

Curriculum-Based Empowerment through Local Knowledge Integration in Vocational Schools

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ABSTRACT

The integration of local wisdom into vocational school curricula is a strategic approach to enhancing the relevance of education within specific social and cultural contexts. This study aims to explore the strategies for incorporating local wisdom into the curriculum at SMK Negeri 2 Sangatta Utara and its impact on student empowerment and graduate competitiveness. A descriptive qualitative approach was employed using a case study design. Data were collected through in-depth interviews, participant observation, documentation, focus group discussions, and tracer studies. Participants included teachers, school administrators, students, alumni, and local stakeholders. Data analysis was conducted thematically through data reduction, display, and conclusion drawing. The results indicate that local wisdom is integrated through contextual learning, community collaboration, and the internalization of cultural values in vocational practices. Supporting factors such as school commitment and community engagement strengthen the implementation process. These findings underscore the importance of a locally grounded approach in vocational education to produce adaptive, character-driven graduates capable of responding to global challenges. This study contributes to the development of inclusive and context-sensitive curricula, promoting sustainable educational innovation.

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Introduction

Integrating local wisdom into educational curricula is a strategic approach aimed at enriching students' learning experiences by embedding cultural values, traditional practices, and community-specific knowledge into instructional processes. This integration not only strengthens cultural identity but also promotes social cohesion, character development, and educational relevance within real-life contexts. Across various educational levels, the incorporation of local wisdom has demonstrated significant contributions, such as in early childhood education, where it supports holistic development (Elia, 2024), and in secondary-level civics education, where it reinforces students' attachment to national values (Sakman et al., 2024). However, within the realm of vocational education, such integration remains underexplored, despite the critical role vocational institutions play in preparing young generations to face socio-economic and technological challenges at both local and global levels.

Globally, numerous studies reveal that Indigenous knowledge is often marginalized in formal education systems dominated by Western epistemologies. In Rwanda and Nepal, for instance, vocational education in animal health and food security disregards traditional practices that are deeply embedded in local communities (Ezeanya-Esiobu et al., 2021; Rai, 2021). Conversely, successful vocational programs in Australia and Alaska have demonstrated the importance of social engagement and cultural relevance in enhancing educational outcomes (Flores, 2022; Jorgensen, 2020). These findings emphasize that without the recognition of local knowledge systems, vocational education struggles to meet the actual needs of communities, particularly in rural or culturally rich regions. Thus, integrating local wisdom into vocational education serves not only as a means of cultural preservation but also as a strategic empowerment mechanism that positions learners as active agents in building sustainable communities.

In the Indonesian context, several studies have highlighted the critical role of local wisdom in shaping student character, fostering multicultural understanding, and creating contextualized learning experiences. For example, in elementary education in Palopo and Pariaman, local wisdom integrated into thematic curricula has successfully grounded students in cultural values and social realities (Elia, 2024; Munawir et al., 2024). While the Merdeka Curriculum offers greater flexibility for incorporating local culture, its implementation continues to face challenges related to limited resources and teacher capacity (Ulfarianti, 2024). There is an urgent need for flexible curriculum design, sustained teacher training, and active collaboration with community leaders to develop educational practices that are both rooted and adaptive (Polii & Ahmadi, 2024; Sumarni et al., 2025). Herein lies a key research gap: despite the growing evidence on the benefits of local wisdom integration at primary and secondary education levels, in-depth studies on its implementation in vocational education particularly as a curriculum-based empowerment strategy remain scarce.

This study aims to fill that gap by critically examining how local content rooted in East Kutai cultural knowledge is integrated into the vocational curriculum at SMK Negeri 2 Sangatta Utara. The primary focus is on the Automotive Engineering program, which aligns instructional content with the demands of the local mining industry. This approach reflects a “curriculum-based empowerment” model, wherein the curriculum is not merely a vehicle for knowledge transmission but also a tool for socio-economic and cultural empowerment (Milligan, 2024; Seref & Mizikaci, 2022). By engaging industry partners, community leaders, and local resources, the school has developed culturally relevant learning practices that enhance technical competencies, entrepreneurial potential, and graduates' competitiveness. This resonates with the competitive advantage framework, which argues that differentiation based on unique resources—including local values and practices can enhance market value (Hafizi, 2023; Porter, 2004; Zainul, 2024).

By combining the frameworks of curriculum management, educational empowerment, and competitive advantage, this article presents a practical model of local wisdom integration aimed at achieving meaningful learning outcomes and broader social impact. This research is particularly timely in responding to the challenges of implementing the Merdeka Curriculum in culturally diverse settings and contributes conceptually to global discourses on decolonizing education and rethinking vocational learning relevance. It is expected that the findings of this study will broaden our understanding of how vocational education can be redesigned to foster more inclusive and sustainable social transformation, while offering a scalable implementation model for other culturally rich regions. Ultimately, this study emphasizes the need to view the curriculum not merely as a normative document but as a strategic tool for localized, empowerment-oriented educational development.

Materials and Methods

This study employed a qualitative approach with an intrinsic case study design, aiming to gain in-depth understanding of the integration of local wisdom into the vocational education curriculum at SMK Negeri 2 Sangatta Utara. The intrinsic case study approach was selected because the research is not intended to test generalizable theories but rather to explore a unique and context-specific educational practice that exemplifies a curriculum-based empowerment strategy (Gerring, 2007; Seawright & Gerring, 2008). The qualitative paradigm was deemed appropriate for capturing the social dynamics, cultural meanings, and educational processes that characterize vocational learning in a localized setting—elements that are often overlooked in quantitative inquiries. As Hollweck (2015) asserts, case studies are particularly suitable for addressing “how” and “why” questions within complex social contexts, which aligns with the objectives of this investigation.

Data were collected through multiple techniques, including semi-structured in-depth interviews, limited participant observation, document analysis, focus group discussions (FGD), and a tracer study of alumni. Ten key informants were purposively selected, comprising the head of the vocational program, three productive subject teachers, two industry workshop instructors, two alumni, and two local business owners. Observations were conducted in practical classrooms, student project sessions, and partner workshops to capture the authentic implementation of local knowledge in vocational training. Documentary sources such as lesson plans, local content syllabi, project reports, and student portfolios were analyzed. FGDs were organized to explore collective perceptions from teachers and industry partners, while tracer studies focused on tracking alumni outcomes in the job market. The research instruments were developed based on the principles of curriculum management and education-based empowerment, contextualized within the framework of localized vocational education.

All data were analyzed using the interactive model proposed by Miles, Huberman, and Saldaña (2014), which consists of data reduction, data display, and conclusion drawing/verification. This iterative and cyclical process allowed the researcher to uncover deep patterns, interpret meanings, and validate findings continuously throughout the study. Data validity was ensured through triangulation of sources, techniques, and time, as well as member checking with key informants to confirm the accuracy of interpretations. The strength of this methodological approach lies in its ability to capture non-measurable dimensions of education, such as the internalization of cultural values, social interactions in learning, and stakeholders' perceptions of the curriculum's impact. Accordingly, the qualitative case study design proved to be the most appropriate strategy for exploring the depth and complexity of curriculum-based empowerment practices grounded in local wisdom.

Result

The findings of this study are presented based on data analysis derived from interviews, observations, document analysis, focus group discussions (FGDs), and tracer studies. The main findings were formulated to answer the research question concerning the strategy of integrating local wisdom into the vocational school curriculum at SMK Negeri 2 Sangatta Utara. Four key themes were identified: (1) the characteristics of local content based on mining-related local wisdom; (2) integration strategies through participatory and contextual approaches; (3) supporting factors for the successful implementation of the program; and (4) the impact of integration on graduate empowerment and competitiveness. Each theme is described in detail in the following subsections.

1. Characteristics of Local Content Based on Mining Related Local Wisdom

The local content curriculum at SMK Negeri 2 Sangatta Utara was contextually designed based on the geographical and economic conditions of the region, which is dominated by coal mining activities. The school conducted a needs assessment of the local business and industrial sectors, then developed appropriate learning materials such as the Preventive Maintenance of Mining Operational Vehicles module. This module was designed to meet specific field requirements not covered in the national curriculum. The content includes technical competencies such as engine maintenance in rugged terrain, handling 4x4 vehicles, and understanding the local supply chain for spare parts. This material is delivered through hands-on practice totaling 30 hours per semester, reflecting an experiential, context-based learning approach.

What distinguishes this approach is its adaptation to local materials and techniques. Based on curriculum documents and teacher interviews, students were involved in producing aftermarket parts such as protective brackets, guards, and canopies using locally sourced steel. These activities trained students to understand material specifications and basic fabrication techniques—such as bending and welding—commonly used by local partner workshops. Beyond improving technical skills, these activities also introduced students to the realities of the local industry, including workplace dynamics, production efficiency, and customer demands. This approach demonstrates that local content is not merely supplementary but a systematic effort to bridge local culture, industry, and vocational education.

2. Integration Strategies through Participatory and Contextual Approaches

The integration of local wisdom into the learning process was conducted through a participatory model involving collaboration between teachers and field practitioners. This model, referred to as co-teaching, involved productive subject teachers working alongside senior mechanics from partner workshops during practical sessions. Each semester, eight off-campus practical sessions were held directly at nearby industrial workshops. This method allowed students to learn firsthand from authentic and relevant industry environments, including techniques for vehicle maintenance in mining terrain, occupational safety management, and real-world problem-solving strategies. While the teachers provided theoretical and pedagogical guidance, the local mechanics shared tacit knowledge that could not be obtained from textbooks or the classroom alone.

In addition to co-teaching, project-based learning was implemented to deepen students' understanding of local issues. One such project involved designing an improvised air filter for mining vehicles operating in high-dust environments. Students were trained to identify problems, develop locally relevant solutions, and present their findings to teachers and industry partners. Even cultural aspects were integrated—local Kutai greetings were incorporated into daily safety briefings as part of character-building

efforts to instill discipline and respect. Observations indicated that this practice reduced equipment damage by 15% and increased students' adherence to safety protocols. Thus, the integration strategies targeted not only cognitive development but also affective and psychomotor domains, resulting in holistic and meaningful learning experiences.

3. Supporting Factors for the Implementation of Local Content

The successful implementation of the local wisdom-based curriculum at SMK Negeri 2 Sangatta Utara was strongly supported by a robust enabling ecosystem. One key factor was the strategic partnerships between the school and local workshops in the surrounding mining area. These partnerships were not symbolic but operational and substantive, involving curriculum development, on-the-job training, and student performance evaluations. Partner workshops provided access to appropriate facilities, served as field instructors, and contributed to the development of industry-relevant materials. This support enabled the school to build a bridge between formal education and real-world industry conditions, reinforcing its role as a transformative institution rather than merely a transmitter of knowledge.

Additional support came from internal financial and managerial systems within the school. Regional government funding (BOSDA) was utilized effectively for procuring practice tools, training teachers, and providing local materials. The school committee, consisting of parents and community leaders, actively supported the program through advocacy and oversight. Moreover, observational data showed a high level of student responsibility in maintaining workshop tools and equipment. Students were observed cleaning tools after use, keeping equipment organized, and promptly reporting damages for repair. This reflects a shift in learning culture—from mere users of resources to stewards of shared assets—marking the success of curriculum-based empowerment strategies.

4. Impact on Graduate Empowerment and Competitiveness

A major indicator of the success of the local wisdom integration strategy is the improved employability of graduates. Tracer study data revealed that 78% of graduates from the automotive program in 2025 were employed in mining-related workshops or hauling companies within six months of graduation. This figure represents a significant increase from the previous year's 60%. This success was not solely due to technical proficiency but also attributed to graduates' social skills, work ethic, and familiarity with local industry contexts. In addition, 90 students successfully passed the LSP P1 certification exams in heavy vehicles, light vehicles, and motorcycles, demonstrating compliance with national professional standards.

Furthermore, the empowerment impact is evident in the rise of entrepreneurial initiatives among alumni. Ten graduates have established their own vehicle service

businesses within their communities and have even hired technicians from the next graduating cohort. Interviews with alumni revealed that their hands-on experiences in local workshops and problem-based projects equipped them not only with technical skills but also with the confidence to become entrepreneurs. This form of empowerment is not symbolic but concrete, with real economic and social contributions to their communities. Thus, local content has emerged not only as a tool for cultural preservation but also as a strategic instrument for developing a skilled, context-aware, and self-reliant workforce.

Discussion

The findings of this study underscore the importance of integrating local wisdom into vocational education curricula as a strategic and transformative response to cultural preservation, community empowerment, and contextualized skill development. At SMK Negeri 2 Sangatta Utara, the contextual incorporation of mining-related knowledge and practices represents more than an educational adjustment; it embodies an epistemological shift that validates local practices as valuable sources of knowledge. This aligns with global insights into indigenous knowledge systems, which have long been sidelined in favor of Western pedagogical frameworks (Ezeanya-Esiobu et al., 2021; Rai, 2021). The integration of preventive maintenance modules specific to mining terrains, co-teaching practices with local mechanics, and student involvement in local material fabrication highlights how vocational curricula can serve not only as training grounds for technical competency but also as a medium for preserving local industrial culture and enhancing student identity and belonging (Pearnpitak et al., 2024; Sumarni et al., 2025).

This approach echoes similar findings across educational levels and cultural settings. For example, in Early Childhood Education in Pariaman and civic education in junior high schools (Elia, 2024; Sakman et al., 2024), the integration of local cultural values not only fostered a sense of communal identity and cultural pride but also improved holistic development and civic engagement. Likewise, thematic curriculum models in Palopo (Munawir et al., 2024) and aesthetic vocational schools (Pritasari et al., 2023) emphasized the need to bridge cultural knowledge with practical skills through culturally relevant content. At SMK Negeri 2 Sangatta Utara, the participatory strategies such as co-teaching and problem-based projects not only responded to this pedagogical imperative but also enhanced affective and psychomotor competencies, ultimately demonstrating the multidimensional potential of culturally grounded education to enhance student agency, local innovation, and community relevance.

The success of these integration strategies is inseparable from the enabling ecosystem built by school leadership, community actors, and local industries. The strategic partnerships with mining-related workshops, parental committees, and local government manifest an operational commitment to building a community-based educational model. This mirrors international cases such as the YANGKHINOK model in

Thailand and vocational adaptations in Australia, where multi-stakeholder engagement proved critical for sustainable curriculum development (Jorgensen, 2020; Pearnpitak et al., 2024). Moreover, the findings of this study reaffirm that local wisdom, when embedded into curricular design, can become a platform for socio-economic mobility, as evident from the increase in graduate employability and emerging entrepreneurship among alumni. This supports previous research indicating that vocational education embedded with local values and real-world relevance enhances labor adaptability, entrepreneurial intentions, and job-market responsiveness (Dumbuya, 2024; Hu, 2024).

However, despite the documented successes, the study also reveals several limitations. Challenges persist in curriculum standardization, teacher preparedness, and balancing between local relevance and national educational standards issues echoed in other studies on curriculum decentralization and multicultural education in Indonesia (Aulia et al., 2024; Polii & Ahmadi, 2024). The lack of comprehensive teacher training and accessible instructional materials grounded in local context continues to hinder scalability and sustainability. Additionally, while the study focused on one particular vocational school, broader generalization may require multi-site investigations across diverse socio-economic and geographic contexts to determine whether the model can be adapted or replicated effectively. The symbolic recognition of local knowledge must be accompanied by systemic policy support, professional development opportunities, and culturally informed curriculum guidelines to ensure long-term implementation and quality assurance.

In light of these findings, several recommendations are proposed for future practice and research. Firstly, there is a need to institutionalize mechanisms that formally recognize local wisdom within curriculum policy frameworks. Secondly, building a continuous professional development model for teachers on culturally responsive pedagogy is essential to equip them with the skills needed to implement such curricula effectively. Future studies should explore comparative case analyses across vocational and non-vocational schools, examine longitudinal impacts of local wisdom integration on student life outcomes, and assess the intersections between indigenous knowledge and emerging digital technologies. Ultimately, integrating local wisdom into vocational education, as evidenced by this study, offers a powerful pathway to not only revitalizing cultural identity but also aligning education with sustainable community development and global employability demands.

Conclusion

This study concludes that the integration of local wisdom into vocational school curricula, particularly in the context of SMK Negeri 2 Sangatta Utara, significantly enhances the relevance of education to local needs while reinforcing students' cultural identity. The findings demonstrate that active community engagement, contextual

learning approaches, and the use of local cultural practices effectively bridge the gap between education and the surrounding socio-economic realities. Through a local wisdom-based learning model, students acquire not only technical competencies but also the character and social values necessary to navigate global challenges adaptively. This research contributes to the development of a more inclusive and context-sensitive vocational education approach and recommends strengthening teacher training, promoting community-based curriculum development, and conducting further cross-regional studies to broaden the national impact of this model.

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