JURNAL BASICEDU

Volume 6 Nomor 2 Tahun 2022 Halaman 2953 - 2961

Research & Learning in Elementary Education

https://jbasic.org/index.php/basicedu

The Readiness of Education in Indonesia in Facing The Society Era 5.0

Hikmat✉

Universitas Islam Negeri Sunan Gunung Djati Bandung, Indonesia

E-mail: hikmat@uinsgd.ac.id

Abstrak

Perkembangan teknologi telah menyebabkan pesatnya dinamika transformasi pendidikan. Perkembangan teknologi di dunia digital memunculkan sistem dan metode pembelajaran yang baru. Perkembangan tersebut dapat ditandai dengan munculnya determinasi era globalisasi menuju era Society 5.0. Oleh karena itu, negara Indonesia perlu melihat kesiapan negaranya menghadapi era Society 5.0 untuk sektor pendidikannya. Penelitian ini menggunakan pendekatan kualitatif dan data dari penelitian-penelitian sebelumnya. Hasil penelitian menemukan bahwa perkembangan pendidikan di era Society 5.0 sangat dipengaruhi oleh teknologi. Fenomena ini dapat membantu mengatasi permasalahan pendidikan di masa pandemi Covid-19 karena fokus penggunaan berbagai teknologi, sehingga tidak perlu pendidikan melalui metode tatap muka tradisional.

Kata Kunci: Pendidikan, Masyarakat 5.0, Revolusi Industri 4.0.

Abstract

Technological developments have led to the rapid growth of dynamics in education transformation. Technological developments in the digital world lead to new learning systems and methods. These developments can be marked by the emergence of the determination of the era of globalization towards the era of Society 5.0. Therefore, the Indonesian state needs to see its country's readiness to face the Society 5.0 era for its education sector. This research uses a qualitative approach and data from previous studies. The study results found that education development in the era of Society 5.0 was strongly influenced by technology. This phenomenon can help overcome educational problems during the Covid-19 pandemic because the focus is on using various technologies, so there is no need for education through traditional face-to-face methods.

Keywords: *Education, Society 5.0, Industrial Revolution 4.0.*

✉ Corresponding author :

Email : hikmat@uinsgd.ac.id

DOI : https://doi.org/10.31004/basicedu.v6i2.2526

ISSN 2580-3735 (Media Cetak)

ISSN 2580-1147 (Media Online)

DOI: https://doi.org/10.31004/basicedu.v6i2.2526

INTRODUCTION

The Japanese government coined the term "Society 5.0." Society 5.0 is a concept that is confined to manufacturing factors and addresses social issues through the merging of physical and virtual places Gladden, (2019); Purba et al., (2021); Althabhawi et al., (2022). Society 5.0 has the concept of big data technology collected by the Internet of things (IoT) transformed by Artificial Intelligence (AI) into something that can help people so that life is better Ghosh et al., (2018); Aquilani et al., (2020); Paschek et al., (2022). Society 5.0 will have a profound effect on every facet of life, including health, urban planning, transportation, agriculture, industry, and education (Allam & Dhunny, 2019). Society 5.0 is a concept developed by the Japanese government to make human life more manageable through technological advancements. However, this approach is backed up by considerations of the humanities, ensuring that the technology is implemented in a balanced manner Kumorotomo, (2020); Holroyd, (2022). Numerous future services across multiple industries are required to satisfy the community's definition of a super-smart society. This can be accomplished by having strong technology skills and competent human resources in their respective fields that enable them to practice their professions digitally and contribute to the community's improvement of services (van Zyl et al., 2017).

The investigation revealed that Industry 4.0 has become the goal of technology development in a variety of sectors and countries. Frequently, the human element is disregarded. Thus, when designing, for example, Engineering Design, it is vital to conduct user experience research to ensure that the resulting products and services fit the customer's preferences and expectations and that the results are accurate (Shneiderman, 2020). For instance, the Design Thinking process includes a Sympathize stage, which begins by attempting to empathize with potential users over the product they wish to build. This procedure will determine whether the product or service should be made the subject of the problem or not, and if so, to what extent and with what benefit (Nagamachi & Lokman, 2015).

As a pioneering concept, Society 5.0 aspires to resolve this issue. However, significant improvement, particularly in technology, is required to "revive" this fifth era of society. To carry out a large-scale revolution, sufficient capital is required. In this scenario, the quality of human resources is critical to establishing an integrated system that meets the needs (Tukker & Tischner, 2017). Naturally, if all resources are available, the dream of transforming the globe into Society 5.0 becomes a possibility. This is conceivable in light of the rapid technological advancements occurring throughout the world, highlighted by technical breakthroughs that improve human work and life (Huang & Rust, 2018).

Currently, education in Indonesia is entering the 4.0 era. The current trend of Indonesian education is online learning which uses the internet to liaison teachers and students. Technology development seems to be a business opportunity in education by establishing online-based tutoring (Thaipisutikul & Tuarob, 2017). In addition, technological developments have also changed the order of education in Indonesia, for example, 1) Since 2013, the national examination system has changed from a paper-based test to an online-based test (Al-Qdah & Ababneh, 2017). 2) The admission system for new student admissions from elementary school to university level in Indonesia has been carried out online, from registration to admissions announcement (Sujarwo et al., 2020). Education has several scope definitions. Education is an effort made to develop the potential that exists in humans. Education, according to Sujarwo et al., (2020), can be described in two ways. The first perspective is social (Finnegan, 2018). Society views education as a process of inheritance or distribution of culture that continuously contains cultural values by the older generation to the younger generation so that society's survival can apply (Inglehart, 2018).

The second point of view is also towards the individual. Continuing from the individual point of view, education is a process of awakening and polishing the potentials in humans to realize particular abilities to ensure a balanced and everyday human life (Montessori, 2015).

Apart from developing the potential that exists in individuals, education also allows humans to interact. Robiah defines education as the interaction between individuals with other individuals or interactions between

individuals and certain social groups (Leask, 2015). In the educational process, there is an interaction, namely communication and communication between humans and humans, whether formal or informal, designed or not, which ultimately leads to the development of the whole human being and human groups. However, to re-establish the educational process, the curriculum components need to be given attention and support for the process's continuity (Dockett & Einarsdóttir, 2017).

The role of teachers or instructors in the Industrial Revolution 4.0 era must be watched out for. Educators should focus only on transferring knowledge and emphasizing character, morals, and exemplary education. This is because the transfer of knowledge can be replaced by technology. However, applying soft skills and hard skills cannot be replaced with sophisticated tools and technology (Cacciolatti et al., 2017). With the birth of society 5.0, it is expected to create technology in education that does not change the role of teachers or instructors in teaching moral education and is exemplary for students. The purpose of this paper is to determine Indonesia's readiness to face society 5.0 in the field of education.

METHOD

This research will be carried out using a qualitative approach as the method (Guest et al., 2020). The data obtained in this study came from previous studies or studies as secondary data. After the data is collected, the next step is to analyze the existing data. The results of the analysis will provide the desired conclusion by the researcher.

RESULT AND DISCUSSION

Education in the Era of Society 5.0

Many challenges and changes must be made in this era of society 5.0. Including what must be done by the education unit as the main gate in preparing excellent human resources. In 2019, the Japanese government launched the period of super-smart society (society 5.0), which was formed in response to the disruption produced by industrial revolution 4.0, which created complicated and ambiguous uncertainty (VUCA). It is feared that the invasion will undermine the human character values that have been preserved thus far. In the era of society 5.0, education is critical for enhancing the quality of human capital. Along with education, various aspects and stakeholders, such as the government, Community Organizations (Ormas), and the entire community, are excited about the impending period of society 5.0. "To prepare for the period of society 5.0, educational units must likewise undergo a paradigm shift in their instructional approach. Among them, instructors diminish their position as distributors of instructional materials and instead serve as an inspiration for student creativity. Educators act as facilitators, tutors, inspirations, and true learners who motivate students to "*Merdeka Belajar*".

Society 5.0 is a society capable of resolving a variety of challenges and social problems through the application of multiple innovations developed during the industrial revolution 4.0, such as the Internet of Things (internet for everything), Artificial Intelligence (artificial intelligence), Big Data (massive amounts of data), and robots. Society 5.0 can alternatively be regarded as a notion for a human-centered and technologically advanced society.

To survive in this era of civilization 5.0, six fundamental literacy skills are required, including data literacy, or the capacity to read, analyze, and utilize large amounts of data (big data) in the digital world. Then there's technological literacy, understanding how machines function, and technological applications (coding, artificial intelligence, machine learning, engineering principles, biotech). Finally, there is human literacy, which includes the humanities, communication, and design. As instructors in a civilization 5.0, teachers must possess digital literacy and the ability to think creatively. According to Sudibjo et al., (2019); Fajrussalam et al., (2020); Dwiningrum, (2021), Director of Hafecs (Highly Functioning Education Consulting Services), instructors are expected to be more imaginative and active in the classroom during the era of society 5.0.

DOI: https://doi.org/10.31004/basicedu.v6i2.2526

Thus, educators must employ three strategies in the era of civilization 5.0: the Internet of Things (IoT) in education, virtual/augmented reality in education, and the use of Artificial Intelligence (AI) in education to determine student learning needs.

Additionally, educators must possess 21st-century life skills, which include leadership abilities, digital literacy, communication, emotional intelligence, entrepreneurship, global citizenship, teamwork, and problem-solving. In twenty-first-century education, the concentration on expertise is currently recognized as 4C, which stands for creativity, critical thinking, communication, and cooperation," he noted. Educators in the society 5.0 century must be driving teachers who prioritize students over themselves, take the initiative to make changes to their students, take action without prompting, continue to innovate, and take sides with students. However, with this change, many have questioned whether the role of the teacher can be replaced by technology? However, a teacher's position does not exist in technology, including direct interaction in the classroom, the emotional bonding between teachers and students, character building, and teacher modeling.

According to Donaldson et al.,(2015), optimizing education is one of the achievements of happiness and welfare for the community. High-quality education reflects the existence of a group of individuals who are advanced, peaceful, and focused on constructive traits (Wen et al., 2018). Education is also used as a driving force for culture and habits in the meaning of the 1945 Constitution in the fourth paragraph, implying that educating the nation's life is a form of solid burden in achieving virtue for the Indonesian government. According to Gürdür Broo et al., (2021), education has developed rapidly, along with the growing technology. This can happen due to systems and learning methods supported by the digital world's technology. This development is marked by the determination of the era of globalization. Fukuda, (2020) argues this determination of globalization is marked in the industrial era 5.0. The industrial revolution 5.0 occurred because of the impact of the 4.0 revolution. Society 5.0 can be defined as a society in which every requirement must be fitted to the lifestyle standards of each community (lifestyle) and where products and services are of high quality and create a sense of comfort to all. Sundari in Dewadi said that Indonesia had entered an era of digitalization and automation. However, not all elements of society are aware of the impact of these changes. The facts of the change are still often debated.

The era of society 5.0 is a solution to public anxiety about the era of the industrial revolution 4.0 regarding technology which will increasingly replace human labor, which results in reducing employment opportunities, the era of society 5.0 is very much expected to be able to reduce the gap that occurs between social and economic problems in the next ten years or even more.

Additionally, educators must possess 21st-century life skills, which include leadership abilities, digital literacy, communication, emotional intelligence, entrepreneurship, global citizenship, teamwork, and problem-solving. In twenty-first-century education, the focus of expertise is currently recognized as the 4Cs, which include creativity, critical thinking, communication, and cooperation.

Educators in the society 5.0 century must be driving teachers who prioritize students over themselves, take the initiative to make changes to their students, take action without being asked, continue to innovate, and take sides with students. "However, with this change, many are questioning whether the role of teachers can be replaced by technology? However, a teacher's position does not exist in technology, including direct interaction in the classroom, the emotional bonding between teachers and students, character building, and teacher modeling.

A country's success in navigating the 5.0 industrial revolution is equally contingent upon the quality of educators, such as teachers. Teachers must develop new abilities and adapt to emerging technologies and global issues. Each educational institution must now develop a new direction and literacy in education. The traditional literacy based on reading, writing, and mathematics must be reinforced by the development of new literacy, specifically data literacy, technology, and human resources. Data literacy refers to the capacity to comprehend, evaluate, and utilize data from a digital environment. Then, technological literacy refers to the capacity to

DOI: https://doi.org/10.31004/basicedu.v6i2.2526

comprehend mechanical systems and work-related technology. Meanwhile, human resource literacy refers to the capacity to connect effectively, be flexible, and possess character.

To prepare for the industrial revolution 5.0, education is required to develop generations that are creative, innovative, and competitive. This can be accomplished by optimizing the use of technology as an educational tool with the expectation of generating output that can either follow or influence the course of history. Indonesia, like the rest of the globe, has to increase the quality of graduates to meet the expectations of the modern workplace and digital technology.

Education 5.0 is a reaction to the needs of the fifth industrial revolution, in which people and technology work collaboratively to generate new opportunities. Fisk in Arjunaita explains "that the new vision of learning promotes learners to learn not only skills and knowledge that are needed but also to identify the source to learn these skills and knowledge". Nonetheless, Togo & Gandidzanwa,(2021) identifies nine patterns or tendencies in education 5.0, as follows:

1. First, study in a different location and at a different time. Students will have additional opportunities to learn at non-traditional times and locations. E-learning enables distant and self-directed learning.
2. Second, individual education. Students will learn using adaptive learning tools that are tailored to their skills. This demonstrates that students at higher levels are presented with more difficult tasks and questions once they have demonstrated a certain level of competency. Students who are having difficulty with the topic will receive additional practice opportunities until they achieve the appropriate level. Students will receive positive reinforcement throughout the educational process.
3. Third, students have a say in how they learn. While each subject taught has the same objective, the path to that objective may vary for each student.
4. Fourth, is project-based learning. Students today must be adaptable to project-based learning as well as to work environments.
5. Fifth, field experience. Technological advancements enable effective domain-specific learning, creating more room for developing abilities that require both student knowledge and face-to-face contact.
6. Sixth, data interpretation. Computer technology ultimately supplanted manual (mathematical) analysis jobs, handling any statistical analysis, defining and analyzing data, and forecasting future trends.
7. Seventh, various assessments. Assessing pupils' abilities using traditional evaluation procedures such as question and response will become obsolete or insufficient. Assessments must evolve; students' factual knowledge can be assessed throughout the learning process, and their ability to apply that knowledge can be evaluated as they work on their field projects.
8. Eighth, student involvement. Participation of students in the development of instructional materials or curriculum is critical.
9. Finally, mentoring. Mentoring or mentoring pupils is critical for developing their ability to study independently.

According to Rahayu (2021), in the last two years, education in Indonesia has experienced new dynamics, namely the change of the original era of the industrial revolution 4.0 to the era of society 5.0. The development of information technology is now considered the opening of the gates of civilization in the era of society 5.0. The situation that occurred in the era of society 5.0 can be seen from the change in social functions towards the function of information technology in every activity of life in various aspects, including education (Rahayu, 2021). The use of online-based learning and learning media is one of the characteristics that appear in the era of society 5.0 education and can maintain the function of education today. Education is one of the social functions that go hand in hand with civilization, including civilization in society 5.0. Article 3 concerning the National Education System aims to develop all the potential possessed by students as a whole, including physical, psychological, physical, spiritual, and social aspects. Students have their uniqueness in each educational unit. The Minister of Education seeks to facilitate the development and guidance of unique students to have superior values in meeting the community's social needs.

DOI: https://doi.org/10.31004/basicedu.v6i2.2526

As a pioneering concept, Society 5.0 aspires to resolve this issue. However, significant improvement, particularly in technology, is required to "revive" this fifth era of society. To carry out a large-scale revolution, sufficient capital is required. In this scenario, the quality of human resources is critical to establishing an integrated system that meets requirements. Naturally, if all resources are available, the dream of transforming the globe into Society 5.0 becomes a possibility. This is conceivable given the rapid pace of technical growth in all parts of the world, which is characterized by technological breakthroughs that improve human work and living.

The Role of the World of Education in the Era of Society 5.0

In the era of society 5.0, education is critical for enhancing the quality of human capital. Along with education, a variety of aspects and stakeholders, including the government, community organizations, and the general public, welcome the impending period of society 5.0. To address the educational difficulties posed by Industrial Revolution 4.0 and Society 5.0, 21st-century living skills, or 4C, have been developed (Creativity, Critical Thinking, Communication, Collaboration).

Meanwhile, in the 21st-century, students are expected to have 6 Basic Literacy skills (numeric literacy, scientific literacy, information literacy, financial literacy, cultural literacy, and citizenship). Basic literacy and other competencies include thinking critically, reasoning, being creative, communicating, collaborating, and having problem-solving skills. And most importantly, have the behavior (character) that reflects the profile of Pancasila students, such as curiosity, initiative, persistence, adaptability, leadership, social and cultural awareness.

Society 5.0 is a society capable of resolving a variety of challenges and social problems through the application of multiple innovations developed during the industrial revolution 4.0, such as the Internet of Things (internet for everything), Artificial Intelligence (artificial intelligence), Big Data (massive amounts of data), and robots. Society 5.0 can alternatively be regarded as a notion for a human-centered and technologically advanced society. There have been changes in education in the 20th and 21st centuries. In 20th Century Education, education focuses on children's information sourced from books. And tends to focus on local and national areas. While the era of 21st Century Education focuses on all ages, each youngster is a member of the learning community. Learning occurs through a variety of channels, including books and the internet, as well as numerous technological and information platforms and global curricular advancements. It is spelled "Merdeka Belajar" in Indonesia.

As educators in a society 5.0, educators must possess digital literacy and the ability to think creatively. According to Darmaji et al., (2019), Director of Hafecs (Highly Functioning Education Consulting Services), educators must be more imaginative and dynamic in their classroom instruction in the period of society 5.0 (society 5.0). Thus, educators must employ three strategies in the era of society 5.0, including the Internet of Things (IoT) in the world of education, virtual/augmented reality in education, and the use of artificial intelligence (AI) in education to identify and answer students' learning needs.

According to the World Economic Forum's (WEF) 2020 research, ten primary abilities are required to succeed in the Industrial Revolution 4.0 era, including the ability to solve complex problems, critical thinking, creativity, human management skills, the ability to coordinate with others, emotional intelligence, the ability to assess and make decisions, service orientation, negotiation skills, and cognitive flexibility. This ability is also relevant in dealing with Society 5.0. To establish an environment in which students can explore the concepts of knowledge and creativity. Educators can use a variety of different learning models, including exploration, project-based, problem-based, and inquiry-based learning. These multiple models encourage students to build creativity and think critically. Learning in the 4.0 revolution era in dealing with Society 5.0, especially during the Covid-19 pandemic, can apply hybrid / blended learning. Dikti also provides various supports to the world of education by providing platforms for online learning, such as:

1. Cooperating with telecommunications providers to seek affordable internet costs,

2. Provide opportunities to organize credit recognition programs between universities through online learning.
3. Dikticontinues to provide lecturers training to sustain online learning materials.

The concepts of Industry 4.0 and Society 5.0 have in common, focusing on developing and utilizing technologies such as the Internet of things (IoT), Artificial Intelligence, and Big Data. The concept of Industry 4.0 and Society 5.0 has a difference where the orientation of industry 4.0 focuses on developing and utilizing technology for productivity and business processes. At the same time, Society 5.0 is oriented towards developing and using technology for better community life. The realization of the Community 5.0 concept leads to achieving the Sustainable Development Goals (SDGs). Strategies that can be taken by educational institutions such as universities can be done by increasing productivity in the fields of research, service, and innovation-based research that leads to the formation of the Smart City/Smart Campus concept. Strengthening cooperation at national and international levels and conducting competency training on a national and international scale to support the number of graduate profiles that suit the needs.

CONCLUSION

Education 5.0 describes various methods of incorporating technological sophistication into learning, whether physically or not. Era 5.0 represents a quantum leap forward from era 4.0, as it integrates neuroscience, cognitive psychology, and educational technology through the use of web-based and mobile technologies, including applications, hardware, and software. Education 5.0 is a phenomenon that emerges in response to the needs of the 5.0 industrial revolution, in which humans and robots collaborate to develop solutions, address various problems, and identify innovative possibilities for modern human life.

REFERENCES

Al-Qdah, M., & Ababneh, I. (2017). Comparing online and paper exams: Performances and perceptions of Saudi students. *International Journal of Information and Education Technology*, *7*(2), 106.

Allam, Z., & Dhunny, Z. A. (2019). On big data, artificial intelligence and smart cities. *Cities*, *89*, 80–91.

Althabhawi, N. M., Zainol, Z. A., & Bagherib, P. (2022). Society 5.0: A New Challenge to Legal Norms. *Sriwijaya Law Review*, *6*(1), 41–54.

Aquilani, B., Piccarozzi, M., Abbate, T., & Codini, A. (2020). The role of open innovation and value co-creation in the challenging transition from industry 4.0 to society 5.0: Toward a theoretical framework. *Sustainability*, *12*(21), 8943.

Cacciolatti, L., Lee, S. H., & Molinero, C. M. (2017). Clashing institutional interests in skills between government and industry: An analysis of demand for technical and soft skills of graduates in the UK. *Technological Forecasting and Social Change*, *119*, 139–153.

Darmaji, D., Mustiningsih, M., & Arifin, I. (2019). Quality Management Education in the Industrial Revolution Era 4.0 and Society 5.0. *5th International Conference on Education and Technology (ICET 2019)*, 565–570.

Dockett, S., & Einarsdóttir, J. (2017). Continuity and change as children start school. In *Pedagogies of Educational Transitions* (pp. 133–150). Springer.

Donaldson, S. I., Dollwet, M., & Rao, M. A. (2015). Happiness, excellence, and optimal human functioning revisited: Examining the peer-reviewed literature linked to positive psychology. *The Journal of Positive Psychology*, *10*(3), 185–195.

Dwiningrum, S. I. A. (2021). Strengthening resilience for learning transformation and anticipatory education in the era of society 5.0. *Educational Innovation in Society 5.0 Era: Challenges and Opportunities: Proceedings of the 4th International Conference on Current Issues in Education (ICCIE 2020), Yogyakarta, Indonesia, 3-4 October 2020*, 11.

Fajrussalam, H., Mansyur, A. S., & Zaqiah, Q. Y. (2020). Gaining Education Character Based on Cultural Sundanese Values: The Innovation of Islamic Education Curriculum in Facing Era Society 5.0. *Jurnal Iqra': Kajian Ilmu Pendidikan*, *5*(1), 104–119.

Finnegan, R. (2018). *Oral poetry: its nature, significance and social context*. Wipf and Stock Publishers.

Fukuda, K. (2020). Science, technology and innovation ecosystem transformation toward society 5.0. *International Journal of Production Economics*, *220*, 107460. https://doi.org/https://doi.org/10.1016/j.ijpe.2019.07.033

Ghosh, A., Chakraborty, D., & Law, A. (2018). Artificial intelligence in Internet of things. *CAAI Transactions on Intelligence Technology*, *3*(4), 208–218.

Gladden, M. E. (2019). Who will be the members of Society 5.0? Towards an anthropology of technologically posthumanized future societies. *Social Sciences*, *8*(5), 148.

Guest, G., Namey, E., & Chen, M. (2020). A simple method to assess and report thematic saturation in qualitative research. *PloS One*, *15*(5), e0232076.

Gürdür Broo, D., Boman, U., & Törngren, M. (2021). Cyber-physical systems research and education in 2030: Scenarios and strategies. *Journal of Industrial Information Integration*, *21*, 100192. https://doi.org/https://doi.org/10.1016/j.jii.2020.100192

Holroyd, C. (2022). Technological innovation and building a 'super smart'society: Japan's vision of society 5.0. *Journal of Asian Public Policy*, *15*(1), 18–31.

Huang, M.-H., & Rust, R. T. (2018). Artificial intelligence in service. *Journal of Service Research*, *21*(2), 155–172.

Inglehart, R. (2018). *Culture shift in advanced industrial society*. Princeton University Press.

Kumorotomo, W. (2020). Envisioning Agile Government: Learning From the Japanese Concept of Society 5.0 and the Challenge of Public Administration in Developing Countries. *Annual Conference of Indonesian Association for Public Administration (IAPA 2019)*, 144–163.

Leask, B. (2015). *Internationalizing the curriculum*. Routledge.

Montessori, M. (2015). *To educate the human potential*. Ravenio Books.

Nagamachi, M., & Lokman, A. M. (2015). *Kansei innovation: practical design applications for product and service development* (Vol. 32). CRC press.

Paschek, D., Luminosu, C.-T., & Ocakci, E. (2022). Industry 5.0 Challenges and Perspectives for Manufacturing Systems in the Society 5.0. In *Sustainability and Innovation in Manufacturing Enterprises* (pp. 17–63). Springer.

Purba, D., Juantara, B., & Bulan, I. (2021). *Educational Innovation in Society 5.0 Era Challenges and Opportunities*.

Rahayu, K. N. S. (2021). Sinergi Pendidikan Menyongsong Masa Depan Indonesia Di Era Society 5.0. *Edukasi: Jurnal Pendidikan Dasar*, *2*(1), 87–100.

Shneiderman, B. (2020). Bridging the gap between ethics and practice: guidelines for reliable, safe, and trustworthy human-centered AI systems. *ACM Transactions on Interactive Intelligent Systems (TiiS)*, *10*(4), 1–31.

Sudibjo, N., Idawati, L., & Harsanti, H. G. R. (2019). Characteristics of Learning in the Era of Industry 4.0 and Society 5.0. *Advances in Social Science, Education and Humanities Research*, *372*(1), 276–278.

Sujarwo, S., Sukmawati, S., Akhiruddin, A., Ridwan, R., & Suharti Siradjuddin, S. S. (2020). An Analysis of University Students' Perspective On Online Learning in The Midst of Covid-19 Pandemic. *Jurnal Pendidikan Dan Pengajaran*, *53*(2), 125. https://doi.org/10.23887/jpp.v53i2.24964

Thaipisutikul, T., & Tuarob, S. (2017). MOOCs as an intelligent online learning platform in Thailand: Past,

present, future challenges and opportunities. *2017 10th International Conference on Ubi-Media Computing and Workshops (Ubi-Media)*, 1–5. https://doi.org/10.1109/UMEDIA.2017.8074143

Togo, M., & Gandidzanwa, C. P. (2021). The role of Education 5.0 in accelerating the implementation of SDGs and challenges encountered at the University of Zimbabwe. *International Journal of Sustainability in Higher Education*, *22*(7), 1520–1535. https://doi.org/10.1108/IJSHE-05-2020-0158

Tukker, A., & Tischner, U. (2017). *New business for old Europe: product-service development, competitiveness and sustainability*. Routledge.

van Zyl, E. S., Mathafena, R. B., & Ras, J. (2017). The development of a talent management framework for the private sector. *SA Journal of Human Resource Management*, *15*(1), 1–19.

Wen, H., Xiao, Y., Hui, E. C. M., & Zhang, L. (2018). Education quality, accessibility, and housing price: Does spatial heterogeneity exist in education capitalization? *Habitat International*, *78*, 68–82. https://doi.org/https://doi.org/10.1016/j.habitatint.2018.05.012