Global Journal of
Education and Social Development
Volume 2, Number 1, 2023

Integrating Technology and Human Values in Primary Education Toward the Society 5.0 Era

Dila Rahmaniyah[1]

[1] Universitas Islam Negeri Kiai Ageng Muhammad Besari Ponorogo, Ponorogo, Indonesia

Abstract

Article history:
Received: January 5, 2023
Revised: March 7, 2023
Accepted: May 3, 2023
Published: June 30, 2023

Keywords:
Artificial Intelligence,
Basic Education,
Digital Adaptation,
Human Literacy,
Society 5.0.

Identifier:
Zera Open
Page: 1-13
https://zeraopen.com/journal/gjes

The Industrial Revolution 4.0 era marked a major change in the global education system with the arrival of digital technologies such as Artificial Intelligence (AI), Big Data, and the Internet of Things (IoT). This change demands a new paradigm in learning that is not only oriented towards mastering technology, but also on the formation of human values and social character of students. The concept of Society 5.0 is present as a solution that places humans at the center of technological advancement, so that education is expected to be able to balance digital innovation with strengthening moral, ethical, and empathetic values. This study uses a literature study approach by analyzing various scientific literature published in the last five years to identify the direction of transformation of basic education in Indonesia. The results of the study show that the transformation of learning towards Society 5.0 must include increasing digital literacy, strengthening teacher competence, and developing technology-based adaptive curriculum. In addition, the integration of humanistic values is needed to create students who are not only intellectually intelligent, but also have character, ethics, empathy, and are able to utilize technology for progress and common welfare.

©2023 The Author(s).
This is an open-access article under CC-BY-SA license (https://creativecommons.org/licence/by-sa/4.0/)

1. Introduction

The rapid development of digital technology has fundamentally changed the social, economic, and educational order. The era of the Industrial Revolution 4.0 was marked by the integration of advanced technologies such as the Internet of Things (IoT), Artificial Intelligence (AI), Big Data, and Cloud Computing that created seamless connectivity between humans and machines (Papadopoulos et al., 2022). This transformation requires adaptive, creative, and technologically literate human resources to be able to compete in a globally automated world. However, behind these advances, new challenges have emerged such as digital inequality, degradation of human values, and a decline in the relevance of traditional curricula to the needs of the 21st century (Alvianto & Wibawa, 2022).

In response to the complexity of the era of disruption, Japan introduced the concept of Society 5.0 in 2016 as a paradigm of a super smart society that places humans at the center of technological development (Fukuyama, 2018). Society 5.0 seeks to integrate physical space and cyberspace to create a balance between economic progress and social problem solving. Through the use of AI and big data, people are expected to enjoy a more comfortable, efficient, and sustainable life (Konno & Schillaci, 2021). In the context of education, this concept emphasizes the importance of a human-centered learning approach that balances technological capabilities with the strengthening of moral, ethical, and empathetic values (Teknowijoyo & Marpelina, 2022).

The transformation of education towards Education 4.0 is the first step towards Society 5.0. Education 4.0 carries a learning model that is collaborative,

project-based, adaptive, and supported by digital technology (Sabaruddin, 2022). The learning process is no longer teacher-centered, but student-centered, where students play an active role as knowledge creators. Teachers function as facilitators and mediators in a dynamic digital learning environment. According to Pratama and Wibawa (2022), the integration of AI, e-learning platforms, and interactive technology in the classroom has opened up new opportunities to increase the effectiveness and personalization of learning. However, on the other hand, inequality of internet access and teachers' digital competence are still the main challenges in Indonesia.

The condition of national education shows that there is a considerable gap in the face of this global change. Alvianto and Wibawa (2022) reported that most basic education institutions in Indonesia are not fully prepared in terms of infrastructure, technological competence, and digital literacy. In addition, Supriadi et al. (2022) emphasized that the application of AI in the world of education is still limited to administrative and evaluative aspects, and has not been thoroughly integrated into the learning process. Therefore, the development of an adaptive curriculum that combines technology and human values is an urgent need.

In the context of basic education, technology-based approaches must remain oriented towards character building, critical thinking development, and the improvement of new literacy (data literacy, technology literacy, and human literacy). Hermawan and Wibawa (2022) highlight the importance of collaboration between digital technology and character education so that students are not only technically competent, but also empathetic and socially responsible. The same thing was

expressed by Handayani and Muliastrini (2020) that education in the disruptive era must be directed to grow a generation that is able to adapt to technology without losing its human value.

Furthermore, national policies such as Freedom of Learning launched by the Ministry of Education, Culture, Research, and Technology are progressive steps towards Society 5.0. This program emphasizes curriculum flexibility, strengthening teacher competence, and utilizing digital technology as an integral part of the learning process (Kadarisman et al., 2022). However, to make Indonesian education truly ready to face a super-intelligent society, a systemic strategy is needed that integrates technology, policies, and a culture of lifelong learning. Taking into account this background, this study aims to analyze the essence of learning in the disruptive era towards Society 5.0 from the perspective of basic education in Indonesia, as well as identify strategies to strengthen the quality of education through the integration of technology, AI, and human values. This study is expected to make a conceptual and practical contribution to national education reform in realizing superior, adaptive, and characterful human resources in the Society 5.0 era.

2. Methods

This research uses a library research approach. This approach was chosen because the research focuses on the study and analysis of theories, previous research results, and education policy documents relevant to learning topics in the disruptive era towards Society 5.0 in the context of basic education in Indonesia. Data in this study were obtained from various secondary literature sources, such as national and

international scientific journals, seminar proceedings, academic books, and official reports published in last five years. The data collection process was carried out through searching for articles in scientific databases such as Google Scholar, ResearchGate, and Elsevier using keywords related to Industrial Revolution 4.0, Education 4.0, Society 5.0, digital transformation in education, and AI in learning.

The selected literature is a scientific work that is directly related to the research theme and has gone through a peer-review process. Sources that are opinionated or do not meet academic criteria are excluded from the analysis. All data collected were analyzed in a qualitative descriptive manner by reading, understanding, and interpreting the content of the literature to identify patterns, tendencies, and relationships between the concepts of Industrial Revolution 4.0, Society 5.0, and basic education. The analysis is carried out through the stages of data reduction, data presentation, and conclusion drawn. Data reduction was carried out to screen relevant literature, while data presentation was carried out by grouping information into key themes such as digital learning transformation, integration of human values in education, and the readiness of the basic education system to face Society 5.0.

The results from each source are then synthesized into a comprehensive picture of the role of education in bridging the changes between the industrial era 4.0 and society 5.0. This approach allows researchers to gain an in-depth understanding of the changing educational paradigm, while exploring the practical implications for the development of learning policies and practices at the primary education level. Through this literature study, it is hoped that a conceptual strategy can be found that is able to integrate technology and human values in the education

system to support the formation of an adaptive, innovative, and characterful generation in the Society 5.0 era.

3. Results

The global changes that have occurred due to the Industrial Revolution 4.0 have brought far-reaching consequences to almost all aspects of life, including the field of education. Advances in digital technologies such as Artificial Intelligence (AI), Big Data, Internet of Things (IoT), Cyber-Physical Systems, and Cloud Computing make the production, communication, and learning processes automatic, fast, and integrated (Papadopoulos et al., 2022). In the context of education, this change requires a reform of the learning paradigm, from the conventional system to technology-based learning that is adaptive and oriented towards 21st century competency development.

However, these advances also pose new challenges, such as digital access gaps, unpreparedness of human resources, and degradation of human values. Therefore, Japan initiated the concept of Society 5.0 in 2016 as an effort to balance technological advances and human welfare. Society 5.0 is human-centered, where technology is used not to replace the role of humans, but to support a smarter, more efficient, and civilized life (Fukuyama, 2018). From an educational perspective, this concept emphasizes the importance of a learning system that places students as active subjects in building knowledge and character, not just recipients of information.

A study from Teknowijoyo and Marpelina (2022) shows that the relationship between these two eras is complementary. The Industrial Revolution 4.0 provides the technological foundation, while Society 5.0 provides the direction of humanity. Thus, education is the main instrument in bridging the two so that technological developments remain on the side of moral and social values. This is in line with the view of Handayani and Muliastrini (2020) who emphasized that basic education in the era of disruption must be able to develop intellectual intelligence as well as the emotional and spiritual intelligence of students.

One of the important results of the literature review is that basic education has a strategic position in instilling new literacy that is the demand of the 5.0 era, namely data literacy, technological literacy, and human literacy (Marín-Marín et al., 2021). Data literacy is related to the ability to read, analyze, and use digital information critically. Technological literacy emphasizes the ability to adapt and utilize digital devices productively, while human literacy focuses on strengthening the values of empathy, ethics, and social responsibility. These three literacy needs to be integrated into the curriculum and learning practices in elementary schools as a provision to face an increasingly digitized society.

In Indonesia, the *Merdeka Belajar* policy is a strategic step to encourage flexible, contextual, and student-centered education. This program provides space for teachers and schools to innovate in project-based and technology-based learning (Kadarisman et al., 2022). However, its implementation in the field has not been fully optimal. Alvianto and Wibawa (2022) found that many basic education units still face limitations in digital infrastructure, lack of teacher training in the use of

technology, and inequality of internet access in rural areas. This causes the digital transformation of education to run slowly and unevenly.

In addition to technical factors, cultural aspects also play an important role. Many teachers still maintain traditional teaching methods centered on lectures and memorization (Sabaruddin, 2022). In fact, the current generation of students are digital natives who are used to technology-based interactions and require a collaborative, creative, and contextual approach to learning. Therefore, improving teacher competence in the field of digital pedagogy is an urgent need so that learning can be in harmony with the characteristics of modern students.

The results of a study by Pratama and Wibawa (2022) show that the use of digital platforms such as Learning Management Systems (LMS), interactive applications, and AI-based media has had a positive impact on increasing student participation and the efficiency of the learning process. However, its application is often limited to administrative aspects such as task collection and automated assessment, not to mention the creative and reflective aspects of learning. For this reason, teachers need to be equipped with the ability to develop technology-based learning models that are oriented towards improving critical thinking and problem-solving skills.

On the other hand, Supriadi et al. (2022) confirms that AI has great potential in supporting adaptive and personalized learning processes. This technology allows the learning system to recognize each student's learning pattern and adjust the material based on their ability level. With this approach, education can be more inclusive and effective, because students are not treated uniformly, but according to

individual needs. However, the use of AI also presents ethical risks such as data privacy, technological dependence, and decreased human social interaction. Therefore, the development of AI in education must always be directed by ethical principles and social responsibility.

In terms of educational philosophy, Society 5.0 emphasizes the importance of returning learning orientation to the development of the whole human being. Education not only aims to prepare a technically competent workforce, but also to form citizens who have moral, social, and environmental awareness (Konno & Schillaci, 2021). In this context, the human-centered learning approach becomes relevant to be applied in primary education. Teachers play the role of facilitators who foster empathy and collaboration, not just delivering material. In line with that, Hermawan and Wibawa (2022) emphasized that education in the future must combine two important things: digital literacy and humanistic literacy.

Handayani and Muliastrini (2020) also emphasized that basic education is the most effective stage to shape children's character to be able to adapt to technological changes without losing cultural identity and spirituality. Learning that integrates technology and human values can be realized through social project-based activities, ethical digital life simulations, and cross-disciplinary collaborative learning. This approach is in line with the ideas of constructivism and lifelong learning, which places learners as active learners throughout life.

In addition to strengthening pedagogy, the role of public policy is also a crucial factor. The government needs to ensure alignment between the vision of digitizing education and the readiness of its supporting ecosystem. Kadarisman et al.

(2022) highlight the importance of education policies that are responsive to technological disruption, including the provision of infrastructure, continuous training for teachers, and supervision of AI integration in schools. This effort needs to be accompanied by collaboration between educational institutions, the technology industry, and the community to create an innovative and inclusive education system.

From the analysis of various literatures, it can be concluded that basic education has three main focuses in facing the Society 5.0 era. First, strengthening digital competencies to improve adaptability to technology. Second, reorient the curriculum to align with the needs of the digital society, including the integration of AI, STEM education, and project-based learning. Third, internalize human values as the foundation of students' character so that they are not trapped in technocraticism alone. These three aspects must be implemented simultaneously and continuously to achieve a balance between technological progress and human moral development.

The future direction of Indonesia's basic education in facing Society 5.0 requires a systemic and collaborative transformation. Teachers, schools, governments, and communities must work together to build a learning culture that is innovation-oriented and human values. Education should not only function as a forum for knowledge transfer, but also as a means of forming a generation that thinks critically, has a strong character, and is able to utilize technology to create positive changes in its environment. Thus, the vision of Society 5.0 as a super-intelligent society that is human-centered can be realized through an inclusive, equitable, and sustainable education system.

4. Conclusion

The transformation of education in the era of the Industrial Revolution 4.0 and Society 5.0 brought major changes to the learning system, the role of educators, and the direction of national education policies. Learning is no longer oriented to knowledge transfer alone, but emphasizes the development of 21st century competencies based on digital literacy, critical thinking, creativity, collaboration, and character. Through the use of technology such as artificial intelligence, big data, and the internet of things, the learning process can take place adaptively, personally, and across the boundaries of space and time. However, technological progress must be balanced with the strengthening of human values so that education continues to function to form ethical and empathetic human beings. Basic education has a central role in forming the foundation of a generation that is ready to face global change. Therefore, teachers need to transform into learning facilitators who are able to integrate technology and moral values in the teaching and learning process.

National programs such as *Merdeka Belajar* are a strategic step towards a society 5.0, but their success depends heavily on the readiness of human resources, infrastructure, and inclusive policies. Collaboration between governments, educational institutions, and the industrial sector is also an important factor in creating an innovative and sustainable education ecosystem. Thus, education towards the era of Society 5.0 must combine technological advances with a humanistic approach that places humans as the center of learning. This transformation is expected to give birth to a generation that is not only intellectually

intelligent, but also has strong character, is able to adapt to change, and uses technology to improve human welfare and civilization.

References

Alvianto, M., & Wibawa, A. (2022). Kesiapan Indonesia Dalam Bidang Pendidikan di Era Society 5.0. *Jurnal Inovasi Teknologi dan Edukasi Teknik*, *2*(2), 73-79.

Fukuyama, M. (2018). Society 5.0: Aiming for a new human-centered society. *Japan spotlight*, *27*(5), 47-50.

Handayani, N. N. L., & Muliastrini, N. K. E. (2020). Pembelajaran era disruptif menuju era society 5.0 (telaah perspektif pendidikan dasar). In *Prosiding Seminar Nasional IAHN-TP Palangka Raya 1*(1), 1–14.

Hermawan, R. A., & Wibawa, A. (2022). Evolusi pendidikan di Society 5.0. *Jurnal Inovasi Teknologi dan Edukasi Teknik*, *2*(8), 391-395.

Kadarisman, M., Wijayanto, A. W., & Sakti, A. D. (2022). Government agencies' readiness evaluation towards industry 4.0 and society 5.0 in Indonesia. *Social Sciences*, *11*(8), 331.

Konno, N., & Schillaci, C. E. (2021). Intellectual capital in Society 5.0 by the lens of the knowledge creation theory. *Journal of Intellectual Capital*, *22*(3), 478-505.

Marín-Marín, J. A., Moreno-Guerrero, A. J., Dúo-Terrón, P., & López-Belmonte, J. (2021). STEAM in education: a bibliometric analysis of performance and co-words in Web of Science. *International Journal of STEM Education*, *8*(1), 41.

Papadopoulos, T., Singh, S. P., Spanaki, K., Gunasekaran, A., & Dubey, R. (2022). Towards the next generation of manufacturing: implications of big data and

digitalization in the context of industry 4.0. *Production Planning & Control*, *33*(2-3), 101-104.

Pratama, S. D. A., & Wibawa, A. (2022). Penerapan teknologi pada pendidikan Indonesia di era Society 5.0. *Jurnal Inovasi Teknologi dan Edukasi Teknik*, *2*(9), 410-415.

Sabaruddin, S. (2022). Pendidikan Indonesia dalam menghadapi era 4.0. *Jurnal Pembangunan Pendidikan: Fondasi Dan Aplikasi*, *10*(1), 43-49.

Supriadi, S. R. R. P., Haedi, S. U., & Chusni, M. M. (2022). Inovasi pembelajaran berbasis teknologi Artificial Intelligence dalam Pendidikan di era industry 4.0 dan society 5.0. *Jurnal Penelitian Sains Dan Pendidikan (JPSP)*, *2*(2), 192-198.

Teknowijoyo, F., & Marpelina, L. (2022). Relevansi industri 4.0 dan society 5.0 terhadap pendidikan di Indonesia. *Educatio*, *16*(2), 173-184.