

The Role of Technology in Promoting Teacher Professionalism: An Analysis of Technology Integration in Teaching and Learning in Schools



Achnaf Al Ashbahani FR¹, Matin², Desi Rahmawati³

^{1,2,3}Postgraduate Jakarta State University

ABSTRACT: This study aims to analyze the role of technology in promoting teacher professionalism, focusing on integrating technology in teaching and learning in schools. Through a qualitative approach with a case study design, the research aims to explore the extent to which technology can enhance teaching quality, expand teacher skills, and improve the efficiency of the learning process. Data were collected through in-depth interviews with teachers who have integrated technology into their teaching, accompanied by direct observation and document analysis, to understand the implementation of technology in the context of learning holistically. The results show that integrating technology in teaching and learning in schools significantly positively impacts teacher professionalism. Teachers who actively use technology tend to have broader skills in designing relevant and engaging learning experiences and can provide students with better feedback. Technology also facilitates collaboration among teachers and expands access to educational resources. However, challenges such as limited access and technological readiness, as well as challenges in effectively integrating technology, still need to be addressed to maximize the potential of technology in enhancing teacher professionalism overall.

KEYWORDS: Technology, Teacher Professionalism, Teaching and Learning

INTRODUCTION

In today's digital era, information and communication technology has changed many aspects of life, including education. Technology has become an essential tool in improving the quality of teaching and learning and encouraging teacher professionalism. With technology, teachers have access to a variety of richer educational resources and tools that can help them develop new skills and improve the effectiveness of their teaching (Anderson & Dexter, 2005). However, although technology offers various opportunities, many teachers still need help integrating it into their daily teaching practices. Limited infrastructure, lack of adequate training, and resistance to changes in traditional teaching methods are some of the main obstacles often faced (Tondeur et al., 2017). In education, teacher professionalism includes various aspects such as pedagogical competence, the ability to adapt to change, and a commitment to continuous learning. Professional teachers can integrate technology effectively into their teaching practices and continue to strive to improve their skills and knowledge through training and professional development (Ertmer & Ottenbreit-Leftwich, 2010).

The use of technology in education has been shown to increase accessibility, flexibility, and quality of learning. With technology, teachers can access richer and more varied learning resources, allowing them to deliver subject matter more engagingly and interactively (Koehler & Mishra, 2009). In line with research conducted by Rosmini et al. (2024), it was concluded that the implementation of technology in educational administration also positively impacts teacher professionalism.

The Learning Management System (LMS) is a critical tool in technology integration, which allows teachers to manage learning materials, assess student progress, and communicate with students more effectively. LMS and other digital tools help teachers implement more interactive and collaborative learning methods, which can increase student engagement and motivation (Koehler & Mishra, 2009). In addition, they must use teaching methods that allow students to interact and participate actively and utilize technology to make learning more exciting. Teachers must also be able to evaluate learning well and overcome problems that may arise in implementing the curriculum (Yanti et al., 2024). Teachers who can utilize technology well tend to be more professional because they can adjust teaching methods to individual student's needs and the latest educational technology developments (Hughes, 2005). The strategy for implementing and developing teacher professionalism in ICT must refer to teaching and learning activities (Fitriyadi, H., 2013). Teacher professionalism is needed to improve educational standards (Maharani, R., 2023).

This study explores the role of technology in encouraging teacher professionalism by analyzing how technology is integrated into teaching and learning in schools. The urgency of this study lies in the importance of understanding the factors that influence the

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adoption of technology by teachers, as well as how technology can be used to improve teaching effectiveness. Although technology has great potential to improve the quality of learning and encourage teacher professionalism, the success of its implementation is highly dependent on several key factors. Adequate infrastructure support is essential to ensure that technology can be accessed and used effectively in schools. In addition, ongoing training for teachers is needed to equip them with the skills and knowledge required to use technology in teaching (Tondeur et al., 2017). The literature shows that teachers must be prepared with professional skills involving teaching and technical skills because if teachers are more knowledgeable, they will be successful in implementing technology in the classroom (Hambali et al., 2023).

Previous research has shown that technology has great potential to enhance student interaction and engagement, facilitate access to various learning resources, and support instructional differentiation (Ertmer & Ottenbreit-Leftwich, 2010). However, many teachers need sufficient training to use technology effectively. This lack of exercise often makes teachers insecure and reluctant to try new technology-based teaching methods. Resistance to change in traditional teaching methods is also a significant challenge. Some teachers are more comfortable with conventional teaching methods and reluctant to switch to technology (Hughes, 2005).

This study offers a novelty by explicitly focusing on the dynamics of teacher perceptions in secondary schools in Jakarta and in-depth analyzing the challenges and opportunities faced in this local context. As such, it is expected to significantly contribute to developing more effective education policies and teaching practices.

LITERATURE

1. Education Technology

Technology has become an essential element in modern education, providing various tools and platforms to improve the quality of teaching and learning. In the context of teacher professionalism, technology plays an increasingly crucial role in helping teachers develop new skills, access broader educational information and resources, and improve teaching effectiveness in schools.

Educational technology is a field that focuses on the application of technology to support and improve the teaching and learning process. With the rapid advancement of information and communication technology, educational technology has become an essential tool in the modern education system. The use of technology in education includes various hardware, such as computers, tablets, and projectors, as well as educational software and applications specifically designed to assist the learning process (Agustian, N., & Salsabila, U. H., 2021). Educational technology includes physical tools and learning management systems (LMS), online learning platforms, and various interactive applications designed to make learning more exciting and compelling.

One of the main benefits of educational technology is its ability to increase accessibility and flexibility in learning. With technology, students can access learning materials from anywhere and at any time, which is very beneficial for students with geographical or time constraints. In addition, technology enables more personalized and adaptive learning, where teaching materials and methods can be adjusted to each student's needs and learning pace (Syafriafdi, N., 2020). Educational technology also allows using various media, such as video, audio, and interactive simulations, to help students understand complex concepts more easily and interestingly. Educational technology also plays a vital role in increasing student engagement and motivation. Technological tools such as interactive whiteboards, educational games, and project-based applications can make learning more interactive and collaborative. According to research, using technology in the classroom can increase student participation, motivate them to learn, and help them develop critical thinking and problem-solving skills (Salsabila, U. H., et al., 2023). Technology also allows teachers to provide real-time feedback, which is essential to helping students improve and develop their skills.

However, to achieve these benefits, teachers must have the knowledge and skills to integrate technology into their teaching effectively. The Technology, Pedagogy, and Content Knowledge (TPACK) model developed by Koehler and Mishra (2009) emphasizes that successful technology integration requires a deep understanding of the relationship between technology, pedagogy, and content. Teachers need to know how to select and use the right technology to support their learning objectives and how technology can enhance traditional teaching methods.

Although educational technology offers many benefits, several challenges must be overcome to ensure its success. One of the main challenges is the limited infrastructure, especially in less developed areas. With adequate access to technological devices and a stable internet connection, it is easier for students and teachers to take full advantage of educational technology (Akbar, A., & Noviani, N. 2019). In addition, adequate training for teachers is also an essential factor. Many teachers feel less confident using technology because they need more training. Therefore, schools and governments must provide ongoing and relevant training programs to help teachers develop their technology skills.

It is also essential to consider resistance to change in traditional teaching methods in this digital era. Some teachers may feel more comfortable with the teaching methods they have used for years and are reluctant to try new approaches that involve technology (Hughes, 2005). Providing the proper support, incentives, and concrete evidence of technology's benefits in improving teaching effectiveness and student learning outcomes is essential to overcome this challenge. Overall, educational technology has great potential to transform the way teaching and learning are conducted. By providing access to a broader range of educational resources, increasing student engagement, and enabling more personalized and adaptive learning, technology can help create a more effective

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and enjoyable learning environment. However, to achieve these benefits, addressing the challenges involved is essential in ensuring that teachers have the support and training they need to integrate technology into their teaching successfully.

2. Teacher Professionalism

According to Law of the Republic of Indonesia No. 20 of 2003 concerning the National Education System, Article 39 paragraph (2), states that educators are professional staff who are tasked with planning and implementing the learning process, assessing learning outcomes, providing guidance and training, and conducting research and community service, especially for educators in higher education.

Teacher professionalism is a complex and multidimensional concept, encompassing various aspects involving skills, knowledge, attitudes, and commitment to the teaching profession. Teacher professionalism involves a deep understanding of subject content, pedagogical skills, and the ability to manage classes effectively. According to Dudung (2018), professionalism in teaching is not only related to content knowledge but also to pedagogical knowledge that enables teachers to deliver material in a way that is understandable and relevant to students. In addition, teacher professionalism includes a commitment to continuous learning, where teachers continuously develop their skills and knowledge through training and professional development.

Pedagogical competence is one of the critical elements of teacher professionalism. This includes designing and implementing effective learning using various teaching methods and strategies appropriate to students' needs. As professionals, teachers must be able to identify individual student needs and adjust their teaching approaches to ensure that all students can reach their full potential. Managing a classroom effectively is also an essential part of pedagogical competence. According to Muhson A. (2004), professional teachers must create a positive and supportive learning environment where students feel safe to learn and participate.

A commitment to continuous learning is another important aspect of teacher professionalism. In a rapidly changing world, especially with technological advances and changes in educational curricula, teachers must stay up-to-date with the latest developments in education. This requires involvement in ongoing training and professional development, which can include workshops, courses, and conferences. Research shows that teachers who engage in ongoing professional development tend to be more effective in their teaching and are better able to adopt new practices that can improve student learning outcomes (Guskey, 2002).

A sense of professionalism also involves a high work ethic and a commitment to professional standards. Teachers must demonstrate integrity, honesty, and dedication to their work. This also means that teachers must strive to always provide the best for their students, including preparing lessons well, providing constructive feedback, and supporting students' academic and personal development. Teacher professionalism also means they must be ready to work collaboratively with colleagues, parents, and other community members to create a holistic and supportive learning environment.

According to Kristiawan, M., & Rahmat, N. (2018), professionalism in teaching also includes critical reflection on teaching practices. Professional teachers must continuously evaluate and reflect on their teaching methods, looking for ways to improve the effectiveness and efficiency of teaching. This can be done through classroom observation, self-evaluation, and colleague discussions. Critical reflection helps teachers to recognize their strengths and weaknesses, as well as to identify areas that need improvement.

The importance of teacher professionalism is also recognized in various education policies. Many countries have professional standards for teachers, including pedagogical competence, content knowledge, and professional ethics. These standards guide teachers in carrying out their duties and as a basis for professional evaluation and development. For example, teacher competency standards in Indonesia include four main competencies: pedagogical, personality, social, and experienced (Kemendikbud, 2007). Overall, teacher professionalism is an essential foundation for the quality of education. Professional teachers have the knowledge and skills to teach effectively, a solid commitment to continuous learning, and a high work ethic. They serve as role models for their students, demonstrating how learning is a lifelong process and the importance of dedication and integrity in work. Thus, teacher professionalism not only improves student learning outcomes but also contributes to the development of the broader community.

3. Impact of Technology on Learning

The impact of technology on learning has been the focus of extensive research in recent decades, highlighting the benefits and challenges that come with it. The use of technology in education has brought about significant changes in how students learn, and teachers teach. One of the essential positive impacts is the increased accessibility of education. Technology allows students to access learning materials from various geographical locations, even remote places. Education is no longer confined to a physical classroom; students can learn from home or anywhere via the Internet (Jamun, Y. M., 2018).

In addition, technology has enabled the personalization of learning. With the help of adaptive software and data-driven learning platforms, teachers can provide learning experiences tailored to students' individual needs. For example, computer programs can assess students' skills in real time and adjust the difficulty level of the material presented. This helps students learn independently and overcome difficulties more effectively (Andriani, T., 2016). This personalized learning has increased student motivation and engagement, as they feel more supported and understood in their learning process.

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Increased interactivity is another positive impact of technology on learning. Tools like interactive whiteboards, simulations, and educational games can make learning more engaging and fun. Students can actively participate in the learning process, which can improve comprehension and retention of information (Sung, Chang, & Liu, 2016). Technology also allows for project-based and collaborative learning methods, where students work together to complete an assignment or project, often through an online platform. This helps them develop not only academic skills but also critical social and teamwork skills. Technology also provides excellent benefits when it comes to feedback. Online learning systems can give students immediate feedback on their performance, helping them identify areas for improvement and correct mistakes immediately. This real-time feedback is essential for effective learning as it allows for quick correction and more efficient learning (Wahyudi M. et al., 2024).

However, the impact of technology on learning also has challenges that need to be addressed. One of the main challenges is the digital divide, where not all students have equal access to technology. This can be due to economic factors, geography, or inadequate infrastructure. Some students may need more access to devices and the internet to catch up on their learning (Warschauer & Matuchniak, 2010). Therefore, governments and educational institutions must address this digital divide by providing more equitable access to technology.

Another challenge is the need for adequate training for teachers. Many teachers feel less confident using technology because they need more training. Continuous professional development programs are essential to help teachers integrate technology effectively into their teaching (Akbar, A., & Noviani, N. 2019). In addition, there is a risk that technology can become a distraction if not used properly. Students may be tempted to access irrelevant content or play games during study time, distracting them and reducing learning effectiveness. Overall, the impact of technology on learning is significant, with many benefits that can increase accessibility, personalization, interactivity, and feedback in education. However, challenges such as the digital divide and the need for teacher training must be addressed to ensure that all students can benefit from technology in their learning. With the right approach, technology has great potential to transform education and provide more effective and inclusive learning experiences for all students.

4. Integration of Technology in Teaching and Learning

Technology integration in teaching and learning has become one of the main focuses of educational reform in the 21st century. The use of technology in education is not only about introducing digital devices into the classroom but also about leveraging technology to enhance teaching methods and student learning experiences. Technology has enabled new approaches to teaching that are more interactive, collaborative, and based on individual student needs. According to Sholeh, M. I., & Efendi, N. (2023), the success of technology integration in education depends on a deep understanding of the relationship between technology, pedagogy, and learning content.

One of the main benefits of technology integration is the increased accessibility of learning resources. The Internet and digital devices allow students to access information and learning materials anytime and anywhere. This is very helpful in expanding the reach of education, especially for students who live in remote areas or have physical limitations. According to Subroto, D. E. et al. (2023), access to technology and the Internet can reduce educational disparities by providing equal learning resources for all students. In addition, technology enables distance and online learning, which has become very important during the COVID-19 pandemic.

Technology also enables personalization of learning, allowing teachers to tailor materials and teaching methods to each student's needs, interests, and abilities. Adaptive learning software, such as Khan Academy, uses algorithms to assess student progress and adjust the difficulty level of the material provided (Khan, 2012). Thus, students can learn at their own pace and get the support they need to succeed. Research by Hakim, M. N., & Abidin, A. A. (2024) shows that technology-based personalized learning can improve student learning outcomes, especially in mathematics and science.

Technology integration also increases interactivity in learning. Tools like interactive whiteboards, simulation software, and educational games make learning more engaging and fun. For example, simulations for science experiments allow students to see the results of various scenarios without real risk, improving their understanding of complex concepts (De Jong & Van Joolingen, 1998). In addition, technology enables using project-based learning methods, where students can work together on projects involving research, problem-solving, and presentation of their results using digital tools.

However, technology integration in education also faces various challenges. One of the biggest challenges is the digital divide, where not all students have equal access to technological devices and the internet. This can exacerbate educational inequalities, especially in areas with inadequate technological infrastructure (Warsita, B., 2017). Therefore, governments and academic institutions must invest in technological infrastructure and ensure that all students have adequate access to digital tools.

Another challenge is teacher readiness and competence in using technology. Many teachers feel less confident or lack sufficient skills to integrate technology into their teaching effectively (Syamsuar, S., & Reflianto, R., 2019). Continuous professional development programs and relevant training are essential to help teachers develop the necessary technological skills and integrate digital tools in ways that support pedagogy and content.

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Addressing these challenges requires a holistic approach and comprehensive support. Education policies should include strategies to improve technological infrastructure, provide ongoing training and support for teachers, and develop curricula that effectively integrate technology. With the right approach, technology integration in teaching and learning can have a significant positive impact, improving the quality of education and preparing students for future challenges.

METHOD

This study uses a qualitative approach with a case study method. The qualitative approach was chosen because it allows researchers to gain an in-depth understanding of teachers' experiences and perceptions of the use of technology in teaching. The case study will be conducted in several secondary schools in Jakarta to obtain rich and contextual data. Data were collected through in-depth interviews with ten teachers from various subject backgrounds. Interviews were conducted to explore teachers' views and experiences on technology implementation in their teaching. In addition, an analysis of the latest literature was also undertaken to gain a broader understanding of teacher professional development in the use of technology that is integrated into everyday learning and teaching. This study will explore how technology is integrated into teaching and learning and how it impacts teacher professionalism in several schools. The study will be conducted in several secondary schools located in the city of Jakarta. The selection of this location is based on the variation in technology implementation and the readiness of the infrastructure in the school. Teachers will be interviewed using semi-structured data collection techniques. Interview questions will focus on their experiences and perceptions of technology integration in teaching, challenges faced, and the impact of technology on their professionalism. Interviews will be conducted directly or through communication technology tools, and they will be recorded and transcribed for further analysis.

DISCUSSION

The following are the results of interviews with ten teachers, as seen in Table 1.

Table 1 Conclusion of Interview Result

No	Source Person	Conclusion
1	Teacher A	The teacher revealed that he can access broader educational resources thanks to technology and continuously improve his skills in integrating technology into learning.
2	Teacher B	It is revealed that technology in learning has increased student engagement because they experience new, more interesting, and interactive learning experiences.
3	Teacher C	Revealing that thanks to technology in the form of e-learning platforms, it is possible to monitor individual student progress more efficiently and provide more targeted feedback.
4	Teacher D	Reveals that technology integration in teaching helps teachers prepare students for an increasingly technology-dominated future, enabling them to develop relevant and necessary skills in today's digital age.
5	Teacher E	The teacher said the main challenges faced are limited access to technology for some underprivileged students and a lack of training in the use of technology. They must also ensure the security of student data and find creative ways to overcome technical obstacles that arise.
6	Teacher F	Educational technology allows us to present learning materials more personally to each student, considering the student's learning styles and individual integrity.
7	Teacher G	Technology in education opens up access to various learning materials that were previously difficult to reach, such as online learning videos, thereby increasing the appeal and effectiveness of learning.
8	Teacher H	Technology has great benefits; through digital learning applications, teachers can access more diverse learning resources, collaborate with teachers from all over the world, and enrich teaching practices.

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9	Teacher I	The main challenges teachers face are the rapid acceleration of technology and choosing tools or applications that suit students' needs and the curriculum, and using this technology does not replace social interaction.
10	Teacher J	Technology integration requires increased skills and knowledge, and training teachers to continue improving their ability to utilize technology is essential.

Teacher Professionalism

Teacher Skills Improvement, Technology integration also allows teachers to access more diverse and up-to-date learning resources. With access to the internet and various online educational platforms, teachers can search for additional learning materials, educational videos, simulations, and other resources to enrich their classroom teaching. This helps teachers to update their teaching materials and present the latest information to students, thus keeping up with the latest developments in their field of study.

Enhancing teacher skills through technology integration in education has become a significant phenomenon in the development of the modern education system. With technology increasingly permeating the classroom, teachers now have broader access to educational resources, ranging from innovative learning materials to interactive learning tools. This situation has allowed educators to develop their skills significantly, enabling them to become more adept at utilizing technology as a tool to enhance the teaching and learning process.

Through training conducted by educational institutions and education service providers, teachers can learn about new technologies and how to integrate them into their curriculum. This involves learning about various educational applications and software and effective teaching strategies that can increase student engagement. By having a deeper understanding of technology, teachers can create a more dynamic and responsive learning environment for students' needs.

In addition, collaboration between teachers is also an essential factor in improving their skills. By sharing experiences, ideas, and resources, teachers can inspire and support each other in expanding their repertoire of teaching techniques. Through online forums, discussion groups, or professional workshops, they can continue to learn from each other and collaborate to create a more effective learning environment.

However, challenges also arise in improving teacher skills. Some teachers may need help adapting to technological changes, especially those who have not used digital tools for a long time. Strong support is required from schools and educational institutions to provide adequate training and facilitate this transition process.

Collaboration among Teachers

Preparing Future Teachers, Preparing teachers for the future is critical to ensuring that education continues to be relevant and adaptive to changes in society and technology. As the digital era advances, demands on teachers' skills and knowledge are also increasing. A study by UNESCO highlighted the importance of teachers developing digital literacy, collaboration skills, and the ability to use technology in teaching effectively. Teachers must also prepare students to become knowledgeable, open-minded global citizens who can adapt to rapid change.

Training and professional development are critical factors in preparing teachers for the future. Training programs organized by educational institutions and governments play a vital role in introducing teachers to new concepts, technologies, and innovative teaching practices. A study by Maharani, R. (2023) found that teachers who engage in ongoing training tend to have higher confidence in using technology.

In addition, collaboration between teachers is also an important aspect of preparing for the future. Through collaboration and the exchange of ideas with fellow teachers, they can learn from each other about best practices, effective teaching strategies, and how to overcome the challenges they face. A study published in the journal *Teaching and Teacher Education* found that collaboration between teachers can increase their engagement and motivation in their profession.

Prayogi, R. D. (2020) states that strong support from schools, the government, and the community is needed to prepare teachers for the future. This includes providing adequate resources, good technological infrastructure, and incentives that encourage participation in training and professional development. With the right preparation, teachers will be able to play a crucial role in shaping a brighter and more sustainable future for education.

The Challenges of Technology in Encouraging Teacher Professionalism Towards Integration in Teaching and Learning

The challenges of technology in promoting teacher professionalism toward integration in teaching and learning can be complex and vary depending on the educational context. One major challenge is the need for access to and adequate training in the use of technology in academic settings. Many teachers may need sufficient access to the necessary hardware and software or receive adequate training on integrating technology into their curriculum.

In addition, the rapid pace of technology change can also be a challenge for some teachers. As new devices and applications emerge rapidly, teachers must constantly update their knowledge and skills to stay relevant. This can be overwhelming and challenging,

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especially for teachers who have been teaching without using technology for a long time or are uncomfortable with the rapid pace of change.

In addition, concerns about data security and privacy are also significant challenges in the use of technology in education. Teachers need to understand and follow strict policies related to the use of student data and online security, which can take additional time and resources to manage properly.

Infrastructure limitations can also hinder the adoption of technology in teaching and learning. In less developed areas, internet access may be unstable or non-existent, making technology more accessible to implement.

Finally, there are challenges in ensuring that the integration of technology in teaching and learning truly enhances students' learning experiences. Using technology for technology's sake alone without considering the actual learning objectives and effective teaching methods can produce unsatisfactory results. Of course, certain factors, both opportunities and challenges (obstacles/barriers) and expectations, need to be considered when utilizing ICT in learning activities (Siahaan, S., 2015).

Strong support from schools, educational institutions, and the government is needed to overcome these challenges. This includes providing ongoing training, adequate access to devices and infrastructure, and clear and firm policies related to the use of technology in education. Thus, teachers can more easily overcome these challenges and improve their professionalism in integrating technology into teaching and learning.

CONCLUSIONS

The results of this study suggest that integrating technology into school learning has great potential to improve teacher professionalism and the overall quality of education. By integrating technology, teachers can develop new teaching skills, access more diverse educational resources, increase student engagement, and facilitate collaboration between teachers.

1. The use of technology allows teachers to develop new teaching skills. With access to a variety of digital learning tools and applications, teachers can expand their repertoire in delivering learning materials and creating more interactive learning experiences for students. This helps teachers be more flexible in dealing with their students' diverse learning needs.
2. The integration of technology allows teachers to access more diverse and up-to-date educational resources. Through the Internet and various online educational platforms, teachers can search for additional teaching materials, educational videos, and other resources to enrich their classroom learning. This helps teachers update their teaching materials and present the latest information to students.
3. The use of technology in learning can also increase student engagement. Through interactive software, learning applications, or collaborative platforms, teachers can create more engaging and relevant learning experiences for students. This helps students to learn independently and develop critical skills needed in a technology-driven society.

Technology integration facilitates collaboration among teachers in sharing ideas, resources, and best practices in teaching. Teachers can support each other and enrich their teaching practices through online discussion forums, professional social groups, or educational resource-sharing platforms. Considering the challenges, such as limited infrastructure and lack of adequate training, steps must be taken to overcome these barriers. Thus, technology integration in learning can effectively enhance teacher professionalism and provide quality education for future generations.

REFERENCES

- 1) Andriani, T. (2016). Sistem pembelajaran berbasis teknologi informasi dan komunikasi. *Sosial Budaya*, 12(1), 117-126.
- 2) Agustian, N., & Salsabila, U. H. (2021). Peran teknologi pendidikan dalam pembelajaran. *Islamika*, 3(1), 123-133.
- 3) Akbar, A., & Noviani, N. (2019). Tantangan dan solusi dalam perkembangan teknologi pendidikan di Indonesia. *In Prosiding Seminar Nasional Program Pascasarjana Universitas Pgris Palembang*.
- 4) Anderson, R. E., & Dexter, S. L. (2005). School technology leadership: An empirical investigation of prevalence and effect. *Educational Administration Quarterly*, 41(1), 49-82.
- 5) Aspi, M., & Syahrani, S. (2022). Profesional guru dalam menghadapi tantangan perkembangan teknologi pendidikan. *Adiba: Journal of Education*, 2(1), 64-73.
- 6) Dudung, A. (2018). Kompetensi profesional guru. *JKKP (Jurnal Kesejahteraan Keluarga Dan Pendidikan)*, 5(1), 9-19.
- 7) Ertmer, P. A., & Ottenbreit-Leftwich, A. T. (2010). Teacher technology change: How knowledge, confidence, beliefs, and culture intersect. *Journal of Research on Technology in Education*, 42(3), 255-284
- 8) Fitriyadi, H. (2013). Integrasi teknologi informasi komunikasi dalam pendidikan: potensi manfaat, masyarakat berbasis pengetahuan, pendidikan nilai, strategi implementasi dan pengembangan profesional. *Jurnal Pendidikan Teknologi dan Kejuruan*, 21(3).
- 9) Guskey, T. R. (2002). Professional Development and Teacher Change. *Teachers and Teaching*, 8(3), 381-391.
- 10) Hakim, M. N., & Abidin, A. A. (2024). Platform Merdeka Mengajar: Integrasi Teknologi dalam Pendidikan Vokasi dan Pengembangan Guru. *Kharisma: Jurnal Administrasi dan Manajemen Pendidikan*, 3(1), 68-82.

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- 11) Hambali, U. N., Natsir, R. Y., & Nasir, N. (2023). Tinjauan Literatur tentang Integrasi Teknologi dalam Proses Pembelajaran Keterampilan Bahasa Inggris. *Jurnal Dieksis Id*, 3(2), 128-141.
- 12) Hughes, J. (2005). The role of teacher knowledge and learning experiences in forming technology-integrated pedagogy. *Journal of Technology and Teacher Education*, 13(2), 277-302
- 13) Jamun, Y. M. (2018). Dampak teknologi terhadap pendidikan. *Jurnal Pendidikan dan Kebudayaan Missio*, 10(1), 48-52.
- 14) Kasmawati, Y. (2020). Peningkatan Kompetensi Melalui Kolaborasi: Suatu Tinjauan Teoritis Terhadap Guru. *Equilibrium: Jurnal Pendidikan*, 8(2), 136-142.
- 15) Kemendikbud. (2007). Peraturan Menteri Pendidikan Nasional Republik Indonesia Nomor 16 Tahun 2007 tentang Standar Kualifikasi Akademik dan Kompetensi Guru
- 16) Khan, S. (2012). The One World Schoolhouse: *Education Reimagined*. Twelve.
- 17) Koehler, M. J., & Mishra, P. (2009). What is technological pedagogical content knowledge (TPACK)? *Contemporary Issues in Technology and Teacher Education*, 9(1), 60-70
- 18) Kristiawan, M., & Rahmat, N. (2018). Peningkatan profesionalisme guru melalui inovasi pembelajaran. *Jurnal Iqra': Kajian Ilmu Pendidikan*, 3(2), 373-390.
- 19) Maharani, R. (2023). Pentingnya Profesionalisme Guru Di Era 5.0. *COMMENT: Journal of Community Empowerment*, 3(2), 8-12.
- 20) Muhson, A. (2004). Meningkatkan profesionalisme guru: sebuah harapan. *Jurnal Ekonomi dan Pendidikan*, 1(2).
- 21) Prayogi, R. D. (2020). Kecakapan abad 21: Kompetensi digital pendidik masa depan. *Manajemen Pendidikan*, 14(2).
- 22) Rosmini, H., Ningsih, N., Murni, M., & Adiyono, A. (2024). Transformasi Kepemimpinan Kepala Sekolah pada Era Digital: Strategi Administrasi Pendidikan Berbasis Teknologi di Sekolah Menengah Pertama. *Konstruktivisme: Jurnal Pendidikan dan Pembelajaran*, 16(1), 165-180.
- 23) Salsabila, U. H., Insani, A. P. S., Mustofa, H., Kalma, M. E. Z., & Wibisono, M. I. (2023). Teknologi Pendidikan: Pemanfaatan Teknologi dalam Pendidikan Pasca Pandemi. *Jurnal Dimensi Pendidikan Dan Pembelajaran*, 11(1), 79-88.
- 24) Sholeh, M. I., & Efendi, N. (2023). Integrasi Teknologi dalam Manajemen Pendidikan Islam: Meningkatkan Kinerja Guru di Era Digital. *Jurnal Tinta: Jurnal Ilmu Keguruan Dan Pendidikan*, 5(2), 104-126.
- 25) Siahaan, S. (2015). Pemanfaatan Teknologi Informasi Dan Komunikasi Dalam Pembelajaran: Peluang, Tantangan, Dan Harapan. *Jurnal Teknodik*, 321-332.
- 26) Subroto, D. E., Supriandi, S., Wirawan, R., & Rukmana, A. Y. (2023). Implementasi Teknologi dalam Pembelajaran di Era Digital: Tantangan dan Peluang bagi Dunia Pendidikan di Indonesia. *Jurnal Pendidikan West Science*, 1(07), 473-480.
- 27) Sung, Y. T., Chang, K. E., & Liu, T. C. (2016). The Effects of Integrating Mobile Devices with Teaching and Learning on Students' Learning Performance: A Meta-Analysis and Research Synthesis. *Computers & Education*, 94, 252-275.
- 28) Syafriaedi, N. (2020). Peran teknologi pendidikan dalam pembelajaran. *Al-Aulia: Jurnal Pendidikan dan Ilmu-Ilmu Keislaman*, 6(1), 1-8.
- 29) Syahroni, M., Dianastiti, F. E., & Firmadani, F. (2020). Pelatihan media pembelajaran berbasis teknologi informasi untuk meningkatkan keterampilan guru dalam pembelajaran jarak jauh. *International Journal of Community Service Learning*, 4(3), 170-178.
- 30) Syamsuar, S., & Reflianto, R. (2019). Pendidikan dan tantangan pembelajaran berbasis teknologi informasi di era revolusi industri 4.0. *E-Tech: Jurnal Ilmiah Teknologi Pendidikan*, 6(2).
- 31) Tondeur, J., van Braak, J., Ertmer, P. A., & Ottenbreit-Leftwich, A. (2017). Understanding the relationship between teachers' pedagogical.
- 32) UU Republik Indonesia No. 20 Tahun 2003 tentang Sisdiknas pasal 39 ayat (2),
- 33) Wahyudi, M., Purnama, R. A., Atrinawati, L. H., & Gunawan, D. (2024). Mengeksplorasi Dampak Teknologi Pembelajaran Aktif di Institusi Pendidikan Kejuruan Menengah. *Jurnal MENTARI: Manajemen, Pendidikan dan Teknologi Informasi*, 2(2), 142-153.
- 34) Warsita, B. (2017). Peran dan tantangan profesi pengembang teknologi pembelajaran pada pembelajaran abad 21. *Kwangsan: Jurnal Teknologi Pendidikan*, 5(2), 77-90.
- 35) Yanti, M. Y., Putri, S. Y., & Yani, M. D. (2024). Kompetensi Profesional Guru Penggerak Dalam Penerapan Pembelajaran Kurikulum Merdeka Di Sekolah Dasar. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, 9(1), 1212-1221



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