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The Relevance Of Digital Skills Of Otkp Graduates To The Needs Of The World Of Work In The Digital Era

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Abstract
This study aims to analyze the relevance of digital skills among graduates of the Office Automation and Governance (OTKP) vocational program at SMK Negeri 1 Bandung with the needs of the labor market in the digital era. The research employed a qualitative case study approach involving productive teachers, graduates, and industry representatives as key informants. Data were collected through in-depth interviews, participant observation, and documentation, then analyzed using Miles and Huberman's interactive model. The results indicate that graduates possess strong basic digital skills such as office software operation and online communication, but exhibit limited competence in virtual collaboration, cloud-based data management, and digital security. The skill gap is influenced by curriculum limitations, insufficient teacher training, and inadequate digital facilities. The study highlights the importance of strengthening the link and match between vocational schools and industries, as well as integrating adaptive digital skills into vocational curricula. The implication of this study emphasizes the need for developing a digital project-based learning model to enhance graduates' employability and adaptability in the digital transformation era

Keywords: Digital skills, Vocational education, OTKP, labor market, Digital era

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INTRODUCTION

The development of digital technology has fundamentally changed the structure and needs of the world of work in the last decade. Digital transformation demands a workforce with skills adaptable to information technology, communication, and system automation (World Economic Forum, 2023). Digital skills are now one of the core 21st-century competencies that every individual must possess to participate in the technology-based economy (UNESCO, 2021). In the context of vocational education, digital skills not only serve as a supplement but are also a key indicator of graduates' work readiness (Setiyawan, Suharno, & Pambudi, 2022).

Vocational education, particularly vocational high schools (SMK), plays a strategic role in preparing ready-to-use workers relevant to industry needs. Based

on Law Number 20 of 2003 concerning the National Education System, vocational education functions to prepare students to be able to work in a specific field. National policy also emphasizes the importance of the link between vocational high schools and industry thru Presidential Instruction Number 9 of 2016 concerning the Revitalization of Vocational High Schools. However, amidst digital disruption, new challenges have emerged: there is still a gap between the competencies possessed by graduates and the demands of the digital industry (Lukitasari, Wrahatnolo, Suhartini, & Astuti, 2024).

The Office Automation and Governance (OTKP) vocational competency, now known as Office Management and Business Services (MPLB), is one of the fields directly impacted by the digitalization of administration. According to Choirunnissa & Oktarina (2025), the development of information technology has changed the paradigm of office administration services from being manual to more digital-based. Slow, bureaucratic service and the risk of manual errors are the main challenges driving the need for digital transformation in the administrative system. This transformation demands proficiency in applications such as Microsoft 365, Google Workspace, Zoom, and e-archiving systems. However, the research findings of Setiawan, Yarmanto, and Kustiawan (2023) indicate that the level of digital maturity in Indonesian vocational high schools is still considered low, meaning graduates lack real-world experience in optimally applying digital office technology.

This condition indicates a real gap between the OTKP learning curriculum and the needs of the technology-based industry. Rahmawati, Abdullah, and Widiaty's (2024) research indicates that vocational education in Indonesia is still dominated by traditional approaches, with digital integration limited to technical aspects rather than a comprehensive transformation of work processes. In fact, the current job market demands administrative staff who can work collaboratively thru digital platforms, manage data online, and understand information security.

Beside the curriculum factor, teacher competency issues and digital facilities are also causes of students' low mastery of digital skills. Setiyawan et al. (2022) emphasize that the lack of digital literacy among educators directly affects the low achievement of digital skills among vocational high school students. This finding aligns with the study by Muliawati, Wahyuni, Pratiwi, and Aini (2023), which states that career development strategies for vocational students in the digital era are not yet effective because teachers have not fully utilized technology as an adaptive learning medium.

In the context of SMK Negeri 1 Bandung, the results of the tracer study show that most OTKP graduates have worked in the service and administration sectors, but many still find it difficult to adapt to digital work systems. Partner companies assess that graduates still need to improve digital skills such as online data management, virtual collaboration, and technology-based professional communication. This finding aligns with the research by Yulie Reindrawati et al.

(2024), which states that integrating artificial intelligence (AI) and digital soft skills can significantly enhance vocational school students' work readiness, but its implementation is still limited in vocational schools.

This gap also impacts the open unemployment rate for vocational school graduates, which remains the highest among other education levels, reaching 9.42% (BPS, 2023). The low absorption rate of these graduates indicates that the skills acquired in school are not yet fully relevant to the needs of the digital workforce. In fact, effective vocational education should be able to equip students with competencies that align with the expectations of technology-based industries, such as digital data management skills, online communication, and the use of collaboration platforms (Rahmawati et al., 2024).

Within the theoretical framework, this research is based on Human Capital Theory by Becker (1993), which emphasizes that investment in education will increase individual productivity and competitiveness. According to Hidayati, Barr, and Sigit (2021), the gap between the competencies taught in schools and the needs of the industrial world remains a major obstacle to the absorption of vocational high school graduates into the workforce, as the competency standards applied by both parties are not yet fully aligned. The application of both theories in the context of vocational education confirms that improving digital skills is a strategic investment in human capital to face the digital age workforce.

In line with this, the Directorate General of Vocational Education (2020) emphasizes that the concept of link and match is a key strategy in bridging the gap between vocational high schools and the industrial world. Lukitasari et al. (2024) in their study added that the success of vocational education is highly dependent on the school's ability to align the curriculum with the needs of the digital industry. Therefore, synergy between educational institutions, the business world, and the government is key to increasing the relevance of vocational school graduates to the modern job market.

The novelty of this research lies in its focus on the relevance of digital skills for OTKP graduates at SMK Negeri 1 Bandung, highlighting four main dimensions: technological literacy, virtual collaboration, digital data management, and professional communication. Unlike previous research that focused more on general work readiness, this study specifically examines digital skills as a key factor in improving the employability of vocational high school graduates in the digital age. The results of this research are expected to provide empirical contributions to the formulation of policies for strengthening digital-based vocational curricula in Indonesia.

Based on the above description, this study has the general objective of analyzing the relevance of digital skills of graduates from the Office Management and Business Services (OTKP) vocational program at SMK Negeri 1 Bandung to the needs of the world of work in the digital era. Specifically, this research aims to:

identify the types and proficiency levels of digital skills possessed by OTKP graduates at SMK Negeri 1 Bandung, analyze the alignment of graduates' digital skills with the needs of the technology-based industrial world, identify the gap between digital learning in schools and the skills required in the workplace, and provide strategic recommendations for schools and the industrial world to enhance the relevance of SMK graduates' digital competencies.

METHOD

This research employs a qualitative approach with a case study research method, focusing on an in-depth analysis of the relevance of digital skills for graduates of the Office Automation and Governance (OTKP) vocational program to the needs of the world of work in the digital era. This approach allows researchers to comprehensively explore how the learning process in schools shapes students' digital skills according to industry demands. The case study method was chosen because it provides an opportunity to understand the real-world context, dynamics, and factors influencing the achievement of digital competence in the school environment. The research was conducted at SMK Negeri 1 Bandung as a representative of vocational education institutions that are adapting to the development of information technology and office digitalization. Thus, the results of this study are expected to provide an in-depth understanding of the gap between digital learning achievements in vocational high schools and the needs of the world of work in the digital transformation era (Raskind et al., 2019).

The research was conducted at SMK Negeri 1 Bandung, Tulungagung Regency. The research period is planned for two months (October–November 2025). The research subjects and informants consist of OTKP graduates from 2022-2024 (10 people), OTKP/MPLB productive teachers (5 people), and representatives from partner businesses/industries (DU/DI) of SMK Negeri 1 Bandung (3 people). The selection of informants was done using purposive sampling according to the strategy described by Palinkas et al. (2015), which is to select information-rich cases that are relevant to the research focus.

In this study, the researcher serves as the primary instrument directly involved in the data collection and analysis process. This role demands a high degree of sensitivity to the social context and dynamics occurring in the field to ensure that the data obtained truly reflects the research reality. The researcher's presence is participatory, where the researcher interacts with informants to gain a deeper understanding of the phenomenon being studied. However, the researcher maintained objectivity by applying the principle of reflexivity to recognize and control potential personal biases that could influence data interpretation. Applying this principle also ensures transparency in the analysis process, so the research results have strong validity and credibility (Johnson, Adkins, & Chauvin, 2020).

Data collection techniques were carried out thru a combination of the following methods as part of a triangulation strategy to enhance the validity of the findings: in-depth interviews, participant observation, and documentation (Carter et al., 2014). Semi-structured interviews were conducted using an interview guide based on digital competence domains (technology literacy, virtual collaboration, digital data management, professional communication). The interviews were recorded (with permission), transcribed, and thematically analyzed.

Participatory observation was conducted directly on the digital-based learning process taking place in the classroom and during school activities. The focus of the observation included the use of various office applications, the application of technology in digital administration, and the practices of managing e-archives by students and teachers. During the observation activity, the researcher used field notes and checklists as the main instruments to record behaviors, activities, and interactions relevant to the research objectives (Raskind et al., 2019). Additionally, documentation was also carried out by collecting various written sources such as syllabi, Lesson Plans (RPP), digital learning materials, and cooperation documents between the school and industry. Researchers also examined the results of a graduate tracer study as supporting material to understand the extent to which digital skills acquired in school are absorbed into the workplace.

The research instruments used in this study include a semi-structured interview guide, a standardized observation sheet, and a documentation form as the main data collection tools. The interview guide was designed to gather in-depth information from informants regarding the relevance of digital skills to the needs of the world of work, while the observation sheet was used to record learning activities and technology application in the school environment. Before being used, all instruments were validated thru expert review by the supervising lecturer to ensure clarity, relevance, and alignment with the research objectives. This validation process also serves to improve the reliability of the data that will be collected in the field. The selection and use of instruments were carried out by referring to best practices in contemporary qualitative research that emphasize the credibility, consistency, and validity of findings (Raskind et al., 2019; Johnson et al., 2020).

This research does not involve the use of special laboratory equipment because its focus lies in collecting qualitative data thru interviews, observations, and documentation. However, some supporting devices were used to ensure the accuracy and efficiency of the data collection process. A digital voice recorder with a minimum resolution of 44.1 kHz was used to clearly and detailedly record the interview results, facilitating the transcription and data analysis process. Additionally, a laptop served as the primary tool for transcription, data organization, and analysis using word processing or qualitative analysis software. Researchers also utilized a stable internet connection to access digital documents, conduct

remote interviews, and support secure data storage and collaboration processes on online platforms.

The data analysis technique in this study was conducted interactively by adopting the Miles and Huberman (2014) data analysis model, which includes three main stages: data reduction, data presentation, and conclusion drawing or verification. The data reduction process is carried out by selecting, grouping, and focusing on important information relevant to the research objectives. Next, the reduced data is presented in the form of narratives, tables, and thematic matrices to facilitate the identification of patterns and relationships between variables. The coding process was applied inductively-deductively with the aid of qualitative data management software to ensure systematization and accurate interpretation. To enhance the credibility and validity of the analysis results, double-coding was performed by two independent analysts and member-checking was conducted with informants to verify the alignment of the findings with their real-world experiences (Johnson et al., 2020; Raskind et al., 2019).

The validity and reliability (trustworthiness) of this study were maintained thru the application of four main criteria: credibility, transferability, dependability, and confirmability. To achieve credibility, the researcher employed source and method triangulation strategies as suggested by Carter et al. (2014), to ensure consistency of findings from various perspectives and data collection techniques. Additionally, the audit trail was created by documenting the entire research process, including interview transcripts, observation notes, and coding results, as evidence of analysis transparency. The principle of reflexivity is applied to keep the researcher aware of potential personal biases, while peer debriefing is used to obtain critical feedback from colleagues regarding data interpretation. To strengthen the confirmation of findings, member checking was conducted with the informants to ensure that the research results authentically reflect their experiences and perspectives (Johnson et al., 2020; Raskind et al., 2019).

This research was conducted after obtaining official permission from the school as the research institution and informed consent from all involved informants. Each informant was given an explanation of the research objectives, their right to participate, and assurances of confidentiality and anonymity for the data they provided. The total number of informants involved was 18, consisting of productive teachers, students, and partner industry representatives, purposively selected according to the needs of the case study. The determination of this number is based on the principle of information power, which emphasizes that the quality and relevance of information are more important than the number of participants, and is considered sufficient to achieve the desired depth of analysis (Palinkas et al., 2015).

RESULTS AND DISCUSSION

Level of Digital Skills Mastery of Graduates

This research was conducted at SMK Negeri 1 Bandung, focusing on the Office Automation and Management (OTKP) Vocational Skills Competency as a representative of the office administration vocational program in the digital era. Based on the results of interviews and observations, it is known that the school has attempted to integrate digital-based learning thru the use of various platforms such as Google Workspace, Microsoft Office 365, and other online administrative support applications. This effort demonstrates the school's commitment to adapting the learning process to the demands of digital transformation in the workplace. Nevertheless, the level of adoption and mastery of digital skills among teachers and students still varies, depending on individual readiness, access to technology, and available training support.

Data from interviews with 10 alumni show that most graduates have basic skills in using digital office applications, but are not yet optimal in utilizing collaborative applications and cloud-based data management. Based on observation and documentation, approximately 70% of graduates are able to use Microsoft Word and Microsoft Excel, but only 40% are proficient in using online collaboration applications such as Google Meet, Trello, or Zoom Meeting.

Table 1. Level of Digital Skill Mastery of OTKP Graduates from SMK Negeri 1 Bandung

Type of Digital Skills	Percentage of Mastery	Category
Basic office application usage (Word, Excel, PowerPoint)	70%	Baik
Online collaboration (Google Meet, Trello, Zoom)	40%	Cukup
Digital data management (Google Drive, OneDrive)	35%	Cukup
Digital security (password management, data protection)	25%	Rendah

The findings of this study indicate a significant gap between the basic digital skills acquired by students in schools and the applied digital skills that are in high demand in the modern workplace. Students generally have mastered the use of basic office applications, but still face difficulties in professionally applying digital workflow concepts, data management, and online collaboration. This condition indicates that the vocational learning curriculum still needs to be strengthened to place more emphasis on the application of digital technology in real-world work contexts. This result aligns with the findings of Rahmawati et al. (2024), who stated

that vocational education in Indonesia has not fully integrated the digital work system comprehensively into the learning process.

Relevance of Graduate Competencies to the Needs of the World of Work

The results of interviews with representatives from the industrial world indicate that graduates of OTKP SMK Negeri 1 Bandung are considered to have a good work ethic, discipline, and sufficient basic administrative skills to support office operational activities. Graduates are also considered to have a high level of professionalism and responsibility in carrying out their duties, which is an important asset in the world of work. However, industry informants assess that digital literacy skills and adaptability to technology-based work systems still need significant improvement to align with the needs of modern industry. Some companies report that many graduates still struggle to use online document management applications, cloud-based administration systems, and digital collaboration platforms. The industrial world today expects a workforce that is not only proficient in basic office applications but also capable of understanding digital workflows and applying technology-based efficiency principles. Additionally, professional communication skills thru digital media are also an important requirement for maintaining work effectiveness across teams and locations. This finding reinforces the view of Setiawan et al. (2023) that enhancing digital competence is a strategic factor in strengthening the competitiveness of vocational education graduates amidst the acceleration of digital transformation. Advanced technology-based education (such as AI) can be a relevant strategy for developing digital competence (Arifin, Alfian, Sumardiono, & Awiliyanto, 2024).

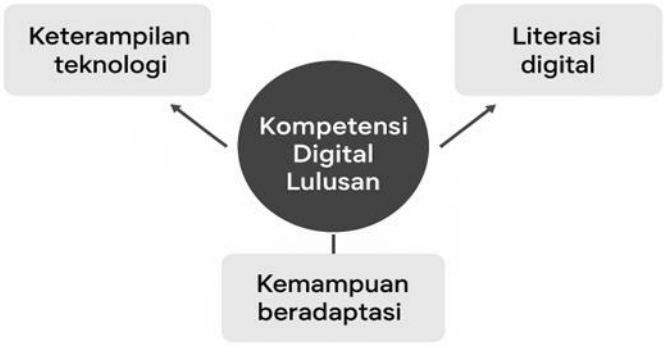

Fig. 1 - Relevance of Graduates' Digital Competencies to Industry Needs

The findings of this study are consistent with the study conducted by Yulie Reindrawati et al. (2024), which confirms that integrating Artificial Intelligence (AI) and digital soft skills has the potential to increase the work readiness of vocational

school graduates by up to 75%. This integration allows students not only to master technical aspects but also to develop critical thinking, collaborative, and adaptive abilities to technological changes. In the context of SMK Negeri 1 Bandung, the implementation of digital project-based learning is still limited to a few subjects and has not been fully implemented. This limitation impacts the less-than-optimal development of students' digital skills, especially in problem-solving and applying technology in real-world work situations. Therefore, strengthening digital project-based learning is an important step to equip students with relevant and highly competitive skills in the technology-based industrial era.

Factors Causing the Digital Skills Gap

Some of the main factors contributing to the digital skills gap between graduates and the workforce include the lack of technology integration in the learning curriculum, limited training for productive teachers in the digital field, minimal technology-based support facilities in schools, and weak active collaboration with the local digital industry. This condition results in students' digital skills not being fully aligned with the standards and practices applied in the modern world of work. According to Lukitasari et al. (2024), the success of vocational education heavily relies on the school's ability to adapt the curriculum to the ever-evolving dynamics of industry needs. The results of this study support this view by confirming that strengthening the link and match between schools and industry needs to be realized thru digital internship programs, real-world project collaboration, and continuous technology-based competency training.

The research results show that the digital skills of OTKP graduates are still dominated by basic technical aspects, such as using office applications and managing digital documents. Meanwhile, the current industrial world demands more complex skills, including collaborative, analytical, creative, and innovative abilities in utilizing technology to improve work efficiency. This condition indicates a significant gap between the competencies produced by schools and the expectations of the industrial world, which is increasingly oriented toward the digitalization of work processes. This finding aligns with the research results of Setiyawan et al. (2022), which revealed that the low digital literacy of vocational high school students is influenced by the limited digital literacy skills of teachers and the lack of contextual project-based learning implementation.

Additionally, this research underscores the importance of implementing Competency-Based Education (CBE) in the context of vocational education as an approach focused on achieving real-world competency outcomes. This approach emphasizes that every learning activity should be directed toward producing measurable, observable, and industry-relevant skills. According to the results of the literature review, the implementation of CBE in VET is effective in improving students' work skills, although it still requires improvement in teacher preparation and supporting facilities (Siswahyudi, Helmi, & Purnamawati, 2022). In the context

of the Office Automation and Governance (OTKP) vocational competency, the implementation of CBE serves as a strategic foundation for integrating digital skills, professional communication, and technology-based data management. Therefore, the results of this study highlight the need for revisions and updates to the OTKP curriculum to make it more adaptable to technological developments and aligned with the demands of the digital industry.

The findings of this study also support the international findings by Muliawati et al. (2023), which emphasize that career development strategies for vocational students in the digital age must focus on mastering technology, digital communication skills, and cross-platform virtual collaboration abilities. These findings indicate that graduates' career readiness is not solely determined by technical skills, but also by interpersonal skills and adaptability in a digital work environment. In the context of SMK Negeri 1 Bandung, there is still a need to improve the capacity of teachers and students in the optimal utilization of digital devices to support innovative teaching and learning processes. Technology integration is not yet fully uniform across all subjects, so the potential of digital-based learning has not been maximized. Therefore, increasing digital literacy, teacher training, and technological infrastructure support are important steps to strengthen the vocational learning ecosystem that is adaptable to the digital transformation era. Improving digital literacy and digital-based administration skills is crucial for enhancing the work readiness of Vocational High School graduates (Hartabela, et al, 2024).

Theoretically, this research contributes to the development of a model for aligning digital competencies with the needs of the world of work. The results strengthen the link and match model of the Directorate General of Vocational Education (2020) by adding a new dimension: the integration of adaptive digital skills. This model can serve as a reference for other vocational schools in developing a curriculum that is adaptable to the digital era.

CONCLUSION

Overall, the digital skills of OTKP graduates from SMK Negeri 1 Bandung are considered quite good, especially at the basic level, which includes the ability to use office applications and digital communication. However, these competencies have not fully met the standards required by the digital industry, which demands higher-level skills such as data analysis, online collaboration, and cloud-based system management. This condition indicates a gap between learning achievements in schools and the real needs of the world of work. Therefore, enhancing technology-based learning, providing continuous training for teachers, and strengthening collaboration with industry are strategic steps that need to be taken immediately. The findings of this research are expected to serve as a basis for developing digital-

based vocational learning models that are more relevant and adaptable to technological developments in Indonesia.

This study concludes that the digital skills of graduates from the Office Automation and Governance (OTKP) vocational program at SMK Negeri 1 Bandung have reached a fairly good level of mastery in basic aspects such as operating office applications and digital communication. However, skills in online collaboration, digital data management, and information security still need to be improved to better align with the demands of the digital age workforce. Thus, there is a gap that needs to be bridged thru the enhancement of adaptive digital competencies, digital project-based learning, and the strengthening of cooperation between schools and technology-based industries.

The results of this study have important implications for the development of curriculum and learning strategies in vocational education to make them more responsive to the demands of the digital era. The comprehensive integration of digital technology into the learning process is no longer just an option, but a necessity to ensure graduates possess relevant, adaptable, and competitive skills in the modern workforce. Additionally, this research underscores the need to strengthen the capacity of productive teachers thru continuous training focused on mastering digital pedagogy and applying technology in teaching and learning activities. These efforts are expected to create an innovative, collaborative learning environment and encourage students' creativity in facing changes in the industrial world. Theoretically, the results of this study also enrich the link and match model by adding the dimension of adaptive digital skills, which emphasizes analytical, collaborative, and communicative abilities in the context of technology-based vocational learning.

Future research is expected to expand its scope by involving more vocational schools from various regions and diverse industrial sectors to make the results more comprehensive and representative. This approach will provide a deeper understanding of the alignment between graduates' digital competencies and the real needs of the workforce. Additionally, quantitative research can be conducted to empirically measure the extent to which improved digital competency affects the employability of graduates in various industrial sectors. Further research could also investigate the effectiveness of implementing digital-based learning models such as project-based learning in improving students' practical and collaborative skills. Thus, the results of future research are expected to make a significant contribution to the development of vocational learning strategies relevant to the dynamics of digital transformation in Indonesia

REFERENCES

Arifin, R. W., Alfian, A. N., Sumardiono, & Awiliyanto, R. (2024). Pengembangan skill digital siswa SMK melalui pemanfaatan generatif AI. *Bhakti Karya dan*

Inovatif, 5(1). https://doi.org/10.37278/bhakti karya dan inovatif. v5i1.1072.

Arina Hidayati, Farah Dzil Barr & Kharisma N. Sigit (2021). Kesesuaian kompetensi lulusan SMK dengan kebutuhan dunia usaha dan industri. *Ekuitas: Jurnal Pendidikan Ekonomi*, 9(2), 284–292. DOI: 10.23887/ekuitas.v9i2.39508.

Badan Pusat Statistik. (2023). *Keadaan ketenagakerjaan Indonesia Februari 2023*. Retrived from https://www.bps.go.id.

Carter, N., Bryant-Lukosius, D., DiCenso, A., Blythe, J., & Neville, A. J. (2014). The use of triangulation in qualitative research. *Oncology Nursing Forum, 41*(5), 545–547. https://doi.org/10.1188/14.ONF.545-547.

Choirunnissa, N. F., & Oktarina, N. (2025). Peran digitalisasi dalam meningkatkan pelayanan administratif kantor. *Bookchapter Administrasi Perkantoran*, 1(1). https://doi.org/10.15294/bap.v1i1.278.

Direktorat Jenderal Pendidikan Vokasi. (2020). *Kebijakan penguatan link and match SMK dengan dunia usaha dan dunia industri*. *Kemdikbud RI*. Retrieved from https://vokasi.kemdikbud.go.id.

Hartabela, D., Pranandary, D., Endra, R. Y., Jamaludin, J., Kartika Puspa, A., & Kurniawan, A. (2024). Peningkatan kompetensi literasi digital dan administrasi SMK Kosgoro Penawartama, Lampung. *Jurnal Pengabdian Masyarakat Tapis Berseri (JPMTB)*, 3(2). https://doi.org/10.36448/jpmtb.v3i2.124.

Johnson, J. L., Adkins, D., & Chauvin, S. (2020). A review of the quality indicators of rigor in qualitative research. *American Journal of Pharmaceutical Education, 84*, Article 7120. https://doi.org/10.5688/ajpe7120.

Lukitasari, F., Wrahatnolo, T., Suhartini, R., & Astuti, N. (2024). Responsive vocational education to the needs of the world of work: A literature review of critical factors. *Jurnal Pendidikan Teknologi Kejuruan*, 8(3). https://doi.org/10.24036/jptk.v8i3.46323.

Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis: A methods sourcebook* (3rd ed.). Thousand Oaks, CA: SAGE Publications, Inc.

Muliawati, N. E., Wahyuni, T., Pratiwi, H., & Aini, L. N. (2023). Career development strategies for vocational students in the digital era. *International Journal of Educational Evaluation and Policy Analysis*, 2(2). https://doi.org/10.62951/ijee pa.v2i2.249.

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and Policy in Mental Health and Mental Health Services Research, 42*(5), 533–544. https://doi.org/10.1007/s10488-013-0528-y.

Rahmawati, S., Abdullah, A. G., & Widiaty, I. (2024). Digital skills in technical and vocational education: A data-driven analysis of TVET competency trends. *Journal of Vocational Education Studies*, 8(2). https://doi.org/ 10.12928/ joves.v8i2.13296.

Raskind, I. G., Shelton, R. C., Comeau, D. L., Cooper, H. L. F., Griffith, D. M., & Kegler, M. C. (2019). A review of qualitative data analysis practices in health education and health behavior research. *Health Education & Behavior, 46*(1), 32–39. https://doi.org/10.1177/1090198118795019.

Setiawan, A., Yarmanto, E. S., & Kustiawan, I. (2023). Digital maturity models and instruments for vocational high schools in Indonesia. *Jurnal Pendidikan Vokasi*, 14(3). https://doi.org/10.21831/jpv.v14i3.72957.

Setiyawan, H., Suharno, & Pambudi, N. A. (2022). The influence of digital and vocational information literacy on student learning outcomes. *Jurnal Pendidikan Vokasi*, 13(2). https://doi.org/10.21831/jpv.v13i2.53999.

Siswahyudi, N., Helmi, H., & Purnamawati, P. (2022). Efektivitas penerapan pendidikan berbasis kompetensi pada sistem pendidikan dan pelatihan kejuruan (VET). *VOCATIONAL: Jurnal Inovasi Pendidikan Kejuruan*, 2(2), 180–185. https://doi.org/10.51878/vocational.v2i2.1228.

UNESCO. (2021). *Digital literacy and skills development for lifelong learning.* UNESCO Institute for Lifelong Learning. Retrieved from https://uil.unesco.org

World Economic Forum. (2023). *The future of jobs report 2023.* Retrieved from https://www.weforum.org/reports/future-of-jobs-report-2023.

Yulie Reindrawati, D., Bascha, U. F., Nata, J. H., Suriani, N. E., Suharto, B., Yunardi, R. T., & Miladyah, R. (2024). Optimalisasi kesiapan kerja siswa SMK di era digital melalui integrasi AI dan soft skills. *Jurnal Abdidas*, 6(5). https://doi.org/10.31004/abdidas.v6i5.1238.