Jurnal Teknologi Pendidikan:
Jurnal Penelitian dan Pengembangan Pembelajaran
https://e-journal.undikma.ac.id/index.php/jtp/index

Juli 2025. Vol. 10 No. 3
E-ISSN: 2656-1417
P-ISSN: 2503-0602
pp. 570-581

Analysis of Curriculum Component Integration in Vocational High Schools and its Relevance to Industry Standards

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Abstract: This study aims to analyze the integration of curriculum components that include objectives, content, learning strategies, and evaluation in the context of vocational education in Vocational High Schools (SMK), and examine their relevance to industry standards. This research used a descriptive qualitative approach with a collective case study method at three private vocational schools in Medan. Data were obtained through in-depth interviews, participatory observation, and documentation, then analyzed interactively based on the Miles and Huberman model. The results showed that there are integrative efforts from each school, but they are not yet fully aligned with industry needs. The main obstacles lie in the lack of ongoing collaboration with industry as well as limitations in adopting technology and evidence-based curriculum updates. This research emphasizes the importance of synergy between educational institutions, government, and the industry sector in designing and implementing a vocational curriculum that is contextual and responsive to changes in technology and the job market.

Article History
Received: 05-06-2025
Revised : 22-07-2025
Published : 30-07-2025

Key Words:
Vocational education, SMK curriculum, curriculum integration, industrial world, SKKNI.

How to Cite: Fadhillah, L., Susilana, R., & Dewi, L. (2025). Analysis of Curriculum Component Integration in Vocational High Schools and its Relevance to Industry Standards. *Jurnal Teknologi Pendidikan : Jurnal Penelitian Dan Pengembangan Pembelajaran*, *10*(3), 570–581. https://doi.org/10.33394/jtp.v10i3.16132
https://doi.org/10.33394/jtp.v10i3.16132

Introduction

Vocational education in Vocational High Schools (SMK) plays an important role in creating human resources who are not only skilled but also ready to meet the demands of the industrial world. In the context of globalization and rapid technological disruption, the ability of vocational education institutions to adapt to industry needs is a necessity. One of the most important aspects in bridging education with the world of work is through a comprehensive and systematic integration of curriculum components with industry standards. The curriculum components are divided into four, namely objectives, content or teaching materials, learning strategies, and evaluation. The learning objectives component is related to the direction that an educational system wants to achieve. This goal is classified into four levels, namely National Education Goals (TPN), Institutional Goals (TI), Curricular Goals (TK), and Instructional Goals or Learning Objectives (TP). National education goals stem from the values of Pancasila and are reflected in Law No. 20/2003. At the instructional level, teachers set learning objectives based on student characteristics and the learning content to be delivered. These objectives cover the cognitive, affective and psychomotor domains in accordance with Bloom's Taxonomy. The content or teaching material component includes learning experiences that students must have in order to achieve educational goals. The material consists of logical (right-wrong), ethical

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E-ISSN: 2656-1417
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(good-bad), and aesthetic knowledge. Content selection should consider scientific validity, relevance to social context, balance of depth and breadth, diversity of objectives, and suitability to students' needs and interests. The learning strategy component refers to action planning to achieve learning objectives. Strategies include structured learning approaches, methods and techniques. Approaches can be teacher-centered or student-centered. A good strategy should consider the characteristics of the learners and the learning objectives. Expository and discovery learning strategies, as well as individual and group learning strategies, are examples of their application. The last component is evaluation, which assesses the effectiveness of the curriculum and the achievement of objectives. Evaluation consists of formative and summative evaluation. Evaluation tools can be in the form of tests and non-tests. Tests include written, oral and practical forms, while non-tests include observations, interviews, case studies and rating scales. A good evaluation must be valid and reliable, and able to provide feedback for learning improvement (UPI MKDP Curriculum and Learning Development Team, 2018)

Each of these components must be designed to equip students with competencies that match the real needs of the workplace. According to Esmail & M. Khan, (2024) , many vocational curricula in various countries do not fully reflect the skill needs of the industrial world, so graduates often experience gaps between theoretical knowledge and practical skills needed. This mismatch shows that the process of integrating curriculum components with the industrial world is not optimal. According to Sobari et al., (2023) , the weak involvement of industry in the preparation of the SMK curriculum is one of the main factors that cause the low relevance of learning materials to work competencies. Often, the content of the curriculum does not reflect actual practices and standards in the world of work, so students only acquire knowledge that is less applicable.

In addition to the content aspect, discrepancies can also be seen from the formulation of learning objectives. Vocational education objectives should be formulated based on the profile of graduates expected by the industry. This includes technical competencies, 21st century skills, and soft skills such as communication, teamwork, and problem solving. According to Kayyali (2023), collaboration between curriculum developers and industry players is essential in formulating learning objectives that are aligned with labor market needs. Unfortunately, this collaboration is still minimal, especially in developing countries. In terms of learning strategies, the strengthening of real project-based approaches and industrial work practices (Prakerin) needs to be improved. Strategies that emphasize hands-on experience and real problem solving will bring students closer to the real work environment. However, Lightcast (2025) argues that many vocational institutions have not optimally utilized technology to design adaptive learning strategies. Platforms such as Skillabi, for example, can assist educational institutions in linking learning outcomes with industry-required skills based on real-time labor market data. Learning evaluation is also a crucial component that determines whether students have achieved the expected competencies. In practice, evaluation in vocational schools is often normative and less performance-based. Esmail & M. Khan (2024) emphasized that an evaluation system that does not reflect industry demands will make it difficult to measure the readiness of graduates to enter the workforce.

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In addition, adapting to changing industry trends is also a challenge in curriculum integration. Rapid technological changes demand periodic curriculum updates. Liu, (2025) highlights the importance of a flexible and change-responsive vocational curriculum, especially in the field of digital technology and automation. However, bureaucratic curriculum revision processes that are not directly linked to industry data hinder relevant and timely updates. The government and policy makers have a great responsibility in creating an adaptive and relevant vocational education system. One form of intervention is to develop policies that facilitate collaboration between education and industry. Kayyali (2023) suggests the importance of incentives for industries that are willing to be involved in curriculum planning and evaluation, as well as teacher training to adapt teaching to current work practices. Investment in capacity building of vocational teachers is also needed so that they are able to integrate technology and industrial work practices into the learning process. On the other hand, the vocational education system must be evidence- and data-based. According to Lightcast (2025), the importance of utilizing labor market big data in curriculum development. Data obtained from job vacancies, skills trend analysis, and labor needs from various sectors can be used to develop a more relevant and contextual curriculum. This is in line with the labor market intelligence approach that is widely applied in developed countries.

Thus, the integration of curriculum components in vocational education in SMK must be done thoroughly and based on cross-sector collaboration. It is not enough to revise the content of lessons or add practical hours, but a comprehensive adjustment is needed starting from learning objectives, materials, strategies, to evaluation, with reference to industry dynamics. SMKs that are able to develop an adaptive curriculum based on the real needs of the world of work will be an important motor in creating a competent, productive and globally competitive workforce.

Research Method

This research adopted a descriptive qualitative design with a collective case study approach. This approach was chosen to obtain an in-depth analysis of the integration of curriculum components in vocational education and its relevance to industry standards in several different Vocational High Schools (SMK) (Creswell & Poth, 2018) . The presence of the researcher is the key instrument in data collection. The research locations included SMKS Multikarya Medan, SMK Swasta Karya Bhakti, and SMK Swasta Gema Buwana. The research informants were three productive subject teachers, one from each SMK. The selection of informants was done through purposive sampling, which is the selection of individuals who have relevant knowledge and experience related to the curriculum and its application in the industrial context (Given, 2016) .

Data were collected through semi-structured in-depth interviews, which allowed for flexibility in extracting complete information. In addition to interviews, participant observation was conducted to directly observe the implementation of the curriculum in the school environment. Documentation studies were also conducted, reviewing documents such as the school curriculum, syllabus of productive subjects, and records of cooperation with the industrial world, to complement the data collected.

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Data analysis was conducted interactively, following the Miles & Huberman model (2014) . The stages of analysis include data reduction, which is the process of summarizing and selecting relevant data from field notes; data presentation, where data is presented in the form of a narrative or matrix to facilitate understanding; and conclusion drawing/verification, which is the identification of patterns and themes that emerge from the data. This analysis process was conducted in parallel with data collection. To ensure the validity of the findings, this study applied source triangulation (comparing information from various informants) and method triangulation (comparing data from interviews, observations, and documents) (Flick, 2018) .

Result and Discussion

This study aims to deeply analyze the integration of curriculum components including objectives, content, strategies, and evaluation in vocational education in Vocational High Schools (SMK) and their relevance to industry standards. Data were collected through in-depth interviews with teacher representatives from three private vocational schools in Medan, namely SMKS Multikarya Medan, SMK Swasta Karya Bhakti, and SMK Swasta Gema Buwana, and supported by observation and documentation studies. The main findings indicate that despite efforts, the curriculum implemented in the three SMKs has not been fully integrated holistically with the actual needs of the industrial world. The main obstacle identified is the difficulty in establishing and maintaining sustainable strategic partnerships with industry.

1. Alignment of Learning Objectives with Industry Demands

Curriculum objectives in vocational education serve as the main guide in designing all elements of education, from determining content, learning strategies, to evaluation systems. These objectives should ideally not only reflect the orientation of education in general, but should also accommodate the demands of the world of work, especially through integration with the Indonesian National Work Competency Standards (SKKNI). SKKNI as a national reference is designed based on the needs of business and industry, so aligning curriculum objectives with SKKNI is key in preparing competent and work-ready graduates.

Interviews with three teachers from private vocational schools in Medan showed that their respective institutions have systematically formulated curriculum objectives, but there is still room to align the objective statements with the competency structure detailed in the SKKNI.

a. **SMKS Multikarya Medan**, a teacher from this school said that the curriculum preparation had been carried out with reference to the needs of students and the expected graduate profile. However, the informant observed that the formulation of curriculum objectives is still macro in nature and has not been fully elaborated into competency elements in accordance with SKKNI. The informants believe that the involvement of the industrial world in the preparation of curriculum documents can strengthen the direction of the objectives to be more synchronized with the needs of the work sector.
b. **SMK Swasta Karya Bhakti**, A teacher from SMK Swasta Karya Bhakti appreciated the school's move to formulate the curriculum objectives progressively, but the informant emphasized that the reference to SKKNI could still be expanded. According to him, curriculum objectives should reflect explicit learning outcomes and lead to work competency levels according to the Indonesian National Qualifications Framework (KKNI), which is a derivative of the SKKNI. The informant also encouraged workshops with industry to ensure this synchronization is more concrete.
c. **SMK Swasta Gema Buwana**, a teacher from this school explained that the curriculum has been directed towards the development of vocational skills, but the strengthening of

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SKKNI-based curriculum objectives needs to be a priority agenda. The informant suggested that the curriculum objectives should not only be oriented towards student learning outcomes at school, but should also be a representation of the profile of graduates required by the industrial world, including technical skills, work attitudes, and soft skills recognized by the employment sector.

The statements of the three informants indicate that private vocational schools in Medan have a good curriculum development framework, but the synchronization of curriculum objectives with SKKNI still needs substantial and technical strengthening. This is important given that curriculum objectives are the foundation that will influence all other components of curriculum design. According to Farid et al., (2025) , a holistic approach in education emphasizes the integration of various aspects of student development, including intellectual, emotional, social, and physical through an active student learning approach. This is in line with the view that vocational curriculum objectives must be able to direct all learning activities consistently, including in shaping the profile of graduates who are competent and relevant to the labor market, where the formulation of curriculum objectives is not sufficiently oriented only towards academic achievements, but must be structured into the dimensions of real work skills contained in SKKNI.

According to Verawadina et al., (2019) , Vocational education curricula should be designed through collaboration between government, industry, and educational institutions to ensure that the current curriculum meets industry needs and covers the competencies needed by the workforce. Without such collaboration, it is feared that the purpose of the curriculum is only formal administrative and has little impact on the work readiness of graduates.

Alignment between the SMK curriculum and SKKNI in Indonesia is widely recognized to provide clarity of competency direction, accelerate graduates' adaptation to the world of work, and strengthen the legitimacy of their skills in the eyes of industry. This synchronization is also in line with the competency-based curriculum (KBK) approach adopted in the national vocational education system. Thus, strengthening SKKNI-based curriculum objectives will not only increase the relevance of vocational education, but also ensure the measurability and achievability of learning outputs that are in line with the needs of the workforce in the modern era.

2. Relevance of Curriculum Content to the Latest Industry Standards and Practices

From the aspect of content or teaching materials, the study found a disparity between the materials delivered in class and the practices and technological standards applied in the industrial world today. Interviews with teachers from three private vocational schools in Medan showed that all schools continue to improve the quality of curriculum content so that it is always relevant to the dynamics of the rapidly growing industry. However, in the process, the teachers observed that there is room for improvement, especially in updating the teaching materials to be more responsive to the latest industrial technology standards and practices.

a. **SMKS Multikarya Medan**: Teachers reported that their school has been using structured and systematic teaching modules, but some of the contents still need refreshing to be in line with technological advancements in the industrial sector. According to the informant, increased access to the latest industry references would be helpful in adapting learning to suit contemporary tools and work procedures.
b. **SMK Swasta Karya Bhakti**: Teachers expressed their appreciation for the comprehensiveness of the curriculum, but informants also highlighted the importance of adding digital and automation skills. These competencies are now part of the standards in

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many industries, and further involvement of the business world in the development of teaching materials is considered to enrich the curriculum content.

c. **SMK Swasta Gema Buwana**: Teachers from this school assessed that learning in their school has been oriented towards employability skills, but acknowledged that strengthening integration with current industry practices and software needs to be encouraged. Support from industry partners is considered important to enrich the curriculum with field case studies and actual technology applications.

The views of teachers from the three SMKs reflect a spirit of continuous improvement and a high commitment to maintaining the relevance of curriculum content to the needs of the world of work. However, objective challenges such as the acceleration of industrial technological transformation, limited state-of-the-art learning resources, and lack of strategic partnerships with the industrial sector still require special attention.

The gap between the content of the vocational curriculum and industry needs is a structural issue in the development of vocational education. According to Angriani et al., (2025) the skills gap between vocational education and the industrial world is one of the biggest challenges faced by vocational education graduates in Indonesia. Many vocational education programs still teach basic skills that are not in line with the development of industrial technology, especially in the field of high technology. This is reinforced by Sobari et al., (2023) , which states that partnerships between education in schools and the skills needed by the industrial world need to be done to overcome the gap.

Meanwhile, according to Verawadina et al., (2019) , the vocational education curriculum needs to be adapted to the era of the industrial revolution 4.0 and relevant in answering the needs of new skills, such as the ability to create and manage coding, *big data*, and artificial intelligence. When the curriculum is not able to accommodate these changes, graduates tend to have difficulty in adapting to the real work process in the industry.

One relevant strategic solution is to build active partnerships between SMK and industry through various collaborative schemes, such as industry-based curriculum development programs, teacher training by industry practitioners, and industrial internships that are not only intended for students, but also for educators. This collaboration also allows industry to provide direct input into the development of SKKNI-based teaching materials so that they truly reflect the competency expectations of the field. The integration of *digital learning-based* teaching technology and the use of industrial software is an important requirement. Unfortunately, this has not been implemented evenly due to differences in resources between schools. Nurhalia et al. (2025) suggests that vocational education needs to take concrete steps in adjusting the curriculum and teaching methods, as well as strengthening the involvement of industry and local communities to make it more contextual, adaptive, and sustainable.

With these considerations in mind, updating curriculum content is not just an administrative process, but a strategic effort to prepare vocational young people who are excellent, flexible and ready to compete in the modern technology-driven work landscape. Through a collaborative and evidence-based approach, schools can more effectively align learning content with current and future skills needs.

3. Effectiveness of Learning Strategies in Bridging Theory and Industrial Practice

In an effort to improve graduates' work readiness, learning strategies in SMKs are required to bridge the gap between conceptual mastery in the classroom and the reality of work in the industrial world. Interviews with teachers from three private vocational schools in Medan show that each school has shown commitment in developing more applicable learning

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strategies. However, these teachers also observed that there is room for strengthening, especially in updating the learning approach to make it more relevant to the dynamics and needs of contemporary industries. The results of the interviews are as follows:

a. **SMKS Multikarya Medan:** The teacher said that the learning strategy used in his school has emphasized basic vocational skills, but on the other hand also realized the importance of innovative approaches that can provide a more contextual learning experience. Therefore, he suggested the implementation of the Teaching Factory (TeFa) model as a strategic alternative to provide real simulations to students in a work environment that resembles a real industry.
b. **SMK Swasta Karya Bhakti:** The teacher from this school highlighted that the development of soft skills and 21st century skills is an urgent need that needs to be accommodated in learning strategies. According to her, the integration of Project-Based Learning (PBL) into the learning structure is a potential approach that can increase student engagement while strengthening collaboration, communication and problem-solving skills.
c. **SMK Swasta Gema Buwana:** The teacher stated that learning in schools has been directed at strengthening vocational competencies, but the challenges of evolving industrial technology require adaptation of more progressive strategies. He encouraged more intensive collaboration with industry so that the learning strategies designed are not only based on the formal curriculum, but also reflect actual industrial practices and technology.

This finding shows that private vocational schools in Medan are actively reflecting on the quality of their learning and are open to strategy transformation to ensure linkages between learning and industry needs. This is in line with the view of the Directorate of Vocational Schools (2024) which states that the implementation of *Teaching Factory* is an effective strategic approach to integrate learning and the world of work directly. This model invites students to participate in the production process and work management with industry standards, so that they not only acquire technical skills, but also understand the work ethic and culture of industrial organizations.

The Project-Based Learning (PBL) approach has received increasing attention in vocational education because it is considered capable of forming active and collaborative learning characters. According to Wiyanti & Indriyanti (2024) , PBL not only encourages students to solve real problems in the form of projects, but also becomes a medium for building initiative, responsibility, and creativity in completing industry-based tasks.

While conceptually these two learning models are ideal, the reality of implementation in schools suggests the need for strong cross-sector support. Supporting infrastructure, industry-based pedagogical training for teachers, and access to industrial technology are essential components that need to be strengthened. Without such support, the learning strategies designed have the potential to not maximize in preparing students to face the complexity of the world of work.

The importance of synergy between educational institutions and industry in designing and implementing learning strategies is crucial. According to Zein (2024) , industry involvement in developing curriculum and learning models not only ensures the relevance of the skills taught, but also encourages the formation of a dynamic learning ecosystem that is responsive to global changes.

4. Accuracy and Relevance of the Evaluation System to Industry Competency Demands

Evaluation is an important element in the vocational education system, especially in Vocational High Schools (SMK), because it serves as a tool to measure the achievement of student competencies thoroughly and objectively. Accurate and relevant evaluation not only

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reflects the success of the learning process, but also plays a strategic role in projecting graduates' readiness to enter the industrial world. However, based on the results of this study, teachers from three private vocational schools in Medan identified the need to strengthen the evaluation system used, to better reflect the real work demands in modern industries. The results of the interviews are as follows:

d. **SMKS Multikarya Medan:** The teacher said that the evaluation system used so far has been running systematically, but most of it still focuses on conceptual aspects. He suggested that practical evaluation based on work performance can be further improved, including by inviting industry partners to participate in the assessment process, so that the measurement of student competence is more representative of the needs in the field.
e. **SMK Swasta Karya Bhakti:** A teacher from this school stated that his school has started to move towards developing performance-based evaluation. However, he also noted that the optimization of assessment instruments still needs to be supported by technical training for teachers. More intensive involvement of the business world is believed to enrich perspectives in the preparation of evaluation indicators that are adaptive to industry needs.
f. **SMK Swasta Gema Buwana:** The teacher said that the assessment system has covered cognitive, affective, and psychomotor aspects, but there is an opportunity to put more emphasis on evaluating cross-cutting skills such as communication, collaboration, and problem solving. He suggested that a project-based evaluation model involving industry practitioners could be used as an alternative to capture students' work readiness more holistically.

The views of the three teachers represent the commitment of private SMKs in maintaining the quality of learning and evaluation systems. However, as also found in various literatures, the evaluation system in SMKs in general still faces challenges in terms of active industry involvement and strengthening aspects of performance-based evaluation. According to Syahrul (2010) , the development of contextualized and work-based competency assessment models is essential to ensure that students truly master the skills required by industry. He recommends the use of authentic assessment that combines peer assessment, performance assessment, and project-based portfolios so that students are not only assessed cognitively, but also in terms of performance in the real world. Meanwhile, according to Mardiyah & Supriyadi (2013) , underlined the importance of training and strengthening the capacity of teachers as a supporting component in realizing an evaluation system based on industry needs. Teachers are required not only as learning facilitators, but also as professional evaluators who are able to design and implement assessment instruments that are objective, adaptive, and oriented to real performance.

In practical terms, the ideal evaluation system is one that is able to describe students' ability to integrate knowledge, skills and work attitudes in real-world situations. Therefore, partnerships between schools and industries in designing and implementing *project-based assessment* and SKKNI-based competency tests need to be improved in a structured manner. Through this approach, assessment is not only a form of measurement, but also an integral part of the learning process itself.

5. The Urgency of Synergistic Collaboration with the Industrial World as the Key to Curriculum Integration

Overall, the root cause of the suboptimal integration of the four curriculum components comes down to one fundamental issue: the difficulty in establishing and maintaining a synergistic and sustainable collaboration with industry. Teachers at SMKS Multikarya Medan, SMK Swasta Karya Bhakti and SMK Swasta Gema Buwana consistently highlighted this

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challenge. Industry is often perceived as not seeing partnerships with SMKs as a strategic investment in the development of future human resources, but rather as an incidental program. In fact, Sabila et al. (2024) , emphasize that active industry involvement in curriculum development can significantly reduce the gap between what is taught in schools and the real needs in the world of work. Furthermore, Sobari et al. (2023) , states that school support in facilitating cooperation with the world of work through curriculum synchronization is a prerequisite for the skills of SMK students to be tested and relevant.

Curriculum revision processes that tend to be bureaucratic and not directly linked to industry labor market data also hinder relevant and timely updates, as Liu (2025) on the importance of vocational curricula that are flexible and responsive to technological change. Governments and policy makers hold a crucial responsibility in creating an ecosystem conducive to this collaboration, for example, through the development of policies that facilitate and incentivize industry engagement (Kayyali, 2023). In addition, the utilization of *labor market big data* in curriculum development, as asserted by Lightcast (2025) , needs to be a priority agenda to ensure that the curriculum developed is truly based on evidence and data on industry needs (*labor market intelligence*).

To overcome this challenge, a more structured and mutually beneficial partnership program needs to be initiated, including not only Prakerin, but also industry involvement in curriculum validation, guest teacher provision, *teaching factory* development, and graduate recruitment (Sabila et al., 2024) . Strengthening the competence of vocational teachers through training and certification relevant to industry developments is also a vital solution (Sari et al., 2024) . Ultimately, efforts to improve the quality of Vocational High School (SMK) graduates cannot rely solely on improving one aspect of learning, but must include the integration of all curriculum components in a comprehensive and structured manner. This includes learning objectives, teaching materials, teaching methods, and evaluation systems, all of which must be designed harmoniously to support each other. This integration becomes more effective if it is developed within the framework of cross-sector collaboration, which actively involves stakeholders from various fields such as government, business and industry (DUDI), professional certification bodies, universities, and communities of expertise or professional associations. Cross-sector collaboration allows the formation of a curriculum that is contextual, relevant to technological developments, and in accordance with the real needs of the labor market both at the national and global levels.

Various academic studies and government policies have underlined the importance of such synergy as a strategic approach to address the challenge of low relevance between graduate competencies and the needs of the world of work. Curricula developed with industry, for example, not only provide students with theoretical understanding, but also equip them with practical skills needed in the real world of work. In this context, curriculum integration should include internships, industrial training, and nationally and internationally recognized competency certification. This approach expands the horizon of vocational education from the classroom to the real work ecosystem, so that learners become accustomed to professional dynamics and expectations early on.

Furthermore, an integrated and collaborative curriculum also provides opportunities for teachers to develop their competencies through industry-based training, so that the learning process in the classroom is not disconnected from the changing realities of the world of work. When all components of the curriculum are designed and implemented in a collaborative spirit, SMK graduates will not only become a technically competent workforce, but also adaptive, productive, and able to compete globally. Thus, curriculum integration that involves many

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parties is not only an educational strategy, but also a long-term investment in building the quality of Indonesia's superior and highly competitive human resources.

Conclusion

The integration of curriculum components in vocational education in SMK has a strategic role in preparing graduates who are competent and in accordance with the demands of the industrial world. This study found that despite the school's efforts to develop a competency-based curriculum, there is still a gap between what is taught at school and the skills needed in the world of work. This gap can be seen in several aspects, namely: (1) Learning objectives have not been fully formulated based on SKKNI; (2) Teaching materials are still less responsive to the latest developments in industrial technology; (3) Learning strategies are not optimal in bridging theory and industrial practice; and (4) The evaluation system still dominantly assesses cognitive aspects, not fully reflecting the real performance of students in the context of the world of work. These weaknesses are mostly caused by the lack of collaboration between vocational schools and the industrial world, and the lack of policy support based on actual labor market data. Therefore, effective vocational curriculum integration must include comprehensive alignment from objectives to evaluation, and be developed through sustainable cross-sector cooperation.

Recommendation

Based on the results of this study, some recommendations for further vocational curriculum research and development include: 1) Enhancing Strategic Partnerships: There is a need for a sustainable collaboration model between schools and industry through joint curriculum forums, the development of teaching modules based on industrial practice, and the involvement of industry partners in the evaluation process and teacher training. 2) Curriculum Update Based on Labor Market Data: Further research is recommended to leverage labor market intelligence and workforce big data to update curriculum content that is responsive to industry developments in real-time. 3) Strengthening the Role of Teachers: The next recommendation is to increase the capacity of teachers through industry-based training and competency certification so that learning and evaluation strategies are more applicable and in line with the world of work. 4) Integration of Innovative Learning Models: Future research can focus on the effectiveness of implementing learning models such as *Teaching Factory* and *Project-Based Learning* in bridging the gap between theory and practice in SMK. 5) Challenges and Barriers: Barriers to curriculum integration include limited school resources, low active industry involvement, and bureaucracy in curriculum revision. Therefore, policy interventions from the government that facilitate industry and school partnerships are needed.

Acknowledgment

The author would like to express his deepest gratitude to Prof. Rudi Susilana, M.Pd and Dr. Laksmi Dewi, M.Pd., lecturers of the Curriculum Model and Design course, for their guidance, motivation, and full support throughout the process of writing this article. Their guidance has been invaluable in sharpening the analysis and refining the overall content of this research. May the knowledge and example they have shared continue to bring lasting benefits as a source of ongoing blessings.

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