



School-industry collaboration in vocational education: Partnership management at SMKN Windusari

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ABSTRACT

The partnership between vocational high schools (SMK) and the business and industrial sectors (DUDI) serves as a key strategy in strengthening vocational education to ensure its relevance to labor market demands. This study aims to provide an in-depth description of the partnership management between SMKN Windusari, Magelang Regency, and DUDI, viewed from the aspects of planning, organizing, implementation, and evaluation. A descriptive qualitative approach was used, with data collected through in-depth interviews, observations, and document analysis. The findings indicate that planning was carried out systematically by integrating the partnership programs into official documents such as the School Work Plan (RKS) and the Medium-Term Work Plan (RKJM). Organizing was implemented through the formation of functional teams with clear structures and roles. Implementation involved the utilization of human resources, funding, and school facilities, supported by industry partners. Evaluation was conducted periodically through discussions, activity reports, and review of Memorandums of Understanding (MoU). Main obstacles included limited partners, differing orientations, and technical constraints, which were addressed through adaptive strategies such as network expansion and schedule adjustments. The study recommends enhancing data-based evaluation and strengthening human resource capacity to ensure the sustainability and effectiveness of vocational school-industry partnerships.

ARTICLE INFO

Article History:

Received: 30 Mar 2025

Revised: 18 Jul 2025

Accepted: 22 Jul 2025

Available online: 23 Aug 2025

Publish: 29 Dec 2025

Keywords:

continuous evaluation; SMK-DUDI partnership; vocational education management

Open access

Curricula: Journal of Curriculum Development is a peer-reviewed open-access journal.

ABSTRAK

Kemitraan antara SMK dan Dunia Usaha serta Dunia Industri (DUDI) sebagai strategi penting dalam penguatan pendidikan vokasi yang relevan dengan kebutuhan pasar kerja. Penelitian ini bertujuan untuk mendeskripsikan secara mendalam manajemen kemitraan antara SMKN Windusari Kabupaten Magelang dengan dunia usaha dan dunia industri (DUDI) ditinjau dari aspek perencanaan, pengorganisasian, pelaksanaan, dan evaluasi. Pendekatan yang digunakan adalah deskriptif kualitatif dengan teknik pengumpulan data melalui wawancara mendalam, observasi, dan studi dokumentasi. Hasil penelitian menunjukkan bahwa perencanaan dilakukan secara sistematis melalui integrasi program kemitraan dalam dokumen RKS dan RKJM, sedangkan pengorganisasian dilaksanakan melalui pembentukan tim fungsional dengan struktur dan tugas yang jelas. Pelaksanaan melibatkan pemanfaatan sumber daya manusia, dana, dan sarana sekolah, serta dukungan dari mitra industri. Evaluasi dilaksanakan secara berkala melalui diskusi, laporan kegiatan, dan peninjauan MoU. Hambatan utama meliputi keterbatasan mitra, perbedaan orientasi, dan kendala teknis, namun diatasi melalui strategi adaptif seperti perluasan jaringan dan penyesuaian jadwal. Penelitian ini merekomendasikan peningkatan kualitas evaluasi berbasis data serta penguatan kapasitas SDM untuk menjamin keberlanjutan dan efektivitas kemitraan vokasi.

Kata Kunci: evaluasi berkelanjutan; kemitraan SMK-DUDI; manajemen pendidikan vokasi

How to cite (APA 7)

Kasanah, H. U., Sari, M. N., Tarso, T., & Purwanto, E. (2025). School-industry collaboration in vocational education: Partnership management at SMKN Windusari. *Curricula: Journal of Curriculum Development*, 4(2), 1229-1240.

Peer review

This article has been peer-reviewed through the journal's standard double-blind peer review, where both the reviewers and authors are anonymised during review.



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INTRODUCTION

Vocational education plays a crucial role in producing graduates who are work-ready, independent, and equipped with skills aligned with industry demands. As institutions of vocational education, Vocational High Schools (SMK) are required to continuously innovate in strengthening the relevance between educational curricula and the labor market (Paroqi et al., 2020). One of the main strategies to achieve this goal is through strong and sustainable partnerships with the business and industrial sectors (DUDI) (Kholifah et al., 2024). These partnerships not only enrich students' learning experiences through industrial work practices, but also serve as a platform for aligning graduate competencies with industry standards. SMKN Windusari, as one of the vocational education institutions in Magelang Regency, has made efforts to establish collaboration with various partners from the business and industrial sectors. These partnerships are not merely intended to fulfill curriculum requirements, but also to create contextual, applicable, and market-driven learning systems.

In practice, such partnerships encompass activities such as joint curriculum development, teacher training by industry practitioners, student internships, workforce recruitment, and the utilization of industrial facilities as learning environments. The success of these partnerships largely depends on effective management by the school (Yudiono et al., 2021). Partnership management consists of several key components: planning, organizing, implementation, and evaluation (Mala et al., 2025). In the context of SMKN Windusari, the planning stage includes the formulation of a vision and mission that integrates industrial collaboration, the setting of strategic objectives, and the identification of potential partners. The organizing process involves forming a dedicated team to manage partnerships, with clearly defined roles and functions, as well as cross-unit coordination within the school. The effective implementation of these aspects determines the quality and effectiveness of the established partnerships, as it not only maps the factors influencing vocational education and industry collaboration but also thoroughly examines concrete implementation in terms of planning, execution, and evaluation (Gaffar et al., 2025).

Systematic and coordinated management is needed to ensure synergy between educational institutions and industry, maximizing student competency (Hussain et al., 2024). These findings align with the focus of this study, which also highlights the managerial dimension of educational partnership programs. Similar research revealed that the success of vocational education partnerships with industry is heavily influenced by strategic planning, stakeholder coordination, and ongoing monitoring and evaluation (Cabrerros, 2023; Korneeva et al., 2023). Meanwhile, other research emphasized the importance of strengthening the capacity of industry trainers and mentors to support the transfer of competencies relevant to job needs (Pratama et al., 2025). This second study demonstrated that internal management plays a crucial role in maintaining the sustainability of educational partnership programs. However, this study is unique in its scientific nature, conveying the dynamics of internal management programs and the adaptive strategies used by educational institutions to address specific challenges in the field, including curriculum alignment, character development, and optimizing the roles of industry trainers and mentors holistically.

Nevertheless, the implementation of partnership management does not proceed without challenges. SMKN Windusari faces several obstacles, such as differing orientations between the education and industry sectors, a limited number of industries in the school's vicinity, and scheduling mismatches between school programs and industrial agendas. According to Saleh in his book entitled "*Kurikulum dan Pengembangan Kurikulum*", other frequent issues include limited resources, both in terms of productive teachers and operational budgets, which affect the execution of partnership programs. These conditions require the school to adopt adaptive and collaborative managerial strategies to ensure the effectiveness of the partnerships (Tarso et al., 2025). On the other hand, several supporting factors contribute to the success of partnerships between SMKN Windusari and the business and industrial sectors. The support from the school principal, school committee, and various external stakeholders who are concerned with vocational education development is a key elements that strengthen these collaborations (Ingtias et al., 2022).

In addition, the commitment of industry partners to actively participate in the educational process further enhances the reciprocal and mutually beneficial nature of the relationship. With strong synergy between schools and industries, vocational education becomes more dynamic and responsive to contemporary demands (Guidotti et al., 2023). Therefore, it is important to conduct a study on the partnership management between SMKN Windusari and the business and industrial sectors, in order to identify how planning, organizing, implementation, and evaluation processes are carried out. This research is expected to provide a comprehensive overview of the current partnership management practices and offer strategic recommendations to overcome existing challenges. Thus, the findings of this study can serve as a valuable reference for policymakers, education practitioners, and other vocational institutions in developing effective and sustainable school-industry partnerships.

LITERATURE REVIEW

Strategic Planning in Vocational School-Industry Partnerships

Strategic planning in partnerships between vocational schools and the business/industrial sectors (DUDI) serves as a fundamental basis for building synergistic relationships that are oriented toward the real needs of the industry. Strategic planning is a process of determining the long-term direction of an educational institution, involving analysis of both internal and external environments. In the context of vocational schools, this planning includes identifying industry-required competencies, mapping students' potential, and developing relevant collaborative programs. Without careful planning, such partnerships tend to become ceremonial and unsustainable (Eden et al., 2024). The importance of active involvement from industry partners in the planning phase has been emphasized in various studies (Yoto et al., 2024). In practice, strategic planning that includes industry actors from the outset enables curriculum synchronization and facilitates the provision of industrial work practice opportunities. Moreover, a demand-driven planning approach ensures that vocational school graduates possess skills that align with current industry standards and technologies. Therefore, collaboration in strategic planning not only strengthens partnerships but also enhances the relevance and quality of vocational education (Firman et al., 2025).

Organizing and Functional Structure in Partnership Management

Organizing is a crucial step in ensuring the effectiveness of partnerships between vocational schools and the industrial sector. It involves the division of tasks, authority, and responsibilities within an organizational structure that supports the achievement of shared objectives (Pinheiro & Alves, 2024). In the context of partnerships, a well-defined functional structure between schools and industry is essential to avoid overlapping roles and to accelerate decision-making processes. A dedicated partnership team or an industrial liaison unit at the school is a common organizational strategy applied (Kamil et al., 2024). A collaborative organizational structure can enhance both coordination and program accountability (Dong et al., 2020). The roles of the school principal as a strategic leader, teachers as technical implementers, and industry partners as professional collaborators must be explicitly defined. The existence of regular communication forums between parties also facilitates the resolution of potential implementation barriers. Hence, the success of the organizational aspect plays a vital role in determining the sustainability and quality of partnership programs (Li & Liu, 2022).

Partnership Evaluation as a Tool for Continuous Improvement

Evaluation plays a pivotal role as an instrument for ongoing improvement in the management of school-industry partnerships. Through systematic evaluation, stakeholders can assess the effectiveness, efficiency, and impact of partnership programs, identifying areas that require enhancement. This process involves collecting data, analyzing outcomes, and formulating recommendations for refining strategies and activities. Regular evaluation also ensures accountability and helps maintain the relevance of programs following industry developments (Aulia et al., 2025). Collaborative evaluations involving both schools and industry partners can generate more objective and actionable insights. Feedback from students, teachers, and industry practitioners serves as a critical reference for improving curriculum design, internship implementation, and competency assessments. Therefore, the evaluation process must be integrated into the overall management cycle to promote adaptive, responsive, and high-quality vocational education practices (Palah et al., 2022).

METHODS

This study employs a descriptive qualitative approach aimed at providing an in-depth depiction of partnership management between SMKN Windusari, Magelang Regency, and the business and industrial sectors (DUDI), viewed from the aspects of planning, organizing, implementation, and evaluation. Data were collected through in-depth interviews with the principal, vice principals, supervising teachers, and industry partners, supported by field observations, document analysis, and activity reports. Data analysis followed the interactive model, involving data reduction, data display, and conclusion drawing. Data validity was ensured through source and method triangulation. This approach enabled the researcher to gain a comprehensive understanding of the dynamics and strategies of the school's partnerships, including the inhibiting and supporting factors, thus providing a realistic portrayal of vocational partnership management practices within the SMK environment.

RESULTS AND DISCUSSION

Management with the Business and Industrial Sectors Viewed from the Aspects of Planning, Organizing, Implementation, and Evaluation

Planning

The planning stage in establishing partnerships with the business and industrial sectors (DUDI) at SMKN Windusari, Magelang Regency, is carried out systematically by the school management. The steps taken include integrating partnership elements into the school's vision, mission, and goals; designing partnership programs within planning documents such as the School Work Plan (RKS) and the four-year Medium-Term Work Plan (RKJM); conducting internal and external school analyses; establishing a partnership organizational structure; selecting suitable industry partners; submitting formal cooperation proposals; and providing the necessary facilities and infrastructure to support partnership implementation. As part of the planning process, evaluations of previously implemented partnerships are conducted to determine future directions. These evaluations are generally carried out through internal school management discussions and brainstorming sessions with various stakeholders, including teachers, staff, students, and DUDI representatives.

However, these evaluations remain relatively simple and are based on general assessments of the success of past activities, without employing in-depth analytical methods such as SWOT analysis. As a result, partnership plans tend to replicate previously successful programs, without incorporating innovation or strategic development based on comprehensive analysis. The parties involved in the planning stage include the principal, vice principals, teachers, staff, the school committee, community leaders, and representatives from DUDI. When compared with success indicators outlined in research guidelines, such as the formulation of objectives and mission, identification of achievement targets, development of logical and systematic activity plans, and the creation of measurable frameworks and guidelines, most of the partnership planning steps at SMKN Windusari meet these criteria. Therefore, the implementation of the planning phase in the school-industry partnership management can be categorized as effective.

Organizing

In its efforts to establish partnerships with the business and industrial sectors (DUDI), SMKN Windusari implements an organizing process through the formation of special teams or working groups. These teams have clearly defined main duties and functions (tupoksi) to manage relationships with industry partners. This step is taken to ensure that the management of the partnerships is carried out professionally and to prevent overlapping roles. The school principal, along with the vice principals for curriculum and public relations, establishes functional teams such as the Industrial Work Practice (PKL) Team and the Job Placement Unit (BKK) Team. These teams then collaborate with other school units and DUDI partners to ensure the smooth implementation of partnership programs.

Documentation collected shows that the structure of this collaboration is formalized in official documents such as decrees (SK) for team formation or task assignments, partnership organizational charts, and other administrative records. These documents serve as the foundation for program implementation and evidence that the organizing process has been conducted formally and systematically, reflecting a well-structured system in managing partnerships with the industrial sector. When compared with the success indicators outlined in the research framework for the organizing aspect, such as the precise allocation of individual responsibilities to achieve objectives, proportional workload distribution, and the development of efficient work mechanisms, it can be concluded that the partnership organizing process at SMKN Windusari has met most of these indicators. Therefore, the implementation of the organizing aspect in the school's partnership management can be categorized as effective (Esguerra & Quinito, 2025).

Implementation

The implementation of the partnership between SMKN Windusari, Magelang Regency, and the business and industrial sectors (DUDI) is carried out through various concrete efforts. Several steps taken include: 1) preparing human resources who are ready to be involved in partnership activities, both teachers and students; 2) providing sufficient funding from legitimate and appropriate financial sources to support various forms of collaboration; and 3) equipping school facilities and infrastructure to be optimally utilized in supporting joint activities with industry partners. Based on the results of documentation studies, it is evident that the implementation of this partnership is supported by the recruitment of educators and education personnel who are specifically involved in the partnership activities.

This is substantiated by official documents such as decrees (SK) for the establishment of implementation teams or committees, and the partnership organizational structure that outlines the distribution of roles and responsibilities among the involved parties. When these implementation steps are compared to the success indicators outlined in the research framework such as shared understanding of the partnership goals among all organizational members, clarity of policies and organizational structure, emphasis on teamwork, provision of recognition and guidance, and belief that involvement in the program contributes to the achievement of personal and institutional goals it can be concluded that the implementation of partnership management at SMKN Windusari meets most of these indicators. Thus, this aspect of implementation can be considered well-executed.

Evaluation

The evaluation of the partnership management between SMKN Windusari, Magelang Regency, and the business and industrial sectors (DUDI) is carried out through various mechanisms. The evaluation process includes gathering input from students, assessing student presentation outcomes, and reviewing reports prepared by implementation teams or supervising teachers involved in the partnership activities. In addition, the evaluation is also directed at reassessing the relevance and continuity of the partnerships with DUDI partners, which includes aligning or updating the terms of cooperation agreements between both

parties (Ubaidah et al., 2021). The evaluation is conducted through discussion forums and brainstorming sessions involving school management and relevant stakeholders. These forums serve as platforms to analyze findings and formulate appropriate conclusions and follow-up actions.

The evaluation process is not only internal but also involves collaboration with DUDI partners to assess the extent to which the programs outlined in the Memorandum of Understanding (MoU) have been implemented as planned. Periodic monitoring is used as a benchmark to determine whether the partnership programs have been carried out correctly. If any discrepancies are found in the implementation of the partnership, the school will immediately coordinate with its DUDI partners to seek the best solutions through deliberation. Conversely, if the partnership yields results that exceed expectations or provides added value, the school will express appreciation by giving awards to its industry partners. The evaluation process also includes reviewing and revising the MoU content to ensure it remains relevant to the evolving conditions and quality of DUDI partners. With this comprehensive evaluation approach, the partnership between the school and industry can continuously be improved and enhanced sustainably.

Inhibiting and Supporting Factors

Inhibiting Factors in Partnerships with the Business and Industrial Sectors

The implementation of partnerships between SMKN Windusari and the business and industrial sectors (DUDI) faces several obstacles that affect the effectiveness of collaboration. One of the main challenges is the difference in orientation between schools and industry. While schools tend to focus on education and character development, DUDI is generally profit-oriented. Additionally, the limited number of DUDI in the vicinity of the school presents another challenge, especially in establishing sustainable partnerships. Another significant barrier is the relatively long distance between DUDI locations and the school, which complicates access and coordination.

Other inhibiting factors include the limited capacity of industry partners to accommodate a large number of student interns, misalignment of program schedules between the school and DUDI, and insufficient budget allocation to support collaborative activities. Furthermore, the limited number of productive (vocational) teachers also hampers the ability to mentor and supervise students during partnership activities properly. These challenges indicate that, although partnerships have been initiated, strategic efforts are still required to overcome these barriers to ensure that collaborations can function more optimally and sustainably.

Supporting Factors in Partnerships with the Business and Industrial Sectors

To address the various challenges in implementing partnership management, SMKN Windusari has adopted several strategic and adaptive measures. One important step is aligning the orientation between the school and the business/industrial sectors (DUDI), ensuring that the collaboration remains mutually beneficial without compromising educational goals. Additionally, the school maintains intensive communication with industry

partners to agree on adjusted schedules that do not conflict with either party's agenda (Ngobeni, 2025).

On the other hand, efforts to secure additional funding are made through the optimization of school budgets, support from the school committee, and involvement of other stakeholders interested in the success of the partnership programs. To address the limited number of available industry partners, the school expands its partnership network by engaging more industrial partners. Furthermore, a rotation strategy for student internships is implemented to ensure that all students have the opportunity to participate in the program, despite the limited capacity of DUDI. These measures are expected to effectively minimize the challenges faced in the implementation of school-industry partnerships.

Discussion

The partnership management between vocational high schools (SMK) and the business and industrial sectors (DUDI) is a strategic aspect in optimizing vocational education to remain relevant to the demands of the labor market (Widodo et al., 2025). In the context of SMKN Windusari, partnership planning is carried out systematically through the integration of the school's vision and mission, the formulation of programs within the School Activity Plan (RKS) and the Medium-Term School Development Plan (RKJM), as well as the mapping of internal and external potentials. Structured planning based on situational analysis is the initial key to successful collaboration with industry partners (Arifin et al., 2025). However, planning at SMKN Windusari is not yet supported by in-depth strategic analysis methods such as SWOT, thus the potential for innovative collaboration remains underexplored.

The organizational phase at SMKN Windusari is carried out through the formation of functional teams, such as the Industrial Work Practice (PKL) team and the Job Placement Service (BKK) team. A clear division of tasks formalized through official decrees (SK) reflects a well-structured and focused organizational arrangement (Nafisah et al., 2024). A clear organizational structure and distribution of duties are strong indicators of successful SMK-DUDI partnership management (Nurdiansyah, 2025). The involvement of the principal, vice principals, and other supporting units indicates good cross-sectoral coordination within the school. However, the effectiveness of inter-team communication during program implementation has not been elaborated in detail. The implementation of the partnership at SMKN Windusari includes human resource preparation, financial management, and the utilization of facilities and infrastructure.

The success of partnership implementation is determined by the readiness of resources and the clarity of the roles of teachers and students in industrial collaboration (Naseer et al., 2025; Vuoriainen et al., 2025). The recruitment of specialized teachers and the assignment of roles within the organizational structure reinforce the implementation aspect. However, implementation effectiveness does not only depend on planning and organization but also on the quality of interaction with industry partners, which has not been explained in detail in the findings. In the evaluation phase, SMKN Windusari uses discussion forums, report assessments, and program evaluations involving DUDI. This evaluative approach reflects a commitment to continuous improvement. Active involvement of DUDI in the evaluation process enhances accountability and sustainability of the partnership (Kiram et al., 2025).

However, the evaluation methods used remain general and have not incorporated quantitative instruments or measurable performance indicators, which makes the improvements more reactive than strategic.

Inhibiting and supporting factors in the implementation of the partnership are also crucial areas of concern. Differences in orientation between education and industry sectors, the limited number of industry partners, and geographic distance are the main obstacles, as previously highlighted in studies on geographical challenges and cultural differences between schools and industries (Cao, 2024; J. Li & Pilz, 2023). On the other hand, SMKN Windusari has demonstrated strong initiatives in addressing these challenges, such as aligning orientations, mobilizing funding, and rotating student internships. These adaptive and collaborative strategies help minimize barriers and strengthen the sustainability of the partnership, in line with the recommended model of partnerships based on local needs and regional potential.

CONCLUSION

The implementation of the partnership has been carried out systematically through the four main aspects of management: planning, organizing, implementation, and evaluation. Planning involves the formulation of the school's vision, mission, and work programs documented in official records; organizing is conducted through the establishment of structured working teams; implementation focuses on the involvement of school and industry resources; while evaluation is carried out periodically to review the effectiveness of the collaboration. Inhibiting factors such as differences in orientation, limited number of industry partners, and technical constraints have been addressed through adaptive strategies, including network expansion and the alignment of activity schedules. Therefore, it is recommended that the school continue to enhance the quality of data-driven evaluations, broaden its industrial networks at the national level, and strengthen human resource capacity so that the established partnerships are not only sustainable but also capable of improving the quality of graduates who are work-ready and highly competitive.

AUTHOR'S NOTE

The author declares no conflict of interest regarding the publication of this article and affirms that the data and content are free from plagiarism.

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