J L T

THE URGENCY OF DIGITIZING LEARNING FOR MADRASAH ALIYAH ISLAMIC BOARDING SCHOOL STUDENTS IN THE ERA OF SOCIETY 5.0

Dwi Setiawati Radjak[1], Syarifudin Jusuf[2], Andi Darmawan Bongkan[3]
[1]Universitas Islam Negeri Maulana Malik Ibrahim Malang, Indonesia
[2,3]Institut Agama Islam Negeri Manado, Indonesia

ARTICLE INFORMATION	ABSTRACT
	Abstract: Digitized learning in Islamic boarding schools is an opportunity and, at the same time, the challenge of continuing to transform to make the learning process massively more efficient and comprehensive in every aspect of human life. In the current era of disruption, technological and industrial change is facing a significant revolution and is known as the Society 5.0 era. Of course, in facing the era of society 5.0, the world of education has an important contribution to make in adapting to current developments in improving the quality of human resources. This research aims to describe the urgency of digitizing learning for Madrasah Aliyah Islamic Boarding School students in the Society 5.0 era. This research uses a qualitative method with a descriptive approach. Data collection techniques include observation, interviews, and a literature study. The research results show the importance of digitalization learning in the era of society 5.0 in Islamic boarding school-based Madrasah Aliyah, activists and stakeholders in education, get an overview of the application of technology learning, which is more specific to communication tools, the challenges of implementing digitalization learning, and the efforts that need to be made to maximize digitalization learning in Islamic boarding school-based Islamic schools.

INTRODUCTION

Currently, many scientists are conducting research on digitalization and learning in the era of society 5.0 (Zizic et al., 2022). The digitalization of learning in the era of society 5.0 presents significant changes in various aspects, one of which is the world of education (Amarulloh et al., 2020). In the learning context, digitalization is an alternative and new breakthrough for utilizing technological developments with the aim of facilitating the teaching and learning process (Harun, 2021). Ade Octaviany et al. (2022), stated that there is a need to develop human resources in preparation for the era of society 5.0. The emergence of various platforms from technological developments in the era of society 5.0 means that the world of education has an important role in preparing quality human resources that are competitive and have character (Author et al., 2018; Muthohar, 2021; Saragih, 2022).

The era of society 5.0 is an era of massive and comprehensive technological and industrial change in all aspects of human life (Akundi et al., 2022; Özdemir & Hekim, 2018). This era emerged as a development of the industrial revolution 4.0 (Tran et al., 2022) which continues to transform in the 21st century and is considered to be able to degrade the role of

humans (Ghobakhloo et al., 2023; Nastiti & 'Abdu, 2020). Industry 4.0 is an industrial revolution that combines advanced technologies such as AI (artificial intelligence), which focuses on using artificial intelligence, and IoT (internet of things), which is used actively in everyday life (Xu et al., 2021), while the era of society 5.0 is the development of a society centered on and coexisting between technology and humans (Ghobakhloo et al., 2022; Skobelev et al., 2017). In this regard, it is necessary to implement technology and communication in digital learning in the world of education, one of which is Islamic boarding schools (Putri et al., 2022; Qomariyah & Darwis, 2023).

Digital era learning in Islamic boarding school institutions needs development so that it can give a new color to its existence in Indonesia, because in the general public, Islamic boarding school institutions are still considered very backward in mastering technology, such as the use of information technology for education (Arif, 2013). Panut et al., (2021), said that in an effort to strengthen the existence of education in Islamic boarding schools, Law No. 18 of 2019 discusses Islamic boarding schools as the basis for the renewal of Islamic boarding schools in Indonesia, which explains that Islamic boarding schools play a role in the function of education in the modern era, marked by the presence of Islamic boarding schools that use a formal system like schools and madrasah (Samudera, 2023). The importance of education that integrates with an era of increasingly advanced development such as the 5.0 era, emphasizing Islamic education in facing the challenges faced by Industry 4.0 and Society 5.0 (Wisuda & Fatimah, 2023).

Researchers conducted observations and interviews at Madrasah Aliyah, an Arafah Bitung Islamic boarding school. The data obtained reports that the lack of application of technology in Madrasah Aliyah, especially among students, is due to Islamic boarding school policies that limit students from using electronic media. Currently, madrasas exist with the vision of "creating graduates who excel in faith and taqwa as well as science and technology". However, this is not in line with the vision and mission at Madrasah Aliyah Arafah Bitung, even though this vision is aligned with the vision of the city of Bitung, which makes Bitung a digital city. Based on data obtained in the field from several leaders and teaching staff at the Arafah Islamic boarding school foundation, in carrying out daily activities, students or santri are not permitted to use cell phones, while currently in Madrasah there are several lessons that use technology, especially when carrying out online-based exams. Due to limited existing facilities, when madrasah activities require the use of technology, the madrasah collaborates with parents of students or students to bring communication technology in the form of a cellphone to the madrasah for use in carrying out the exam.

Meanwhile, several previous studies show that Islamic boarding school-based digitized learning in the world of formal education, such as madrasah, is still under social control with the demands of the times, which must continue to transform by applying the concept of digital literacy (Azis, 2019; Dewi Rahmawati et al., 2022; Qomariyah & Darwis). However, there is little research that explains the urgency of digitalization learning, especially in the application of Islamic boarding school-based digital literacy concepts in Aliyah madrasas (Karimah et al., 2023). In fact, in the era of society 5.0, digital learning is really needed in a more millennial learning effort to be able to produce students who are intelligent and have character, both in terms of this world and the hereafter (Marzuki et al., 2021; Qomariyah & Darwis, 2023). Apart from that, Islamic boarding schools have an important role in efforts to maintain Islamic identity and values amidst technological developments and social change. Based on the explanation explained, it is important to carry out an in-depth study regarding the urgency of digitizing learning for Madrasah Aliyah Islamic Boarding School students in the Era of Society 5.0.

METHOD

This study employs a qualitative method with a descriptive approach, which allows the researcher to describe, interpret, and analyze phenomena occurring within a social setting in

depth. This method was chosen for its strength in understanding the context and meaning of events or human behaviors in their natural environment without manipulating variables (Creswell & Poth, 2018). The research was conducted at Arafah Islamic Boarding School in Bitung during the first semester of the 2023–2024 academic year, involving tenth-grade students of Madrasah Aliyah Arafah Bitung as the study subjects. This Islamic boarding school was selected as the research site due to its unique characteristics, which are relevant to the study's objectives.

Data collection techniques included participatory observation, in-depth interviews, and a literature review. Participatory observation was carried out to gain a direct understanding of the activities and social interactions within the boarding school. This method allows the researcher to engage directly in the daily lives of the study subjects, capturing data naturally and contextually (Angrosino, 2007). In-depth interviews were conducted to further explore the perspectives and personal experiences of the students that could not be observed directly. The interviews were semi-structured, enabling the researcher to follow the flow of conversation while maintaining focus on the predetermined topics (Kvale, 2007).

In addition, a literature review was conducted to strengthen the field findings with references from relevant literature. The sources used included scholarly journals, books, and recent articles with high validity. The data obtained from observations, interviews, and literature review were then analyzed using thematic analysis. This technique was chosen for its ability to identify, analyze, and report patterns or themes emerging from qualitative data (Braun & Clarke, 2006). Through this analysis, information or data deemed relevant to the research focus will be categorized and interpreted to address the research questions.

RESULT AND DISCUSSION
Application of Technology and Communication Tools in Islamic Boarding Schools

Education The integration of technology in the educational activities of Madrasah Aliyah Arafah, Bitung City, represents a significant step towards aligning traditional Islamic education with the demands of Society 5.0. The dual system, where madrasa activities are conducted in the morning and Islamic boarding school (Islamic boarding school) activities in the evening, presents both opportunities and challenges in the adoption of digital tools. The research highlights that while madrasa teachers primarily focus on general educational curriculum, asatidz (ustadz) at the pesantren emphasize more profound Islamic teachings. This dichotomy necessitates a balanced approach in integrating technology to ensure that both scientific knowledge (Iptek) and faith-based learning (Imtaq) are effectively supported. The study reveals that the digitalization of learning at Madrasah Aliyah has led to increased access to a wider range of educational resources. This shift is crucial in the context of Society 5.0, where technological literacy is essential. However, the implementation of these digital tools requires careful management to ensure that they complement rather than overshadow the traditional values taught in the Islamic boarding school. For example, while digital platforms facilitate access to scientific knowledge, there is a need to develop digital content that aligns with the ethical and spiritual teachings of Islam, ensuring that the students' faith is nurtured alongside their technical skills (Rohman et al., 2023).

The research underscores the importance of collaboration between madrasas and Islamic boarding schools in successfully implementing digitalization efforts. Both educational units must work together to align their policies and strategies with the overarching educational goals that integrate both IMTAQ (Faith and Taqwa) and science and technology (Iptek). This collaborative approach ensures that the digital tools used in both settings are complementary and reinforce the holistic development of students. A significant finding of the study is the emphasis on human resources, particularly policymakers, educators, and students, in driving the successful integration of technology. The study notes that effective collaboration between the madrasah and the Islamic boarding school leadership is critical in shaping policies that support the use of technology while preserving the core values of Islamic education

(Ismunandar & Kurnia, 2023). For example, digital tools must be curated to ensure that they are in line with the ethical standards of the Islamic boarding school, while also being robust enough to support the scientific learning objectives of the madrasah.

The transition to a digitally-driven education system presents several challenges, particularly in an Islamic boarding school setting where traditional values are deeply ingrained. The research identifies that one of the primary challenges is ensuring that the digital tools do not undermine the religious teachings that are central to the pesantren's mission. However, the study also highlights the opportunities that digitalization presents, such as the ability to make learning more interactive, engaging, and accessible to a broader audience. The need for supervision and synergy between the madrasah and Islamic boarding school is paramount in ensuring that digital learning is effectively integrated. The research suggests that by developing a collaborative framework, where both institutions contribute to the design and implementation of digital learning tools, it is possible to create an environment where technology enhances rather than detracts from the students' educational experience. This approach not only ensures that students are well-prepared for the challenges of Society 5.0 but also that they remain grounded in their faith and ethical principles.

Based on the findings, the research proposes several strategic implications for the implementation of digitalization in Islamic boarding schools. Firstly, it is essential to develop training programs for educators in both madrasas and Islamic boarding schools to enhance their digital literacy and ability to integrate technology into their teaching practices effectively. Second, policymakers should consider creating a unified digital platform that supports both scientific and religious education, ensuring that the content is relevant and adheres to Islamic values. Finally, continuous monitoring and evaluation of the digital tools and their impact on students' learning outcomes should be conducted to ensure that the objectives of integrating technology are being met. This involves gathering feedback from students, educators, and policymakers to refine and improve the digitalization process continuously.

Challenges in Implementing Digitalized Learning in Islamic Boarding Schools Boarding school

Madrasah Aliyah Arafah, an institution rooted in Islamic boarding school traditions, aspires to produce graduates who not only possess a deep understanding of Islamic teachings but also embody good morals, live by the Quran, and follow the sunnah of the Prophet Muhammad (Shallallahu Alaihi Wasallam). However, the rapid advancement of technology, particularly the widespread use of communication tools such as cellphones, poses significant challenges in maintaining these traditional values. One of the primary concerns is the potential for moral decline among students, which is seen as a consequence of the misuse of these devices. As highlighted by Ahmad (2023), cellphones can be a double-edged sword; they offer both benefits and risks depending on the user's intentions and actions. The misuse of cellphones has been identified as a key obstacle to moral development in students, as evidenced by numerous incidents reported within the institution. The tension between preserving the moral and ethical framework of Islamic education and embracing the digital tools necessary for modern learning is a recurring theme in this context. Teachers and asatidz (ustadz) are increasingly faced with the challenge of ensuring that students use technology responsibly while adhering to the institution's moral standards. The concern is that, while digital learning is now integral to education, its implementation must be carefully managed to avoid undermining the very values that the boarding school seeks to instill.

The implementation of digitalized learning in Islamic boarding schools like Madrasah Aliyah Arafah has revealed a critical dilemma: how to harness the benefits of technology without compromising the moral integrity of students. Observations and interviews conducted within the school indicate that the presence of cellphones among students has led to numerous cases of misuse, further complicating efforts to foster moral discipline. These findings support the notion that technology, if not properly regulated, can become a significant barrier to the

moral and ethical development of students. Warastri (2023) argues that the era of Society 5.0, where technology is deeply integrated into human life, presents unique challenges for educational institutions, especially those grounded in religious traditions. Islamic boarding schools, which are tasked with not only imparting knowledge but also shaping the character of their students, must navigate these challenges carefully. The potential for technology to distract from or even contradict the moral teachings of the institution is a serious concern that requires thoughtful and strategic responses.

Despite these challenges, the necessity of digitalized learning in today's educational landscape cannot be ignored. The digital era has revolutionized access to information and knowledge, making it easier for students to learn and engage with educational content. For Islamic boarding schools, this presents an opportunity to enhance the educational experience by integrating technology into their curricula. Badi'ah et al. (2021) and Haris (2023) suggest that Islamic boarding schools, including Madrasah Aliyah Arafah, must embrace digitalization to remain relevant and competitive in the modern educational environment. The presence of digital tools should not be viewed solely as a threat to moral education but rather as an opportunity to reinforce the institution's values through carefully curated and supervised content. Students, who have been equipped with strong moral foundations, should be better prepared to handle the potential negative impacts of the internet compared to those who lack such guidance. In this sense, the achievement of the Madrasah's vision and mission—producing morally upright, knowledgeable individuals—can still be realized in a digitalized learning environment.

To successfully implement digital learning while maintaining the moral integrity of students, several strategies need to be considered. Firstly, there must be strict regulations and supervision regarding the use of digital devices within the school environment. This includes setting clear guidelines on acceptable use and monitoring students' online activities to prevent exposure to harmful content. Secondly, the curriculum should be designed to incorporate digital literacy, emphasizing the responsible and ethical use of technology. Educators should also receive training on how to effectively integrate digital tools into their teaching while upholding the school's moral and ethical standards. Moreover, collaboration between educators, parents, and policymakers is crucial in developing a unified approach to digital learning in Islamic boarding schools. By working together, these stakeholders can ensure that the digital tools used in education are aligned with the institution's values and contribute positively to the students' development.

Efforts that need to be made to maximize digital learning in Madrasah Aliyah-Based Islamic Boarding School

The era of Society 5.0 emphasizes the need for expertise across various fields, with a particular focus on adaptive and personalized education systems. In this context, Madrasah Aliyah-based Islamic boarding schools must incorporate advanced technologies such as Artificial Intelligence (AI) to tailor educational experiences to individual student needs. AI can analyze learning patterns, identify gaps, and provide customized curricula that align with contemporary developments. As noted by Fahruroji (2021), the collaboration between madrasahs and Islamic boarding schools is essential in integrating these technologies effectively, ensuring that digital learning not only complements traditional educational methods but also enhances them. Distance learning (daring) has become increasingly relevant, particularly through the use of digital platforms and big data analytics. These tools can significantly improve the effectiveness of education by making it more accessible and responsive to student needs. The current independent curriculum used in madrasahs, which integrates various topics into a more inclusive, flexible, and sustainable learning framework, can greatly benefit from these technological advancements (Radjak et al., 2024). This curriculum supports the idea that learning should not only be about absorbing information but also about engaging with it in a way that prepares students for real-world challenges.

To fully realize the potential of digital learning, there must be a concerted effort to enhance the digital literacy and technological competence of educators. Teachers in Madrasah Aliyah-based Islamic boarding schools must be equipped with the necessary skills to effectively utilize digital tools in their teaching. This includes proficiency in the Internet of Things (IoT), e-learning platforms, digital libraries, and other educational technologies. Humaira and Aprison (2024) and Nasrul et al. (2022) emphasize that educators need to be actively involved in responding to the challenges of the digital era by integrating these technologies into their pedagogy. This shift requires not only technical training but also a mindset change, where educators view technology as an ally in achieving educational goals rather than as a mere tool. Moreover, continuous professional development programs should be established to keep educators up-to-date with the latest technological trends and educational methodologies. This ongoing training will help them stay relevant and effective in their roles, ensuring that students receive a quality education that prepares them for the demands of Society 5.0.

Another critical effort is the implementation of mentoring programs designed to help students make the most of existing technology. These programs should focus on developing students' digital skills, such as compiling a digital portfolio, understanding industry trends, and building professional networks. By engaging with these programs, students can better prepare for their future careers, gaining insights into the professional world and the role that technology plays within it. Additionally, collaborative teaching efforts that involve alumni and industry professionals can provide students with valuable insights and practical experiences. These collaborations can help students develop essential soft skills, such as public speaking, problem-solving, and leadership. By connecting with alumni who have successfully navigated careers in technology, or with industry professionals, students can gain real-world perspectives that complement their academic learning. Such initiatives ensure that students are not only academically prepared but also equipped with the soft skills necessary to thrive in a rapidly evolving technological landscape.

Maximizing digital learning in Madrasah Aliyah-based Islamic boarding schools requires a holistic approach that involves collaboration among all stakeholders, including educators, students, alumni, and industry professionals. This collaborative environment should be fostered through regular interactions, workshops, and seminars that bring together different perspectives and expertise. By creating a learning community that is supportive and collaborative, students are more likely to engage with and benefit from digital learning initiatives. Furthermore, educational institutions should seek partnerships with technology companies and industry leaders to stay abreast of the latest advancements and to provide students with opportunities to apply their learning in real-world contexts. Such partnerships can also facilitate the development of internship programs and other practical experiences that help bridge the gap between academic learning and professional practice.

CONCLUSION

The importance of digitalization in the era of society 5.0 in Islamic boarding school-based Madrasah Aliyah is one of the efforts that must be developed first through innovation and policies from various leaders of both madrasas and Islamic boarding schools, developing human resources by synchronizing the world of education and industry, and making technology a tool for learning activities in the learning process. Because in this activity, the era of society 5.0 is not only about technology but also about how society, in this case students, can use and utilize it wisely to create a more innovative and competitive future. It is not limited to understanding or providing learning theories that refer to it. madrasah and Islamic boarding school curriculum, but what is expected is that the students will be able to think critically and constructively and be able to utilize technology.

REFERENCES

Ade Octaviany, R., Sihotang, W., Simarmata, P. S., Rahman, A., & Muliati, A. (2022). Human Resource Development Strategy as Preparation for The Industrial Revolution Era 5.0. *International Journal of Educational Research & Social Sciences, 3* (3), 1157–1164. https://doi.org/10.51601/ijersc.v3i3.376

Ahmad, J. F. (2023). *Pengaruh Kebiasaan Menggunakan Aplikasi Handphone Terhadap Akhlak Siswa SMK TEKNIKOM CIKARANG* (Doctoral dissertation, Universitas Islam "45" Bekasi).

Akundi, A., Euresti, D., Luna, S., Ankobiah, W., Lopes, A., & Edinbarough, I. (2022). State of Industry 5.0—Analysis and Identification of Current Research Trends. Applied System Innovation, 5 (1). https://doi.org/10.3390/asi5010027

Amarulloh, A., Surahman, E., & Meylani, V. (2020). Digitalisasi dalam Proses Pembelajaran dan Dampaknya terhadap Hasil Belajar Peserta Didik. *BIOEDUKASI: Jurnal Pendidikan Biologi Universitas Muhammadiyah Metro, 11* (1), 1–10. http://dx.doi.org/10.24127/bioedukasi.v11i1.2815

Angrosino, M. (2007). *Doing Ethnographic and Observational Research*. London: SAGE Publications.

Arif, M. (2013). Perkembangan Pesantren di Era Teknologi. *Jurnal Pendidikan Islam, 28*(2), 307-322.

Author, L., Zurqoni, Z., Retnawati, H., Apino, E., & Anazifa, R. D. (2018). Impact of Character Education Implementation : A Goal-Free Evaluation. *Problems of Education in the 21st Century, 76*(6), 881–889. https://www.ceeol.com/search/article-detail?id=941189

Azis, T. N. (2019). Strategi Pembelajaran Era Digital*. Annual Conference on Islamic Education and Social Sains (ACIEDSS 2019), 1* (2), 308–318.

Badi'ah, S., Salim, L., & Syahputra, M. C. (2021). Pesantren dan Perubahan Sosial pada Era Digital. *Analisis: Jurnal Studi Keislaman, 21* (2), 349–364. https://doi.org/10.24042/ajsk.v21i2.10244

Braun, V., & Clarke, V. (2006). Using Thematic Analysis in Psychology. *Qualitative Research in Psychology, 3*(2), 77-101. https://doi.org/10.1191/1478088706qp063oa

Creswell, J. W., & Poth, C. N. (2018). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches (4th ed.)*. Thousand Oaks, CA: SAGE Publications.

Dewi Rahmawati, A., Harun, U., & Hasanah, S. (2022). Upaya Pesantren dalam Mengembangkan Digital Skill Santri (Studi Kasus Pondok Modern Darussalam Gontor Kampus Putri 6 Poso). *Prosiding Kajian Islam Dan Integrasi Ilmu Di Era Society (KIIIES) 5.0*, 482–485.

Fahruroji, A. (2021). Pembelajaran Era Digital (Studi di Pondok Pesantren Kun Karima Kabupaten Pandeglang). *Aksioma Ad Diniyah: The Indonesian Journal Of Islamic Studies, 9* (1).

Ghobakhloo, M., Iranmanesh, M., Morales, M. E., Nilashi, M., & Amran, A. (2023). Actions and Approaches for Enabling Industry 5.0-driven Sustainable Industrial Transformation: A Strategy Roadmap. *Corporate Social Responsibility and Environmental Management, 30* (3), 1473–1494. https://doi.org/10.1002/csr.2431

Ghobakhloo, M., Iranmanesh, M., Mubarak, M. F., Mubarik, M., Rejeb, A., & Nilashi, M. (2022). Identifying Industry 5.0 Contributions to Sustainable Development: A Strategy Roadmap for Delivering Sustainability Values. *Sustainable Production and Consumption, 33*, 716–737. https://doi.org/10.1016/j.spc.2022.08.003

Haris, M. A. (2023). Urgensi Digitalisasi Pendidikan Pesantren di Era Society 5.0 (Peluang dan Tantangannya di Pondok Pesantren Al-Amin Indramayu). *Jurnal Manajemen Pendidikan Islam*, 49–64. https://doi.org/10.30868/im.v4i02.3616

Harun, S. (2021). Pembelajaran di Era 5.0. Pasca Sarjana Universitas Negeri Gorontalo *Prosiding Seminar Nasional Pendidikan Dasar "Merdeka Belajar Dalam Menyambut Era Masyarakat 5.0,"* 265–276.

Humaira, F., & Aprison, W. (2024). Kompetensi Literasi Digital Pendidik di Era Society 5.0. *ADIBA: Journal of Education, 4* (1), 29–38. https://adisampublisher.org/index.php/adiba/article/view/557

Ismunandar, A., & Kurnia, A. (2023). Peningkatan Kemampuan Pendidik di Era Society 5.0. *Jurnal Review Pendidikan Dan Pengajaran, 6* (2), 388–397. https://doi.org/https://doi.org/10.31004/jrpp.v6i2.18234

Karimah, U., Mutiara, D., Rizki, R., & Farhan, M. (2023). Pondok Pesantren dan Tantangan: Menyiapkan Santri Tangguh di Era Society. *Al-Fikri: Jurnal Studi Dan Penelitian Pendidikan Islam, 6*(1), 42. https://doi.org/10.30659/jspi.6.1.42-59

Kvale, S. (2007). *Doing Interviews*. London: SAGE Publications.

Marzuki, M., Santoso, B., & Ghofur, M. A. (2021). Penguatan Peran Pesantren Untuk Membangun Pertahanan Umat Islam Indonesia di Era Society 5.0. *Prosiding Seminar Nasional Sains Teknologi Dan Inovasi Indonesia (SENASTINDO), 3*, 269–278. https://doi.org/10.54706/senastindo.v3.2021.154

Muthohar, A. (2021). Implementation and Development Models of Character Education in School. *Jurnal Penelitian Pendidikan Dan Pembelajaran, 8* (2), 69–82. https://doi.org/10.21093/twt.v8i2.3236

Nasrul, N., Hasnah, S., & Dzakiah, D. (2022). Kompetensi Guru di Era Society 5.0. *Prosiding Kajian Islam Dan Integrasi Ilmu Di Era Society 5.0 (KIIIES 5.0) Pascasarjana Universitas Islam Negeri Datokarama*, 116–120.

Nastiti, F. E., & 'Abdu, A. R. N. (2020). Kesiapan Pendidikan Indonesia Menghadapi Era Society 5.0. *Jurnal Kajian Teknologi Pendidikan, 5* (1), 61–66. http://dx.doi.org/10.17977/um039v5i12020p061

Özdemir, V., & Hekim, N. (2018). Birth of Industry 5.0: Making Sense of Big Data with Artificial Intelligence, "the Internet of Things" and Next-generation Technology Policy. OMICS A Journal of Integrative Biology, 22 (1), 65–76. https://doi.org/10.1089/omi.2017.0194

Panut, P., Giyoto, G., & Rohmadi, Y. (2021). Implementasi Undang-undang Nomor 18 Tahun 2019 tentang Pesantren terhadap Pengelolaan Pondok Pesantren. *Jurnal Ilmiah Ekonomi Islam, 7*(2). https://doi.org/10.29040/jiei.v7i2.2671

Putri, R., Budiarti, N., Sulistyani, E., Anggraini, F., & Citra Marvyna, H. (2022). Pengenalan Teknologi Virtual Reality dan Augmented Reality untuk Meningkatkan Pembelajaran Digital di Pondok Pesantren Al Muin Syarif Hidayatullah. *Communautaire: Journal of Community Service, 01* (02).

Qomariyah, N., & Darwis, M. (2023). Peran Pondok Pesantren Salaf di Era Society 5.0. *Journal of Pesantren Studies, 3* (2), 220–234. https://doi.org/https://doi.org/10.54471/rjps.v3i2.2528

Radjak, D. S., Jusuf, S., Isilly, K., Darmawan Bongkan, A., Ibrahim, M., Aliyah, M., & Bitung, A. (2024). In House Training (IHT) Kurikulum Merdeka di Madrasah Aliyah Arafah Bitung. In *Jurnal Pengabdian West Science, 03* (02).

Rohman, B., Sholichah, A. S., Alam, M., Fauziah, E., & Alwi, W. (2023). Eksistensi Madrasah dalam Meningkatkan Kualitas Pembelajaran di Era Digital Wilayah Wilayah DKI Jakarta dan Banten. *Jurnal Pendidikan Islam, 12* (001), 1181–1204. https://doi.org/https://doi.org/10.30868/ei.v12i001.5244

Samudera, S. A. (2023). Undang-undang Pesantren sebagai Landasan Pembaharuan Pondok Pesantren di Indonesia (Studi Kebijakan UU No. 18 Tahun 2019). *Jurnal Pendidikan Dan Kajian Islam, 2* (2), 186–200. https://doi.org/10.54622/fahima.v2i2.92

Saragih, N. D. (2022). *Menyiapkan Pendidikan dalam Pembelajaran di Era Sosiety 5.0*. http://repository.uhn.ac.id/handle/123456789/7094

Skobelev, P., Skobelev, P. O., & Borovik, S. Y. (2017). On the way from Industry 4.0 to Industry 5.0: from digital manufacturing to digital society. *International, Scientific Journal "Industry 4.0," 2* (6), 307–311. https://www.researchgate.net/publication/356284207

Tran, T. A., Ruppert, T., Eigner, G., & Abonyi, J. (2022). Retrofitting-Based Development of Brownfield Industry 4.0 and Industry 5.0 Solutions. *IEEE Access, 10*, 64348–64374. https://doi.org/10.1109/ACCESS.2022.3182491

Warastri, N. T. (2023). Tantangan dan Upaya Guru Profesional di Era Revolusi 5.0. *Seri Publikasi Pembelajaran, 1* (1), 1–14. https://doi.org/https://doi.org/10.31219/osf.io/uhxpe

Wisuda, A. H., & Fatimah, S. (2023). Towards the Era of Society 5.0: Human Resources Management in Integrated Islamic Schools. *Al-Tanzim: Jurnal Manajemen Pendidikan Islam, 7*(2), 521–536. https://doi.org/10.33650/al-tanzim.v7i2.5432

Xu, X., Lu, Y., Vogel-Heuser, B., & Wang, L. (2021). Industry 4.0 and Industry 5.0—Inception, Conception and Perception. *Journal of Manufacturing Systems, 61*, 530–535. https://doi.org/10.1016/j.jmsy.2021.10.006

Zizic, M. C., Mladineo, M., Gjeldum, N., & Celent, L. (2022). From Industry 4.0 towards Industry 5.0: A Review and Analysis of Paradigm Shift for the People, Organization and Technology. In *Energies* (Vol. 15, Issue 14, pp. 1–20). MDPI. https://doi.org/10.3390/en15145221