

Implementation of School and Industry Partnership in Improving Graduates' Competencies: Best Practice at Smk Muhammadiyah 1 Salam Magelang

Hesti Risatina ^{1*}, Bambang Sudarsono ¹, Enung Hasanah ¹

¹ Universitas Ahmad Dahlan, Indonesia



2408046039@webmail.uad.ac.id *

ABSTRACT

This study aims to analyze and model best practices for partnerships between schools and the Business and Industry (DUDI) in improving graduate competencies at SMK Muhammadiyah 1 Salam, Magelang. The study used a descriptive qualitative approach with data collection techniques through observation, in-depth interviews, and documentation. The results show that the partnership is implemented systematically and integratedly through curriculum synchronization, industry involvement in competency assessment, implementation of industrial work practices (prakerin), on-the-job training (OJT) for teachers, graduate recruitment, and funding and facility support. The findings indicate that the effectiveness of the partnership is not determined by the number of programs, but rather by the level of integration between planning, implementation, evaluation, and graduate transition to the workforce. Curriculum synchronization increases the relevance of learning, while industry involvement in evaluation strengthens the validity of competencies. Experiential learning through prakerin and OJT contributes significantly to strengthening technical skills and work attitudes. This study produces an integrative partnership model that connects the curriculum, industry-based learning, and graduate absorption pathways, so that it can serve as a reference in the development of more relevant and sustainable vocational education.

Keywords: Vocational Education; School-Industry Partnerships; Graduate Competencies; Work-Based Learning; Curriculum Synchronization; Work Readiness

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INTRODUCTION

Vocational High Schools (VHS) are the main pillar in the vocational education system in Indonesia, which plays a strategic role in preparing human resources who are ready to work, adaptive, and competitive amidst the dynamics of industrial transformation (Darling-Hammond et al., 2020; Mcgunagle, 2020). With a large number of educational institutions and millions of students, vocational schools are a significant contributor to the provision of skilled labor in various sectors (Ahmad et al., 2014; Suyatmo et al., 2025). However, technological developments, digitalization, and automation have changed the competency requirements in the workplace, requiring vocational schools to produce graduates not only with technical skills, but also with critical thinking, problem-solving, adaptation, and a professional work ethic (Iskandar et al., 2020; Ruslin, 2017). This change requires adjustments in the learning process, curriculum, and patterns of relationships between schools and the world of work.

Apart from being oriented towards preparing the workforce, vocational schools also have an important role in fostering an entrepreneurial spirit among students (Iskandar et al., 2020; Mahendra et al., 2019; Wang et al., 2022). Various practice-based programs, such as teaching factories, school production units, entrepreneurship centers, and digital business integration,

are being developed to provide real-world business experience. This approach is expected to increase graduate independence and open up opportunities for them to create their own jobs (Pacher et al., 2023; Wismansyah et al., 2024). However, the success of these programs depends heavily on the quality of implementation at the educational unit level, particularly in building strong and sustainable connections with the Business and Industrial World.

In practice, there is still a gap between the competencies of vocational school graduates and industry needs. This gap is caused by various factors, including suboptimal curriculum synchronization, limited quality and number of productive teachers, a lack of practical facilities relevant to technological developments, and a weak quality assurance system (M. Yang & Paramalingam, 2025). On the other hand, partnerships between vocational schools (SMK) and industrial and industrial industries (DUDI), which should be a strategic solution, have not been running optimally. Internship programs often fail to provide in-depth work experience due to limited duration and a lack of industry involvement in the learning process. Furthermore, not all skills programs have relevant industry partners, resulting in a mismatch between the competencies learned and job requirements in the field (Thamizhiniyan et al., 2022; Usmeldi & Amini, 2022).

Various government policies have encouraged strengthening partnerships between vocational schools (SMK) and industry through strategic programs that emphasize curriculum collaboration, increased investment, and industry involvement in the learning process. However, implementation at the educational unit level still shows high variation, both in terms of the quality of partnerships and their impact on improving graduate competencies. This suggests that the success of partnerships is determined not only by policy but also by the school's ability to develop contextual, adaptive, and sustainable implementation practices in line with the real needs of industry (Hermans et al., 2024; Yanto et al., 2023).

In scientific studies, partnerships between vocational schools and DUDI have been widely discussed, but most of the research is still normative and evaluative, and has not revealed in depth how these partnerships are implemented operationally and integrated at the educational unit level (Guile & Spinuzzi, 2023; Roll & Ifenthaler, 2021). Thus, there remains a research gap regarding effective partnership implementation models that directly impact graduate competency development. The lack of practical models makes it difficult to replicate successful partnerships across vocational schools with varying characteristics.

In this context, SMK Muhammadiyah 1 Salam in Magelang Regency demonstrates relatively advanced and integrated partnership practices. The school develops various collaborative programs with industry, such as synchronizing curriculum based on industry needs, implementing structured Field Work Practices, teacher internships in industry, workshops with industry partners, and strengthening formal collaborations that include graduate recruitment. These practices are oriented not only toward fulfilling learning programs but also toward improving the relevance of graduate competencies and job readiness (Li, 2024; Omar et al., 2023).

Based on the above description, this study aims to analyze and model best practices for implementing partnerships between vocational schools and the industrial and industrial sectors to improve graduate competency, using a case study at SMK Muhammadiyah 1 Salam. The research focuses on how the partnership program is designed, implemented, and integrated into a system that supports the overall improvement of graduate quality.

The primary contribution of this research lies in the development of a comprehensive, practice-based implementation model for vocational high schools-industrial industries partnerships at the educational unit level. This model emphasizes the interconnectedness between curriculum design, industry-based learning processes, and graduate transition mechanisms into the workforce. With its integrative approach, this research is expected to provide theoretical contributions to the development of vocational education and serve as a practical reference for educational units in strengthening sustainable partnerships with industry.

METHOD

This study uses a qualitative approach with a descriptive design to gain a deep understanding of the implementation practices of partnerships between schools and the Business and Industry in improving graduate competency. This approach was chosen because it can explore phenomena contextually and holistically based on real-world conditions, while emphasizing the meaning, process, and experiences experienced by the research subjects. Through this approach, the study seeks to comprehensively describe various forms of best practices that occur in the implementation of partnerships in the school environment.

The research was conducted at SMK Muhammadiyah 1 Salam in Magelang Regency, as a case study location, purposively selected based on the consideration that the school has relatively advanced and integrated partnership practices with the industrial sector. The research focused on various activities reflecting the implementation of the partnership, including teaching factory practices (TEFA), industrial classes, and strengthening industrial culture within the school environment. These three aspects were observed as a representation of the integration between school learning and the needs of the workplace.

The data sources in this study consist of primary and secondary data. Primary data was obtained directly through observation, in-depth interviews, and documentation, while secondary data was obtained from various supporting documents, such as activity reports, collaboration documents, and school archives relevant to the research (Mekarisce, 2020). Informants were selected using purposive sampling, taking into account their involvement and knowledge of the implementation of school partnerships with DUDI. Informants in this study included the principal, vice principal, productive teachers, and other parties directly involved in the implementation of the partnership program.

Data collection techniques used three main methods: observation, interviews, and documentation. Direct observations were conducted during industry-based learning activities, such as teaching factories and industrial classes, to obtain a concrete picture of the partnership implementation process. In-depth, semi-structured interviews were conducted to gather information related to the planning, implementation, and impact of the partnership on student competencies. Meanwhile, documentation was used to complement and strengthen the data obtained through observations and interviews (Fadli, 2021; Mekarisce, 2020).

The validity of the data in this study was ensured through triangulation techniques, namely by comparing data obtained from various sources and methods. Triangulation was carried out by matching the results of observations, interviews, and documentation, and reconfirming with informants to ensure the consistency and accuracy of the data (M. Aris Akin, Ulfiani Rahman, 2026). Thus, the research results are expected to have a high level of credibility.

The data analysis process is interactive and continuous, from data collection to conclusion drawing. The analysis includes three main stages: data reduction, data presentation, and conclusion drawing. Data reduction involves selecting, focusing, and simplifying data relevant to the research objectives. The reduced data is then presented in descriptive narrative form for ease of understanding. Conclusions are then drawn in stages, considering the interrelationships between findings and reconfirmed with field data to ensure validity.

RESULT AND DISCUSSION

1. Overview of the Implementation of the Vocational High School and Industry Partnership

Based on observations, interviews, and documentation analysis, the implementation of the partnership between SMK Muhammadiyah 1 Salam and the Business and Industry World demonstrates a structured and sustainable pattern. The partnership is not only manifested in formal collaboration but is also integrated into various academic and non-academic activities at the school. The findings indicate that the partnership has become an integral part of the education system, particularly in supporting industry-based learning and improving graduate competencies.

In general, the forms of partnership implementation can be classified into five main aspects, namely: (1) curriculum synchronization, (2) industry involvement in vocational practice test assessment, (3) implementation of student internships and teacher OJT, (4) recruitment of

graduate workers, and (5) funding and facility support. These five aspects are interrelated and form a flow that connects the educational process in schools with real needs in the world of work.

2. Synchronization of Industry-Based Curriculum

The research findings indicate that curriculum synchronization is routinely implemented through coordination forums between schools and the Industrial and Industrial Industries (DUDI), particularly at the beginning of the academic year. This activity involves the principal, the vice principal for curriculum, the head of the expertise program, and industry representatives. Interviews revealed that the synchronization process not only addresses the suitability of the material but also encompasses competency standards, technological developments, and the skills required in industry. Documentation revealed that the curriculum has undergone adjustments in several productive subjects, particularly in terms of practical materials and tool use. Teachers have also adjusted their learning methods to be more project-based and hands-on. Classroom observations indicate that learning has shifted toward a contextual approach, with students given assignments that mimic industrial work.

However, the implementation of the synchronization results still faces several challenges, such as limited practical facilities that are not yet fully up to industry standards and varying levels of teacher understanding in adapting industry needs to learning. This indicates that curriculum synchronization requires ongoing support for optimal implementation.

3. Industry Involvement in Vocational Practical Test Assessment

Research findings indicate that the industrial and industrial sectors are directly involved in the vocational practical test assessment process. Industry acts as an external examiner, assessing students' abilities based on applicable work standards. This involvement occurs during the final year competency test. Interviews with teachers and school officials revealed that the presence of industry in the assessment process provides a different perspective than internal assessments. Industry tends to emphasize accuracy, efficiency, and standard operating procedures. This allows students to better understand the expectations of the real world of work.

Observations during the practical exams indicate that students are required to complete assignments independently, following established work procedures. Assessment documentation also indicates stricter standards compared to internal school assessments. However, industry involvement in assessments still depends on the availability of partners and is not implemented evenly across all expertise programs.

4. Implementation of Student Internship

The industrial work experience (*prakerin*) at SMK Muhammadiyah 1 Salam is conducted for six months, namely in the 12th grade in the odd semester, from July to December. Prior to the internship, students participate in a briefing activity involving the principal, department heads, PKL work groups, and industry representatives. The briefing material includes work ethics, work safety, and an introduction to the industrial environment. Interview results indicate that this briefing is considered important to prepare students mentally and technically before entering the world of work. During the internship, the school conducts regular monitoring to ensure that activities are running according to learning objectives. Upon completion, students are required to compile a report and present the results of their work experience.

Observations and interviews revealed that internships significantly improve students' competencies, particularly in technical skills and understanding of work culture. Students become more disciplined, responsible, and able to work in teams. However, the experiences students gain vary depending on the industry and the level of involvement of their mentors at the internship site.

5. Implementation of Teacher OJT

In addition to students, teachers are also involved in on-the-job training (OJT) programs in industry. This program aims to improve teachers' professional competencies to align with technological developments and industry needs. Interviews revealed that teachers participating in OJT gained hands-on experience using tools, work procedures, and industry standards.

Research shows that OJT experiences positively impact the quality of classroom learning. Teachers become more confident in teaching practical materials and are able to provide examples that are more relevant to field conditions. However, OJT implementation is still limited to certain teachers and has not been implemented evenly.

6. Recruitment of Graduates by Industry

In terms of graduate recruitment, several partner industries provide job opportunities for students who have completed their education. Interviews revealed that some graduates were directly recruited by the industries where they completed their internships. This demonstrates a continuity between the educational process and workforce needs. However, not all students receive equal opportunities, as the recruitment process still considers individual competencies and industry needs. Thus, partnerships create opportunities, but do not guarantee automatic recruitment.

7. Funding and Facility Support

The research also shows the contribution of the industrial and industrial sectors in the form of funding and facilities. This support includes assistance with practical tools, collaboration on the use of industrial facilities, and support for industry-based learning activities. Documentation shows that some practical equipment in schools is the result of collaboration with industry. This support helps schools overcome limited facilities and improve the quality of learning. However, this support is still limited and does not cover all the needs of the expertise program.

Synthesis of Findings

Overall, the research results show that the implementation of the Vocational High School and Industry partnership at SMK Muhammadiyah 1 Salam has covered various important aspects of vocational education, from planning (curriculum), implementation (learning and internships), evaluation (practical tests), to outcomes (graduate recruitment). However, there is still variation in the level of implementation in each aspect, indicating the need for system strengthening so that the partnership can run more optimally and equitably.

DISCUSSION

Research findings indicate that the implementation of the partnership between SMK Muhammadiyah 1 Salam and the Business and Industry World has evolved toward a systemic and integrated model. This is evident in the interconnectedness of partnership components, including curriculum synchronization, industry-based learning implementation, industry involvement in evaluation, and graduate transition mechanisms into the workforce. This pattern indicates that the partnership is no longer positioned as an additional program, but rather as an inherent part of the school's vocational education system (Hadromi, 2018; Purnawan et al., 2020; Youyou & Kit, 2023).

Regular curriculum synchronization is a key foundation for building educational relevance to industry needs. Findings indicate that industry involvement in this process can encourage adjustments to learning materials, methods, and competency standards (Ahmad & Latib Ab, 2015; Nadzeri et al., 2023). Conceptually, this condition reflects an effort to bridge the gap between the formal curriculum and the demands of the workplace. However, research also reveals that the effectiveness of synchronization is highly dependent on implementation capabilities at the classroom level. Limited facilities and varying teacher competencies in adapting to industry needs are factors that influence the optimization of synchronization results (Xu, 2024; C. Yang et al., 2023). Thus, curriculum synchronization needs to be understood as an ongoing process that does not stop at the planning stage, but must be followed by strengthening implementation capacity.

Industry involvement in vocational practical test assessments strengthens the authentic dimension of the learning evaluation system. The presence of industry assessors encourages the use of assessment standards that are more contextual and aligned with real-world work practices. These findings suggest that external validation of student competencies can enhance the credibility of learning outcomes while strengthening graduates' job readiness (Nurtanto et al., 2022; Suartini, 2019). However, the reliance on the availability of industry partners in this

process also poses challenges in terms of consistency and equity of implementation. Therefore, a more systematic institutional mechanism is needed to ensure that industry involvement in evaluation can be sustainable and equitable across all expertise programs (Handoyono et al., 2020; Sudarsono et al., 2023).

Student internships and teacher internships are at the heart of experiential learning, directly connecting schools with the world of work. The six-month internship provides students with authentic experiences in an industrial setting, which has been shown to contribute to improved technical skills and foster work attitudes. However, findings also indicate variations in the quality of experiences among students, influenced by the type of industry and the intensity of mentoring (Nurtanto et al., 2020; Sugihartini et al., 2025). This indicates that the success of internships is not only determined by their duration, but also by the quality of management and the suitability of the internship location.

On the other hand, OJT for teachers plays a strategic role in bridging the gap between industrial developments and the learning process in schools. Teachers who participated in OJT demonstrated improved understanding of technology and work procedures, which subsequently impacted the quality of teaching. This finding confirms that improving graduate competency is inseparable from improving teacher capacity. Therefore, effective partnerships must encompass the simultaneous development of students and teachers as part of an integrated learning system (Akmal et al., 2025; Antera, 2021; Polat et al., 2010).

Regarding graduate transition, recruitment opportunities from partner industries demonstrate that partnerships have created a closer link between education and the job market. This finding reflects the existence of mechanisms that support the continuity of the educational process through to the workforce absorption stage. However, the research also confirms that these opportunities remain selective and dependent on the individual competencies of graduates (López et al., 2023; Schulz et al., 2023). This shows that partnerships serve as facilitators of access, but do not replace the importance of learning quality as a primary determinant of graduate success in the workplace.

Financial and facility support from Industry demonstrates that partnerships also have a resource dimension that contributes to improving the quality of learning. Assistance with practical equipment and access to industrial facilities helps schools provide a learning environment more relevant to real-world conditions. However, findings indicate that this support is not evenly distributed across all expertise programs, resulting in gaps in the quality of learning resources (Birchler & Michaelowa, 2016; Guile & Spinuzzi, 2023). Therefore, a more focused partnership management strategy is needed to ensure that the support received can be utilized optimally and sustainably.

Based on the overall findings, it can be synthesized that the success of the partnership between vocational schools and the industrial and industrial sectors at SMK Muhammadiyah 1 Salam lies in the level of integration between components, not in the existence of each program separately. Curriculum synchronization, industry-based learning, authentic evaluation, teacher development, and graduate transition mechanisms form a system that is interconnected and mutually reinforcing. This model demonstrates that effective partnerships must be built within a sustainable systemic framework, where each component has a clear role in supporting the achievement of graduate competencies (Sutiman et al., 2022).

Thus, the findings of this study emphasize that strengthening partnerships between vocational schools and industrial and industrial sectors needs to be directed at comprehensive integration between planning, implementation, evaluation, and educational outcomes. A partial approach that only emphasizes one aspect, such as internships or formal collaborations, is insufficient to produce truly work-ready graduates. Therefore, an integrated, practice-based partnership model, such as the one found in this study, has the potential to be developed as a reference for improving the quality of vocational education more broadly (Pickering et al., 2024).

The findings of this study indicate that the partnership established between schools and industry makes a significant contribution to improving graduates' competencies, particularly in strengthening technical skills, enhancing work readiness, and aligning graduate competencies

with industry demands (Silor et al., 2025). These alignments are reflected in several implemented practices, including collaborative curriculum synchronization with industry partners, the implementation of industrial internships (PKL), the involvement of industry professionals in the learning process, and the availability of recruitment opportunities for graduates through partnership networks (Anselmann et al., 2024).

Although this study shares similarities with previous research, its distinguishing feature lies in its focus on a best practices approach. While prior studies tend to emphasize the general effectiveness of partnership programs, this research highlights distinctive and context-specific best practices that emerge from the organizational culture within the school environment (Maina et al., 2022). Most studies on vocational school-industry partnerships tend to focus on specific aspects, such as the effectiveness of internships, curriculum alignment, graduate employability, or industry contributions to the learning process (Tanggu Mara et al., 2025). In contrast, this study conceptualizes partnerships more comprehensively as an integrated and interconnected system, encompassing curriculum planning, industry-based learning implementation, internship programs, teacher competency development through on-the-job training (OJT), competency assessment, and graduate recruitment.

This study also opens broad opportunities for further research. Therefore, future studies are recommended to adopt a comparative approach across schools to examine how leadership characteristics, organizational culture, and industry networks influence the effectiveness of such partnerships.

CONCLUSION

This study demonstrates that the partnership between SMK Muhammadiyah 1 Salam and the business and industrial sector (DUDI) is implemented in a systemic and integrated manner across key aspects of vocational education. The partnership extends beyond formal collaboration to include curriculum synchronization, industry involvement in competency assessment, industrial work practice (*prakerin*), on-the-job training (OJT) for teachers, and graduate recruitment mechanisms. The findings indicate that partnership effectiveness is determined not by the number of programs, but by the degree of integration within a sustainable system. Curriculum alignment enhances learning relevance, industry-based assessment strengthens competency validity, and experiential learning through *prakerin* and OJT supports skill development, despite variations in implementation quality. In addition, recruitment pathways facilitate graduates' transition into the workforce. Overall, an effective vocational school-industry partnership should be developed as an integrated system that aligns planning, implementation, evaluation, and outcomes. Such an approach not only improves the relevance of vocational education but also strengthens graduates' work readiness in a more comprehensive manner.

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