementation during the industry period, but also by student readiness before placement, the quality of school and industry partnership, and a sustainable feedback mechanism. Based on this synthesis, this study proposes an Integrated Kirkpatrick-Based Evaluation Framework for Industrial Work Practice in Vocational Education (Figure 2). This conceptual model was developed to extend the Kirkpatrick model by adding three main components, namely readiness before PKL (pre-placement readiness), school-industry partnership as a context that influences all evaluation levels, and a feedback mechanism from institutional results toward curriculum improvement and PKL program development.

The proposed conceptual model has practical implications as a PKL quality improvement framework that can be used by vocational schools. Through this model, the evaluation process does not stop at measuring reaction, learning, behavioral change, and institutional results, but continues to become the basis for curriculum refinement, strengthening partnerships with industry, improving learner readiness before PKL, and formulating evidence-based policy. Thus, PKL evaluation becomes a cycle of continuous quality improvement, not merely a final program assessment activity.

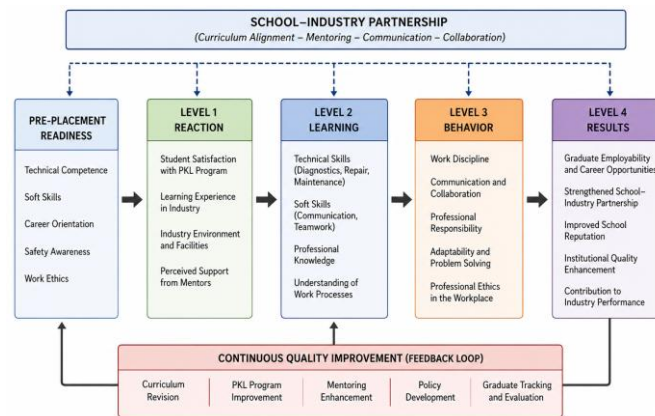


Figure 2. Integrated Kirkpatrick-Based Evaluation Framework for Industrial Work Practice (PKL) in Vocational Education

The framework also has theoretical implications for the WBL literature more broadly. By demonstrating that all four Kirkpatrick levels are productively evaluable through qualitative multi-site methodology, this study challenges the dominant quantitative paradigm in training evaluation research and demonstrates that qualitative evidence, particularly at the behavioral and results levels, provides richer and more actionable interpretive insight than survey-based metrics alone. Future WBL evaluation research should consider mixed-methods designs that integrate the contextual depth of qualitative approaches with the generalizability of large-sample quantitative methods.

Implications for TVET Policy and Practice

The findings carry several direct implications for TVET policy and practice at institutional, regional, and national levels. For vocational school administrators, the study underscores the necessity of formalizing PKL evaluation processes across all four Kirkpatrick levels, rather than relying solely on student logbooks and end-of-placement assessment forms. Schools should develop systematic satisfaction survey instruments, competency assessment rubrics co-designed with industry partners, post-PKL behavioral tracking protocols, and longitudinal graduate outcome databases. These institutional quality systems require investment but generate returns in program legitimacy, partnership depth, and policy advocacy capacity.

For industry partners, findings highlight the strategic value of structured mentoring investment. Workshops that assign dedicated, trained mentors to PKL students, rather than deploying students as supplementary labor, generate stronger competency outcomes and higher-quality eventual recruits. Industry associations in the motorcycle engineering sector could develop shared mentoring standards and certification pathways to professionalize this role and reduce the quality variance currently observed across partner workshops.

At the national policy level, Indonesia's Ministry of Education, Culture, Research, and Technology should consider the development of a standardized PKL evaluation framework, potentially grounded in the Kirkpatrick model, for mandatory adoption across SMK programs. Such a framework would enable aggregate data collection on PKL effectiveness, support evidence-based curriculum policy, and position Indonesia's TVET system for favorable comparison within ASEAN and broader international education quality frameworks (Pramesti et al., 2025). The ongoing alignment of Indonesian vocational education with Society 5.0 imperatives (Huda et al., 2025) further underscores the urgency of robust program evaluation infrastructure as a foundation for adaptive curriculum development.

More broadly, the results of this study show that the success of PKL cannot be explained only through the quality of the learning experience in the workplace, but is also influenced by the readiness of the educational institution to build sustainable partnerships, conduct data-based evaluation, and integrate evaluation results into curriculum development. These findings contribute to the development of Work-Based Learning literature by confirming that the effectiveness of PKL is the result of the interaction between pedagogical, organizational, and institutional partnership factors.

CONCLUSION

This study aims to evaluate the effectiveness of Industrial Work Practice (PKL) in the Motorcycle Engineering Skill Program at Vocational Schools using the Kirkpatrick Four-Level Evaluation Model through a multi-site qualitative

approach. The results show that PKL implementation is effective at all four evaluation levels. At the reaction level, participants gave a positive response to the industry learning environment that provided authentic work experience. At the learning level, PKL improved technical and non-technical competencies that complemented learning at school. At the behavior level, behavioral change occurred in the form of increased work discipline, professional responsibility, work ethic, and communication ability, although its sustainability was still influenced by the school environment after PKL ended. At the results level, PKL had a positive impact on improving graduates' work readiness, strengthening school partnerships with the industrial world, and enhancing school reputation. These findings show that PKL is an effective vocational learning strategy when designed, implemented, and evaluated systematically.

This study also makes a theoretical contribution by extending the application of the Kirkpatrick Evaluation Model in the context of vocational education using a multi-site qualitative approach. The integration of this model with experiential learning theory, situated learning, human capital theory, and competency-based education produces the Integrated Kirkpatrick-Based Evaluation Framework for Industrial Work Practice as an evaluation framework that can support the continuous improvement of PKL program quality. Practically, the results show that schools need to implement a comprehensive PKL evaluation system based on the four Kirkpatrick evaluation levels so that assessment does not focus only on participant satisfaction, but also on learning achievement, behavioral change, and institutional impact. Industry partners need to strengthen the mentoring system and the development of stages for building learners' competencies, while the government can use these findings as a basis for developing national standards for PKL evaluation to continuously improve the quality of vocational education.

This study has several limitations, namely that it was conducted only at two Vocational Schools and focused on the Motorcycle Engineering Skill Program, so the results cannot yet be generalized to the entire context of vocational education in Indonesia. In addition, some data were obtained through the retrospective experience of alumni, which has the potential to give rise to recall bias. Therefore, further research is recommended to use a longitudinal design to observe the sustained impact of PKL, to apply a mixed methods approach to obtain more comprehensive evidence, to expand the object of research to various fields of expertise, and to involve schools, industry, teachers, and learners in developing a more collaborative PKL evaluation model that is adaptive to the needs of the world of work.

REFERENCES

- Akkerman, S. F., & Bakker, A. (2011). Boundary Crossing and Boundary Objects. *Review of Educational Research*, 81(2), 132–169. <https://doi.org/10.3102/0034654311404435>
- Asiri, M. (2025). Exploring graduate programs' curriculum review discussions in partnership with industry players through social exchange perspectives. *Environment and Social Psychology*, 10(1). <https://doi.org/10.59429/esp.v10i1.3260>
- Boahin, P., & Hofman, W. H. A. (2014). Perceived effects of competency-based training on the acquisition of professional skills. *International Journal of Educational Development*, 36, 81–89. <https://doi.org/10.1016/j.ijedudev.2013.11.003>
- Br Damanik, D. G., & Rizky, M. C. (2025). HCM's Role in Driving Innovation and Creativity in the Workplace. *International Journal of Accounting, Business, and Economic Policy*, 1(2), 81–85. <https://doi.org/10.66324/ijabep.v1i2.16>
- Caire, G., & Becker, G. S. (1967). Human Capital, A Theoretical and Empirical Analysis with Special Reference to Education. *Revue Économique*, 18(1), 132. <https://doi.org/10.2307/3499575>
- Choiri, A. (2025). The Role of Artificial Intelligence (AI) in Economic and Labor Market Transformation. *Digital Marketing, Consumer Behavior, and Economic Trends Journal*, 1(1), 1–9. <https://doi.org/10.70865/dmcbej.v1i1.11>
- Gesi, S. L., Effendi, Y. R., & Romadhon, R. (2025). The Role of Teachers in Shaping Students' Attitudes of Responsibility in Pancasila and Civics Education Learning at SMP Negeri 12 Malang. *International Review of Social and Cultural Studies*, 1(1), 12–16. <https://doi.org/10.66324/irscs.v1i1.45>
- Guba, E. G. (1981). Criteria for assessing the trustworthiness of naturalistic inquiries. *Ectj*, 29(2), 75–91.
- Gunawan, H., Pratikto, H., & Churiyah, M. (2023). E-Module Development Computer-Based Accounting Work-Based Learning (WBL). *JOURNAL OF MANAGEMENT, ACCOUNTING, GENERAL FINANCE AND INTERNATIONAL ECONOMIC ISSUES*, 2(3), 827–835. <https://doi.org/10.55047/marginal.v2i3.635>
- Gutiérrez-Pulido, H., & Orozco-Rodríguez, C. (2025). The contribution of professional internships to the academic

- development of engineering and science students: a case study. *Frontiers in Education*, 10. <https://doi.org/10.3389/feduc.2025.1563361>
- Harun, R., & Kamin, Y. (2019). Application of Work-Based Learning Model in Technical and Vocational Education: A Systematic Review. *Education, Sustainability And Society*, 2(4), 01–04. <https://doi.org/10.26480/ess.04.2019.01.04>
- Hoque, K., Kenayathulla, H. B. B., Subramaniam, M. V. D., & Islam, R. (2020). Relationships Between Supervision and Teachers' Performance and Attitude in Secondary Schools in Malaysia. *SAGE Open*, 10(2). <https://doi.org/10.1177/2158244020925501>
- Huda, N., Nurhanurawati, N., Mastuti, A. G., & Adnan, M. (2025). Critical Review of Character Education in Vocational High Schools in Era Society 5.0. *RESET: Review of Education, Science, and Technology*, 1(2), 113–124.
- ILO. (2022). Skills for the future of work - Strategies for inclusive growth in Asia and the Pacific. *International Labour Organization*. https://www.ilo.org/sites/default/files/wcmsp5/groups/public/@asia/@ro-bangkok/@sro-bangkok/documents/publication/wcms_650239.pdf
- Jaedun, A., Nurtanto, M., Mutohhari, F., Saputro, I. N., & Kholifah, N. (2024). Perceptions of vocational school students and teachers on the development of interpersonal skills towards Industry 5.0. *Cogent Education*, 11(1). <https://doi.org/10.1080/2331186x.2024.2375184>
- Kemendikbudristek. (2022). *National framework for vocational education and training: Policy direction 2020–2024*.
- Kirkpatrick, D., & Kirkpatrick, J. (2006). *Evaluating training programs: The four levels*. Berrett-Koehler Publishers.
- Kolb, D. A. (2014). *Experiential learning: Experience as the source of learning and development*. FT press.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge university press.
- Li, W., Darodjat, T., & Rattanapun, S. (2026). Pathways to Employability: Mediating Impacts of Skill Growth, Professional Networks, and Identity Formation in Internship Experiences. *World Journal of Education*, 16(1). <https://doi.org/10.5430/wje.v16n1p118>
- Maclean, R., & Pavlova, M. (2013). Vocationalization of secondary and higher education: pathways to the world of work. *Revisiting Global Trends in TVET*.
- Mahfud, T., Winnarko, H., & Kusuma, B. J. (2025). Work-based learning in vocational education over past two decades: A scientometric and future research agenda. *SCT Proceedings in Interdisciplinary Insights and Innovations*, 3. <https://doi.org/10.56294/piii2025529>
- Miles, M. B., Huberman, A. M., & Saldaña, J. (2018). *Qualitative data analysis: A methods sourcebook*. Sage publications.
- Nadroh, A., Putri, I. E., Khaironita, K., Rizki, F., & Efriyanti, L. (2026). Evaluation of the Industrial Work Practice Program (PRAKERIN) Curriculum at SMKN 1 Lembah Melintang, West Pasaman District Using the CIPP Model. *YASIN*, 6(3). <https://doi.org/10.58578/yasin.v6i3.10383>
- OECD. (2023). Education at a Glance 2023. In *Organisation for Economic Co-operation and Development*. <https://doi.org/10.1787/e13bef63-en>
- Pandey, S., Gaikwad, H., & Ghawshinde, S. (2025). The Role of Project-Based Internships in Shaping Engineers' Careers. *Journal of Engineering Education Transformations*, 39(1). <https://doi.org/10.16920/jeet/2025/v39is1/25132>
- Pramesti, G. N. D. P., Savandha, S. D., & Amelia, A. (2025). Global Strategies to Enhance Higher Education Participation: Lessons from ASEAN and Beyond in Addressing Enrollment Challenges and Workforce Demands. *Cakrawala Repositori IMWI*, 8(3), 1591–1602.
- Preechawong, S., Anmanatrakul, A., Pinit, P., Koul, R., & Easter, M. (2021). Relationship between mentoring and coaching experience, teaching self-efficacy and job satisfaction of vocational school teachers in Thailand. *Educational Studies*, 50(5), 722–742. <https://doi.org/10.1080/03055698.2021.1994374>
- Prihandono, B. Y., & Nurhadi, D. (2025). Evaluation of the Effectiveness of the Daihatsu Program Based on the Kirkpatrick Model in Partner Vocational Schools. *EDUTECH: Journal of Education And Technology*, 9(1), 155–167.
- Rarasati, I. P., Rohmatulloh, G. B., Ilavi, H. A., Athourrohman, M., Saputra, P. W., Hariyanti, R. E., & Asyafa, R. (2023). KKN Pemberdayaan Masyarakat Melalui Penguatan Lembaga Desa dan UMKM Berbasis IPTEK Desa Pandanarum. *Journal of Sustainable Community Service*, 3(4), 1–12. <https://doi.org/10.55047/jscs.v3i4.517>
- Rodhiah, R., & Bravo, C. T. (2024). Pelatihan Kepemimpinan dalam Membentuk Perilaku Kerja Inovatif pada UKM. *PORTAL RISET DAN INOVASI PENGABDIAN MASYARAKAT*, 3(1), 10–16.

<https://doi.org/10.55047/prima.v3i1.1033>

- Saldana, J. (2025). *The Coding Manual for Qualitative Researchers*. SAGE Publications Ltd. <https://doi.org/10.4135/9781036235611>
- Suarta, I. M., Suwintana, I. K., Sudhana, I. G. P. F. P., & Hariyanti, N. K. D. (2017). Employability Skills Required by the 21st Century Workplace: A Literature Review of Labor Market Demand. In *Proceedings of the International Conference on Technology and Vocational Teachers (ICTVT 2017)*. Atlantis Press. <https://doi.org/10.2991/ictvt-17.2017.58>
- Sudarmini, N. L. P., Sutarya, I., & Kiriana, I. (2025). Optimization of Personal Grooming and Attitudes for Hospitality Internship Preparation at SMKN 2 Sukawati. *International Journal of Education, Culture, and Society*, 3(3). <https://doi.org/10.58578/ijecs.v3i3.6135>
- Sutikno, S. (2024). Enhancing supervision efficiency and satisfaction: Evaluating the impact of the e-monprakerin model on vocational high school apprenticeship monitoring. *Jurnal Pendidikan Teknologi Kejuruan*, 7(2), 64–75. <https://doi.org/10.24036/jptk.v7i2.36023>
- Sutiman, S., Sofyan, H., Arifin, Z., Nurtanto, M., & Mutohhari, F. (2022). Industry and Education Practitioners' Perceptions Regarding the Implementation of Work-Based Learning through Industrial Internship (WBL-II). *International Journal of Information and Education Technology*, 12(10), 1090–1097. <https://doi.org/10.18178/ijiet.2022.12.10.1725>
- Tanaka, N., Liang, X., & Angel-Urdinola, D. (2024). *Financing for Technical and Vocational Education and Training : Skills4Dev* (Issue 11). World Bank Group. <http://documents.worldbank.org/curated/en/099541405222456804>
- World Economic Forum. (2023). *The Future of Jobs Report 2023*. World Economic Forum. <https://www.weforum.org/publications/the-future-of-jobs-report-2023/>
- Yin, R. K. (2014). Case Study Research Design and Methods. In *The Canadian Journal of Program Evaluation* (5th ed., Vol. 30, Issue 1). Sage.
- Yin, R. K. (2018). Case study research and applications: Design and methods. 2017. *Sage Publications*. ISBN-13, 9781506, 336169.
- Zamora, J., K., A., Waskito, & Giatman. (2025). Factors Contributing to the Success of Industrial Work Practice (PKL) Using PLS in a Vocational Mechanical Engineering Program. *Jurnal Penelitian Pendidikan IPA*, 11(11). <https://doi.org/10.29303/jppipa.v11i11.12435>