El Midad : Jurnal Jurusan PGMI Vol. 17 No. 3 Desember 2025
p-ISSN 2087-8389 e-ISSN 2656-4289 p. 859-871
website : http://journal.uinmataram.ac.id/index.php/elmidad email : elmidadpgmi@uinmataram.ac.id

INTEGRATION OF VOCATIONAL HIGH SCHOOL CURRICULUM WITH INDUSTRY NEEDS BASED ON *OUTCOME-BASED EDUCATION*

[1] Rochmah Wijayanti, [2] Maharani Fadhiyah Haifani,
[3] Anam Sutopo, [4] Sutama
Universitas Muhammadiyah Surakarta,
[1]q300250011@student.ums.ac.id, [2]q300250001@student.ums.ac.id
[3] as123@ums.ac.id, [4]sut197@ums.ac.id

ABSTRACT

This study aims to describe the process of integrating the vocational high school (Sekolah Menengah Kejuruan/SMK) curriculum with the needs of the industrial sector through the implementation of the Outcome-Based Education (OBE) approach. The study is motivated by the gap between the competencies of SMK graduates and the demands of the labor market, necessitating curriculum reform oriented toward achieving learning outcomes. A descriptive qualitative approach with a case study Design was employed and conducted at SMK Muhammadiyah 1 Baturetno, Wonogiri Regency. Data were collected through interviews, observations, and document analysis, and were analyzed using an interactive analysis model with triangulation techniques to ensure data validity. The findings indicate that the school has implemented the principles of link and match through collaboration with industry in curriculum planning, internship program implementation, and the strengthening of teacher competencies. However, gaps remain between students' learning outcomes and industry competency standards, particularly in non-technical skills such as communication, teamwork, and work discipline. The implementation of OBE provides strategic direction for vocational education to become more oriented toward learning outcomes relevant to industry needs. Therefore, continuous synergy between schools and industry is a key factor in producing competent, adaptive, and competitive graduates in the era of Industry 4.0.

Keywords**:** outcome-based education; vocational; curriculum integration; link and match; industry partnership

INTRODUCTION

Vocational high schools (SMK) occupy a strategic position in the education system because they are the main pathway for developing human resources with applied competencies and high work readiness. Through this function, SMKs are expected to produce graduates who not only master technical skills but also possess professional characteristics that meet the needs of modern industry. However, field findings indicate that graduates' competency levels are still not fully aligned with the standards set by the business and industrial sectors. These challenges include gaps in the mastery of technical skills and soft skills such as communication, cooperation, and discipline (Directorate General of Vocational Education, 2022). This situation emphasizes the need to improve the curriculum to make it more adaptive to changes and the real needs of industry.

A lack of relevance between vocational education curricula and industry needs often causes this skills gap. Research shows that many vocational school graduates face difficulties finding suitable employment, with industry considering that graduates' skills do not meet required standards (Agustian et al., 2024; Misbahudin & Asmaul, 2022; Maulina & Yoenanto,

2022). For example, Agustian et al. highlight the main challenge in vocational education: the low employment rate of vocational school graduates due to a curriculum that does not support the development of the required skills (Agustian et al., 2024).

This kind of orientation results in graduate profiles that do not adequately represent actual work competencies. To overcome this problem, an integrated curriculum development model is needed that can connect industry needs to the direction of vocational education. One relevant approach to overcoming this challenge is *Outcome-Based Education* (OBE). OBE emphasizes the importance of establishing specific and measurable learning outcomes as the basis for curriculum Design and evaluation (Setiono et al., 2023; Jakhale & Attar, 2015; Spady, 1994).

This study aims to comprehensively analyze efforts to integrate vocational school curricula with industry needs by applying OBE principles. From a theoretical perspective, this research is expected to strengthen the conceptual understanding of learning outcome-based vocational curriculum Design that is aligned with labor market needs. From a practical standpoint, the results of this study are expected to serve as a guide for educational institutions, policymakers, and industry partners in designing contextual learning activities that are relevant and work-competency-oriented, thereby increasing graduates' competitiveness globally.

This study highlights four main pillars in curriculum integration, including: (1) alignment between vocational school learning outcomes and industry *learning outcomes*; (2) harmonization of curriculum content with industry competency standards; (3) strengthening collaboration between schools and the business/industrial world (*link and match*) in planning and implementing learning; and (4) implementing an evaluation system based on learning outcomes in accordance with the principles *of Outcome-Based Education* (OBE) (Cantika & Alhayat, 2023; Sholeh et al., 2023). Through synergistic and sustainable collaboration between educational institutions and industry partners, it is hoped that vocational education can produce graduates who are competent, adaptive, and able to innovate in the face of changes in the global job market.

LITERATURE REVIEW

The Concept of Vocational Education Curriculum Integration

Curriculum integration in the context of vocational education can be understood as a systematic process of aligning various curriculum components, including learning objectives, materials, and implementation strategies, with the real needs of the world of work. According to Finch and Crunkilton (1999), an ideal vocational curriculum Design should be based on *job analysis* and mapping of work competencies that are constantly evolving in the industrial sector. Thus, curriculum integration is not only aimed at aligning subjects with technical skills, but also

at strengthening the mastery of non-technical competencies, such as communication skills, teamwork, and the application of professional ethics required in the workplace.

Operationally, the implementation of curriculum integration is achieved through the link-and-match principle, which involves integrating educational institutions with the business and industrial world (DUDI). This approach emphasizes the importance of active collaboration with industry from the planning stage through implementation and evaluation of learning. Through this mechanism, educational institutions can ensure that the developed curriculum is relevant, technologically adaptive, and responsive to labor market dynamics (Directorate General of Vocational Education, 2022). One example of the practical application of this concept is SMK Muhammadiyah 1 Baturetno, which seeks to strengthen partnerships with industry by implementing internship programs, developing adaptive curricula, and improving productive teacher competencies through joint training activities.

The Principle of *Outcome-Based Education* (OBE)

Outcome-Based Education (OBE) is an educational approach that places learning outcomes at the center of the learning process. This approach emphasizes that each student must demonstrate measurable competency upon completing a learning program (Rosiawan, 2022; Gurukkal, 2020).

According to Spady (1994), the OBE paradigm requires that all components of education, including curriculum Design, learning strategies, and assessment systems, be designed in an integrated manner and consistent with the learning objectives set from the outset. Thus, the focus of education is no longer limited to the implementation of
the learning process, but instead on the real abilities students can apply in the world of work and professional life.

Biggs and Tang (2011) reinforce this concept through the principle of constructive alignment, which aligns learning objectives, learning activities, and assessment mechanisms. In vocational education, the application of this principle is key to ensuring that the learning process does not stop at mastery of theory. However, it encourages students to master skills that are applicable and relevant to industry needs. OBE itself is based on four fundamental principles, namely *clarity of focus*, *Design down*, *high expectations*, and *expanded opportunities*. These four principles provide a framework for educational institutions to Design competency standards that are clear, measurable, and relevant to developments in the industrial world (Apriyani et al., 2022).

In line with this, Ramadhan's (2025) research shows that the formulation of explicit learning objectives and the application of learning outcome-based assessment significantly contribute to improving graduates' work readiness. By implementing the OBE approach, educational units such as SMK Muhammadiyah 1 Baturetno can ensure that every component

of learning, from curriculum Design and implementation to assessment, is always oriented towards concrete learning outcomes aligned with the competencies required by industry partners.

The Role of Industry in Curriculum Integration

Industry plays a significant role in ensuring the effective implementation of *Outcome-Based Education* (OBE) curricula. Industry not only functions as a user of graduates but also serves as a strategic partner actively involved in the entire process of vocational education development. This collaboration includes identifying key competencies relevant to the needs of the world of work, providing *work-based learning environments*, and providing continuous feedback on the quality of curriculum implementation in educational units (Apriyani et al., 2022). Through close collaboration with industry, educational institutions can ensure that the teaching materials, learning approaches, and evaluation systems applied are genuinely aligned with the dynamics of the labor market, which continues to evolve in response to technological developments and globalization.

The Ministry of Education, Culture, Research, and Technology (2021) emphasizes that implementing the 8+i link-and-match concept is a comprehensive strategy to strengthen integration between education and industry. This scheme covers various important aspects, such as collaborative curriculum Design between schools and industry partners, the implementation of project-based *learning*, the provision of professionally recognized competency certification, and the alignment of learning outcomes with the real needs of the workforce in the field. Furthermore, Milandah and Yoenanto (2022) and Ningsih et al. (2025) emphasize that the success of link-and-match implementation is strongly influenced by the intensity of industry involvement, particularly in curriculum development and the implementation of industrial work practices.

In the context of SMK Muhammadiyah 1 Baturetno, the application of the 8+i *link-and-match principle has proven relevant and effective*. This school has established partnerships with various industry partners, particularly in the automotive, computer engineering, and machinery sectors. This synergy takes the form of *Industrial Work Experience* (Prakerin) activities, curriculum development tailored to field requirements, including the involvement of industry experts in classroom and workshop learning activities. Through this partnership, students not only gain theoretical understanding but also real-world workplace experience, creating a balance between academic competence and practical skills. Thus, active industry participation is a key element in strengthening the relevance, quality, and sustainability of OBE-based curriculum implementation in vocational education.

Gaps and Urgency of Integration at SMK Muhammadiyah 1 Baturetno

Although various forms of cooperation with industry have been pursued by SMK Muhammadiyah 1 Baturetno, empirical evidence shows that aligning the school curriculum with industry needs remains a challenge. This gap is evident in the suboptimal integration between the learning outcomes set out in the curriculum and the competency standards applied in the workplace. As a result, some graduates still need a period of adaptation when entering the workforce because their skills are not yet fully aligned with industry expectations.

In addition, limited practical facilities also affect the effectiveness of *implementing Outcome-Based Education (OBE)*. Facilities and infrastructure that do not fully reflect current industry conditions limit students' opportunities to gain authentic and contextual learning experiences. On the other hand, educators' competence is a crucial factor that also warrants serious attention. Teachers are not only required to master the subject matter, but also need to have a deep understanding of the philosophy and principles of OBE implementation, including the ability to Design outcome-oriented learning and assess student achievement based on actual performance in the field. The findings of Jaya et al. (2023) also show that although many vocational high schools (SMK) have adopted the *Outcome-Based Education* (OBE) approach, several obstacles hinder its effective implementation. These obstacles are divided into two main categories, namely infrastructure and teacher readiness. Both have a significant impact on the suitability of graduates' competencies to industry needs (Harahap et al., 2025; Latifah et al., 2025).

This condition underscores the importance of a comprehensive analysis of the extent to which curriculum integration at SMK Muhammadiyah 1 Baturetno has been aligned with vocational education policies oriented towards the needs of the world of work. This research is relevant to identifying strengths and weaknesses in the integration process and to exploring the potential application of OBE principles as a strategy to strengthen the link between the school curriculum and industry competency requirements. Thus, the results of this study are expected to contribute to the development of a more adaptive, contextual, and globally competitive vocational learning model.

Framework

One of the fundamental problems still faced by vocational education in Indonesia is the lack of alignment between graduate competencies and industry needs. This mismatch indicates that the curriculum of vocational high schools (SMK) remains more oriented towards inputs and learning processes. In contrast, the learning outcomes dimension relevant to industry competency standards has not received sufficient attention. Therefore, an integrative strategy is

needed by developing a curriculum aligned with the needs of the world of work so that vocational education is truly capable of producing graduates who are competent, relevant, and competitive in the labor market.

The *Outcome-Based Education* (OBE) approach serves as a conceptual and practical framework that can be used to guide all elements of education, from the formulation of objectives, content development, implementation of learning methods, to evaluation systems, in order to focus on measurable learning outcomes and competency-based learning (Spady, 1994). Through the application of OBE, the success of the educational process is no longer measured by how well teaching activities are carried out, but instead by the extent to which students can demonstrate real performance aligned with professional standards or industry needs.

At SMK Muhammadiyah 1 Baturetno, the application of the OBE principle plays a strategic role in strengthening the curriculum's relevance to industry needs. The school strives to formulate learning outcomes that refer to work competencies, so that every component of learning, both theoretical and practical, is focused on equipping students with the skills needed in the workplace. This approach aligns with the concept of constructive alignment proposed by Biggs and Tang (2011), which emphasizes the importance of consistency among planning, implementation, and evaluation of learning to ensure the achievement of predetermined learning outcomes.

However, the success of OBE-based curriculum implementation cannot be separated from the industry's active contribution. The industry not only serves as a user of graduates but also as a strategic partner involved in determining graduate profiles, developing competency standards, and providing internship and fieldwork opportunities for students (Wardoyo et al., 2024). On the other hand, educational institutions need to make continuous adjustments, such as updating the curriculum, improving teacher capacity through training programs, and providing learning facilities and infrastructure that support the practical and sustainable application of OBE principles.

Based on this foundation, the conceptual framework of this study was developed through the interactive relationship between three main components, namely: (1) The mismatch between the competencies of vocational school graduates and the needs of the industrial world, which is the basis for the urgency of curriculum integration; (2) The application of the *Outcome-Based Education* (OBE) principle as a systematic approach to ensure that the curriculum focuses on learning outcomes that are relevant to work standards; and (3) Collaboration between schools and industry as a strengthening factor in the planning, implementation, and evaluation of a curriculum based on the real needs of the world of work.

The synergy of these three components is expected to produce a curriculum integration model that not only strengthens the relevance and quality of the learning process but also increases the competitiveness of Muhammadiyah 1 Baturetno vocational school graduates in facing the challenges of the modern world of work and dynamic changes in the industrial sector.

METHODOLOGY

This study adopts a qualitative, descriptive case study Design to provide an in-depth understanding of the process of integrating the vocational school (SMK) curriculum with industry needs, grounded in *Outcome-Based Education* (OBE). The qualitative approach was chosen because it allows researchers to explore educational phenomena contextually, naturally, and comprehensively in accordance with the actual situation in the field (Creswell, 2018; Yin, 2014).

The research was conducted at SMK Muhammadiyah 1 Baturetno, Wonogiri Regency, which is one of the vocational schools partnering with industry and has begun implementing OBE principles in its learning system. The research subjects consisted of the principal, productive teachers, students, and representatives from partner industries. Data collection techniques included in-depth interviews, direct observation, and document review to obtain a comprehensive picture of curriculum implementation and industry collaboration (Setyaningsih et al., 2025).

Data analysis was conducted using an interactive model developed by Miles et al (2014), which includes three main stages: data reduction, data presentation, and conclusion drawing. To ensure the credibility and validity of the data, this study applied source and technique triangulation, as well as conducting *member checking* with participants to verify the accuracy of data interpretation and research findings (Agustian et al., 2024; Maulina & Yoenanto, 2022).

RESULT AND DISCUSSION

The results of the study indicate that SMK Muhammadiyah 1 Baturetno has consistently applied the *link-and-match principle* to align vocational education with the demands of the world of work. This commitment is reflected in the school's strategy of establishing and maintaining sustainable partnerships with various industry players, especially in the automotive engineering sector, which is relevant to the skills developed. Through these partnerships, the school not only adapts its curriculum content to industry needs but also ensures that the learning process reflects real-world working conditions in the field.

Industry partners are actively and systematically involved, providing input on the development of productive subjects, formulating graduate competency standards, and assessing student learning outcomes. This collaboration enables the transfer of knowledge and current work practices from industry to the school environment, making the competencies

students acquire more applicable and relevant. In addition, the joint evaluation mechanism between schools and industry contributes to continuous improvement in learning quality, as evaluation results serve as a basis for improving the curriculum and teaching methods. Thus, the implementation *of link and match* at SMK Muhammadiyah 1 Baturetno is not only administrative in nature but has been substantively integrated into the planning, implementation, and evaluation of vocational education. The active involvement of the industrial world is an important factor in ensuring the curriculum's relevance to technological developments and labor market needs (Agustian et al., 2024).

However, the results of the field study show that there is still a significant gap between the *learning outcomes* achieved in schools and expectations. Industry. One aspect often overlooked in this context is the development of non-technical, or soft, skills. Research shows that the industry demands graduates who not only have technical skills but also strong interpersonal and communication skills (Yudiono, 2021; Ferreira et al., 2024). Industry stakeholders report that although students have pretty good technical skills, such as operating workshop equipment, assembling components, and performing machine maintenance, they often face challenges in communication, work discipline, responsibility, and teamwork. These non-technical skills are important indicators of a person's ability to adapt and survive in a competitive work environment.

This gap shows that learning in schools still tends to focus on *hard skills*, while strengthening work character and interpersonal skills has not become a top priority. In fact, in the context of modern industries built on collaboration and technology, soft skills are a key determinant of productivity and effectiveness (Jaya et al., 2023). This shows that the implementation *of Outcome-Based Education* (OBE) in schools is still in the development stage and requires continuous improvement to operate comprehensively and in an integrated manner.

The application of OBE principles at SMK Muhammadiyah 1 Baturetno is evident in the shift in learning orientation, now focused on outcomes in the form of real competencies. Teachers not only teach basic knowledge and skills, but also guide students to produce products or projects that represent their mastery of learning outcomes. In productive subjects, for example, teachers set measurable *Learning Outcomes (CP)* relevant to the world of work, such as the ability to assemble simple machine components or perform industrial tool maintenance. Learning is carried out using a *project-based learning* (PjBL) approach that requires students to be active, work together, think critically, and take responsibility for their work. This model aligns with Biggs & Tang (2011), who state that the OBE principle emphasizes what learners can do after learning, not just what they know.

In addition, learning evaluation is carried out using *performance assessment*, which is a form of assessment oriented towards students' actual performance in the field. Through this assessment, teachers can assess the extent to which students can integrate technical and non-technical skills to complete industry-based project tasks. Performance-based assessment is considered more authentic because it can describe students' abilities in contexts that resemble real work situations (Agustian et al., 2024; Misbahudin & Asmaul, 2022; Maulina & Yoenanto, 2022).

The partnership between schools and industry is also reflected in various collaborative programs such as *teaching factories*, industrial teacher training, student internships, and joint curriculum development. Industry regularly provides feedback on learning designs and student evaluation results, enabling schools to adjust their curricula to be more relevant to changing workplace needs. Collaborative practices between vocational education and industry are a tangible implementation of the government's *link-and-match* policy. This policy aims to reduce the gap between the skills required in the workplace and the competencies possessed by vocational education graduates.

In this context, collaboration between vocational schools (SMK) and industry is important for producing graduates who are ready to meet labor market demands. However, the successful implementation of OBE depends not only on curriculum Design and partnerships with industry, but also on the readiness of human resources (HR) and the availability of learning facilities (Jaya et al., 2023). Teachers have a strategic role as facilitators who must understand the OBE philosophy and Design learning outcomes, performance indicators, and assessment strategies aligned with them. At SMK Muhammadiyah 1 Baturetno, some teachers still face obstacles in translating the OBE concept into learning practices due to limited training and experience in designing competency-based learning.

Practical facilities that do not fully reflect the modern industrial environment are also a significant obstacle. Outdated practical equipment limits students' opportunities to practice in situations that resemble the real world of work.

As a result, some performance-based learning outcomes have not been optimally achieved. This condition is consistent with the findings of Yuwantiningrum et al. (2025), who reported that limitations in facilities and infrastructure are among the main obstacles to implementing OBE in vocational education.

Despite the challenges, the implementation of OBE at SMK Muhammadiyah 1 Baturetno has provided a new direction in the development of vocational education that is adaptive to industry needs. The application of this approach has encouraged a paradigm shift

in learning, from one oriented initially towards delivering material to one that focuses on measurable, relevant learning outcomes. The synergy among schools, teachers, students, and industry creates a learning ecosystem oriented towards real performance and job readiness. Thus, vocational education no longer prepares students only for work but also to adapt, innovate, and contribute in the dynamic world of work in the era of Industry 4.0 (Creswell, 2018; Yin, 2014).

CONCLUSION

This study concludes that integrating the vocational high school (SMK) curriculum with the needs of the industrial world through an *Outcome-Based Education* (OBE) approach is a key strategy in reducing the gap between graduate competencies and labor market demands. The implementation of OBE at SMK Muhammadiyah 1 Baturetno has directed the learning process to focus more on learning outcomes that are relevant, measurable, and in line with industry standards. The success of OBE implementation is greatly influenced by active industry involvement, teacher readiness to implement outcome-based learning, and adequate practical facilities. However, improving non-technical skills, such as communication and teamwork, remains necessary to ensure that graduates are genuinely ready to navigate the dynamics of the modern world of work. With strengthened school-industry collaboration and the continuous implementation of OBE, vocational education has the potential to produce graduates who are competent, adaptive, and competitive in the era of Industry 4.0.

REFERENCE

Agustian, D., Amartha, A., & Wardoyo, S. (2024). Tantangan Pendidikan Vokasional dalam Meningkatkan Penyerapan Lulusan SMK di Dunia Industri. *Jurnal Studi Guru Dan Pembelajaran,* 7(3), 1373-1382. https://doi.org/10.30605/jsgp.7.3.2024.5016

Apriyani, M. E., Pramudhita, A. N. A. N., & Wijaya, I. D. (2022). *Curriculum Design for the applied undergraduate business information system study program: Focus on learning outcomes required in Indonesia.* In *Proceedings of the 4th International Conference on Vocational Innovation and Applied Sciences (ICVIAS 2022)* (pp. 73–81). NST Proceedings. https://doi.org/10.11594/nstp.2022.2912

Biggs, J., & Tang, C. (2011). *Teaching for quality learning at university* (4th ed.). McGraw-Hill Education.

Cantika, V. M. & Alhayat, A. (2023). Implementation of Outcome-Based Education in a Leading High School (a Case Study at SMA Taruna Bakti Bandung). *Proceedings Series on Social Sciences & Humanities*, 12, 52–59. https://doi.org/10.30595/pssh.v12i.773

Creswell, J. W. (2018). *Research Design: Qualitative, quantitative, and mixed methods approaches*. Sage Publications.

Direktorat Jenderal Pendidikan Vokasi. (2022). *Panduan pengembangan link and match SMK dengan dunia usaha dan dunia industri*.

Ferreira, C., Gabriel, B., Valente, R., Andrade-Campos, A., Dias-de-Oliveira, J., Neto, V., … & Figueiredo, C. (2024). In Search of a More Balanced Engineering Curriculum: The Perspective of Students, Teachers, Alumni, and Employers. Trends in Higher Education, 3(1), 142–154. https://doi.org/10.3390/higheredu3010008

Finch, C. R., & Crunkilton, J. R. (1999). *Curriculum development in vocational and technical education: Planning, content, and implementation*. Allyn & Bacon.

Gurukkal, R. (2020). Outcome-Based Education: An Open Framework. *Higher Education for the Future*, 7(1), 1–4. https://doi.org/10.1177/2347631119886402

Harahap, A. S., Nasution, F. R. A., Siregar, N. S., Jalinus, N., & Ernawati, E. (2025). Peran Kepemimpinan Digital Di Era Pendidikan 4.0 Dalam Mengelola Smk: Systematic Literature Review Tentang Peluang Dan Tantangan. *VOCATIONAL: Jurnal Inovasi Pendidikan Kejuruan*, 5(2), 24-33. https://doi.org/10.51878/vocational.v5i2.5783

Jakhale, A. R. & Attar, A. (2015). A Novel Approach Towards Outcome-Based Engineering Education for Continuous Quality Improvement: A Case Study. *Journal of Engineering Education Transformations*, 0(0), 133. https://doi.org/10.16920/ijerit/2015/v0i0/59348

Jaya, D. J., Sudira, P., Raharjo, N. E., Wagiran, W., & Wijanarka, B. S. (2025). Outcome-Based Education (OBE) approach in vocational education: Strategies, advantages, and challenges in Indonesia: *El enfoque de la educación basada en los resultados (EFC) en la formación profesional: estrategias, ventajas y retos en Indonesia*. *Papeles, 17*(33). https://doi.org/10.54104/papeles.v17n33.2059

Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi. (2021). *Panduan implementasi Kurikulum Merdeka pada satuan pendidikan vokasi*.

Latifah, A., Ningati, R. S., Winata, N. A. M., & Nugraha, H. (2025). Analysis of curriculum implementation in the accounting major at SMKN 11 Bandung. *Hipkin Journal of Educational Research*, 2(1), 109–122. https://doi.org/10.64014/hipkin-jer.v2i1.46

Maulina, M., & Yoenanto, N. H. (2022). Optimalisasi link and match sebagai upaya relevansi SMK dengan dunia usaha dan dunia industri (DUDI). *Jurnal Akuntabilitas Manajemen Pendidikan, 10*(1), 28–37. https://doi.org/10.21831/jamp.v10i1.48008

Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis*. Sage Publications.

Misbahudin, A. R. & Asmaul, R. (2022). Upaya Meminimalkan Gap Antara Kompetensi Lulusan SMK Dengan Tuntutan Dunia Industri. *WAKTU: Jurnal Teknik UNIPA*, 20(01), 12-14. https://doi.org/10.36456/waktu.v20i01.5118

Nesa, N., & Muhammad, R. R. (2025). Design curriculum based on Outcome-Based Education (OBE): Preparing work-ready graduates. *Edukasiana: Journal of Islamic Education, 4*(1), 374–384. https://doi.org/10.61159/edukasiana.v4i1.385

Ningsih, O. W., Suyatno, S., & Hasanah, E. (2025). The Implementation of the Link and Match Program Between Vocational High Schools and the Business-Industrial Sectors. Edusoshum: Journal of Islamic Education and Social Humanities, 5(2), 334–346. https://doi.org/10.52366/edusoshum.v5i2.208

Ramadhan, F. (2025). Implementation Of The Data Literacy Course In Supporting The OBE-Based Curriculum At Telkom University. *EduGrows: Education and Learning Review*, 1(2), 119-142. https://doi.org/10.69836/edugrows.v1i2.107

Rosiawan, M. (2022). Implementing Outcome-Based Education in Accordance with ISO 21001 Requirements. *Advances in Economics, Business and Management Research*, 1067–1077. https://doi.org/10.2991/978-94-6463-008-4_132

Setianingsih, E., Ariani, A., & Muhdi, A. (2025). Pengembangan Kurikulum Dan Inovasi Pembelajaran Pada Program Keahlian PPLG Melalui Kelas Industri Crocodic Di SMK Negeri 1 Purwokerto. *CENDEKIA: Jurnal Ilmu Pengetahuan*, 5(1), 318-329. https://doi.org/10.51878/cendekia.v5i1.4496

Setiono, S., Windyariani, S., & Juhanda, A. (2023). Implementasi Sistem Penilaian Berbasis Outcome-Based Education di Perguruan Tinggi. *Jurnal Pendidikan*, 11(1), 1-9. https://doi.org/10.36232/pendidikan.v11i1.2617

Soleh, A., Triyanto, T., Parno, P., Suharno, S., & Estriyanto, Y. (2023). Tinjauan Pustaka Sistematis: Model Kemitraan antara SMK dengan Dunia Usaha dan Dunia Industri. *Jurnal Ilmiah Pendidikan Teknik Dan Kejuruan,* 16(2), 126. https://doi.org/10.20961/jiptek.v16i2.72697

Spady, W. G. (1994). *Outcome-Based Education: Critical issues and answers*. American Association of School Administrators.

Wardoyo, S., Septiani, M., Fauziah, N. E., Wiherdiansyah, F., & Akbar, Z. (2024). Pengaruh Keterkaitan Kompetensi Guru SMK Terhadap Daya Saing Lulusan Dalam Dunia Industri: Systematic Literature Review. *VOCATIONAL: Jurnal Inovasi Pendidikan Kejuruan*, 3(4), 184-192. https://doi.org/10.51878/vocational.v3i4.3874

Yin, R. K. (2014). *Case study research: Design and methods*. Sage Publications.

Yudiono, H. (2021). Need Analysis in the Development of Production-Based Learning. *Proceedings of the 2nd Vocational Education International Conference*, VEIC 2020, 27th August 2020, Semarang, Indonesia. https://doi.org/10.4108/eai.27-8-2020.2305767

Yuwantiningrum, S. E., Rainanto, B. H., Utami, N. R., & Sukma, B. E. (2025). Enhancing Curriculum Relevance in Vocational Hospitality Education: A Community Engagement Experience at SMK Negeri 3, Bogor City. Abdi Dosen : *Jurnal Pengabdian Pada Masyarakat,* 9(3), 1304-1319. https://doi.org/10.32832/abdidos.v9i3.3015