

DIGITAL TRANSFORMATION IN MUHAMMADIYAH EDUCATION FROM A PHILOSOPHICAL VALUES PERSPECTIVE: A STUDY OF MUHAMMADIYAH EDUCATIONAL INSTITUTIONS IN SUMATERA UTARA

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Abstract: *The digital transformation in education triggered by the Industrial Revolution 4.0 presents various ethical dilemmas. Not only demands practical responses but also encourages critical reflection through a philosophical approach. The education system in Muhammadiyah recognizes this challenge by undertaking various efforts, one of them is adapting digital technology while still upholding humanist values. This study focused on exploring the digital transformation of Muhammadiyah education, oriented towards uncovering the strength of humanist values at both the philosophical and implementation levels. This study used a qualitative, phenomenological approach, with selected informants based on purposive sampling. Data collection techniques include participant observation and in-depth interviews, and data analysis used interactive analysis proposed by Miles, Hubermann, and Saldana. This study found that humanist values are the primary basis for the digital transformation of Muhammadiyah education. The integration of digital technology into learning at Muhammadiyah educational institutions actually strengthens humanist values. The humanist digital transformation of education will produce students who are technologically literate (digital literate), as well as possessing character, morals, and transcendental awareness.*

Keywords: *Digital Transformation; Muhammadiyah Education; Humanization; and Philosophical Values*

Introduction

Digital transformation in the world of education currently occupies a central position¹, especially in the context of the development of the Industrial Revolution 4.0.² Since the digitalization has proven to help expand access to education and open up many new ways to learn.³ It means, this dynamic has opened up ever-wider space for education to grow and express itself in line with contemporary life orientations. Digitalization even encourages educational subjects adapting to developments in this era of disruption by maximizing positive impacts and

¹Loso Judijanto, et al., Digital Transformation in the World of Education: Integration of Technology in the School Curriculum, Jurnal Ilmiah Edukatif 11(1) 2025, 37-46.

²Loso Judijanto, et al., Digital Transformation of Pedagogy in Higher Education Based on Bibliometric Studies of Publications in the Last Decade, Belaindika Journal: Learning and Educational Innovation 7(1) 2025, 48-56.

³Najlaa Khayyirah Alkhowarizmi, et al., Educational Transformation in the Digital Era: Challenges and Opportunities in Improving the Quality of Learning in Indonesia, Student Research Scientific Journal 3(4) 2025, 759-764.

minimizing negative impacts to become a Smart and Good Citizen.⁴ One of the most obvious is the paradigm shift from teacher-centered learning to an active, collaborative, and flexible learning model that is oriented towards students.⁵

It is undeniable that the digital transformation in education triggered by the Industrial Revolution 4.0 presents various ethical dilemmas that not only demand practical responses but also encourage critical reflection through a comprehensive philosophical approach.⁶ One dilemma that arises is the tension between freedom and control. Nowadays, digital technology expands access to learning, but on the other hand, it raises questions about the limits of individual freedom to determine the direction and process of their learning. Thus, this polarity significantly determines the essence of the educational subject's attitude. It means that digital transformation needs to be critically examined for its contribution to individual freedom or for strengthening individual freedom control mechanisms. However, it must remain oriented toward the goals and functions of education itself.⁷

This digital transformation is driving transformation in various sectors of life, including social, organizational and industrial governance, macroeconomics, and even impacting the education sector.⁸ The implication is that digitalization is no longer merely a supporting tool but has reshaped the way educational subjects interact, work, and learn. In this context, the need for human resources equipped with digital and technological literacy is crucial for survival and adaptation in the era of digital transformation.⁹ Therefore, education is required to equip students with various forms of literacy, such as digital literacy, technological literacy, data literacy, and human resource literacy.¹⁰

In fact, education also needs to prepare students to have 21st-century skills including critical thinking, problem solving, creativity, innovation, communication, and collaboration.¹¹ Mastery of these skills is aimed at forming individuals who are not only intellectually capable, but also have ethics and character.¹² Therefore, education contributes to the dynamics of 21st-century life amidst digital transformation. In this context, teachers are required to have the ability to facilitate

⁴Fadia Puja Ainun, et al., Identification of Digital Transformation in the World of Education Regarding Opportunities and Challenges in the Era of Disruption, *Journal of Citizenship* 6(1) 2022, 1570-1580.

⁵Nurul Istiqomah & Na'imah, Education Transformation: Paradigm Shifts in Learning in the Age of Technology, *Journal of Educational Sciences* 9(3) 2025, 1546-1557.

⁶Ratih Setiawati, et al., Technological Transformation in Education in the Era of the Industrial Revolution 4.0: Technological Dilemmas from a Philosophical Perspective, *Cendikia: Journal of Education and Teaching* 1(5) 2023, 219-225.

⁷Rhyno Fairuz Melin, Technology in Education: Building a Discourse on Future Indonesian Education, *Khatulistiwa: Journal of Education and Social Humanities* 4(2) 2024, 195-203.

⁸Siti Hajar Halili, Technological Advancements in Education 4.0, *The Online Journal of Distance Education and e-Learning* 7(1) 2019, 63-69;

⁹Zahra Nabila Iqbal, et al., The Role of Human Resources in Improving School Performance in the Digital Era, *Journal of Management and Education Science* 1(3) 2024, 68-73; Ramadhan Ridlo Fadlulloh Iswandi & Mudji Kuswinarno, Transformation of Human Resource Development in the Digital Era, *Initiative: Journal of Economics, Accounting and Management* 4(1) 2025, 250-262.

¹⁰Rifa Hanifa Mardhiyah, et al., The Importance of Learning Skills in the 21st Century as a Demand in Human Resource Development, *Lectura: Journal of Education* 12(1) 2021, 29-40; Ratih Setiawati, et al., Technological Transformation in Education in the Era of the Industrial Revolution 4.0: Technological Dilemmas in a Philosophical Perspective, *Cendikia: Journal of Education and Teaching* 1(5) 2023, 219-225.

¹¹Pitri Maharani Efendi, et al., The Relevance of the Independent Curriculum to Ki Hadjar Dewantara's Conception: A Critical Study from a Philosophical-Pedagogical Perspective, *Jurnal Elementaria Edukasi* 6(2) 2023, 548-561.

¹²Dyanti Mahrunnisya, Learner Skills in the 21st Century, *Jupenji: Indonesian Journal of Education* 2(1) 2023, 101-109.

learning that aligns with current developments, including mastery of digital pedagogical skills, information and media literacy, and effective discussion and interaction skills in digital spaces.¹³

Likewise, Muhammadiyah educational institutions are aware of these challenges by undertaking efforts to strengthen human resources, provide technology training, and collaborate across sectors with a progressive approach based on Islamic values.¹⁴ Since Muhammadiyah believes that education is able to shape human beings in accordance with societal developments while remaining based on religious values.¹⁵ It is even convinced that digital synergy can create superior and progressive educational institutional management.¹⁶ Clearly, Muhammadiyah educational institutions have a value base as a reference in facing the dynamics of digital transformation.

Therefore, a critical philosophical study of digital transformation in Muhammadiyah education is necessary. Adapting the digital technology is not solely achieved through *tajdid* (renewal) movements;¹⁷ However, it also ensured that humanist values remain integrated into its educational structure. It means that digital-based education is aimed at empowering students to become intelligent, inclusive, and character-based members of society. Muhammadiyah education can thrive amidst the digital transformation, as research by Safira et al. found, due to its three strengths: value, system, and human resource strength.¹⁸

This study also focused on exploring the philosophical perspective of digital transformation within the Muhammadiyah education system. This critical and comprehensive review aimed to uncover the "strength of values" within Muhammadiyah education, particularly the value of humanization, both philosophically and in practice. Furthermore, Muhammadiyah education embraces a progressive education paradigm that serves as a strategic framework for strengthening the quality and relevance of Muhammadiyah education amidst global dynamics and digital transformation.¹⁹

Theoretical Framework

Digital Transformation in the Education System

Digital transformation of education is the process of implementing and integrating digital technology into the education system. This process fundamentally transforms educational methodology by providing new values and perspectives. Once education adopts digital technology, it can better design educational transformation based on technological developments. In fact, education will experience transformation along with technological

¹³Yayu Sri Rahayuningsih & Tatang Muhtar, Digital Pedagogy as an Effort to Improve 21st Century Teacher Competence, *Basicedu Journal* 6(4) 2022, 6960-6966; Andi Haris, et al., *21st Century Teacher Skills in Reducing Learning Loss in Students: A Phenomenological Study in Senior High Schools in Sumbawa Regency*, *Mandala Education Scientific Journal* 8(1)2022, 628-638.

¹⁴Harianto Ghany Rakhman, et al., The Role and Challenges of Muhammadiyah in the Digital Era, *Masterpiece: Journal of Islamic Studies and Social Sciences* 3(3) 2025, 313-321; Syaiful Bahri, Challenges and Strategies of Muhammadiyah in Facing the Development of Educational Sciences in the Digital Era, *Aladalah: Journal of Politics, Social, Law and Humanities* 3(1) 2025, 215-223.

¹⁵Tiana Dwi Marisa, et al., Muhammadiyah's Challenges in Islamic Education Innovation: Welcoming the Digitalization Era with Quality Knowledge, *Moral: Journal of Islamic Education Studies* 2(1) 2025, 201-213.

¹⁶Eka Febryani Siskawandari, et al., The Future of Muhammadiyah Management: Adaptation of AIK in the Digital Era, *Ekoma: Journal of Economics, Management, Accounting* 4(5) 2025, 8319-8326.

¹⁷Umar al Faruq, Opportunities and Challenges for Muhammadiyah Education in the 4.0 Era, *Ar-Risalah: Islamic Media, Education and Islamic Law* 18(1) 2020, 13-30.

¹⁸Linda Safira, et al., The Main Strengths of Muhammadiyah Educational Institutions in Conquering Educational Challenges in the 4.0 Era, *Journal of Social Sciences and Education* 7(1) 2023, 370-377.

¹⁹Safry Andi, et al., Progressive Education Paradigm: Concept, Essence, and Innovation of Muhammadiyah Learning in the Digital Era, *Innovative Multidisciplinary Journal* 9(12) 2025, 355-372.

advances in the digital era.²⁰ However, this digital transformation pattern is not only about the technology itself, but also as an intersection between subject and object of education, the education system, and educational technology tied in a methodological unity.

Digital transformation in education includes very substantial things, such as learning through mobile applications, electronic media-based learning platforms, or innovation of educational learning systems through migration from on-premise computer infrastructure to cloud computing.²¹ In fact, according to Dorner & Rundel, digital transformation in education has generated enthusiasm to encourage community involvement in the process.²² It means that digital transformation in the education system must be oriented toward positive implications for social life. Thus, in one analysis, this transformation can develop an effective education system that meets the needs of the digital economy and ensures easy access for stakeholders in the education sector.²³

This orientation indicates the digital transformation of Islamic education must be accompanied by its impacts. One such focus should be on economic performance by increasing the capacity for economic innovation through the dissemination of knowledge and improving the skills and productivity of human resources. Therefore, the phrase "Digital transformation" in Islamic education actually explains the implementation of new technologies, talents, and processes to remain competitive in the ever-changing knowledge landscape. In this 5.0 era, the Islamic education system needs to be able to adapt systematically, massively, and quickly to social, cultural, economic, and political transformations, and especially to the ever-changing expectations of consumers and stakeholders.

Education needs to adapt the digital transformation if it wants to keep pace with technological developments and ultimately design effective learning. David Thornburg analyzed this situation in "From the Campfire to the Holodeck: Creating Engaging and Powerful 21st-Century Learning Environments."²⁴ or also Judith V. Boettcher & Rita-Marie Conrad in "The Online Teaching Survival Guide: Simple and Practical Pedagogical Tips".²⁵ Shah even provided a framework for utilizing AI in education and it turned out that AI was capable of producing educational innovations.²⁶ All of these analyses are intended to reveal the "meeting" of the education system – read teaching – with technological developments, one of them is explained practically by Wood & Ponsford in "Techno Teaching: Taking Practice to the Next Level in a Digital World".²⁷

Digitalization is the systematic process of converting the physical aspects of educational processes and workflows into digital ones, thereby effectively achieving educational (learning)

²⁰Sindi Septia Hasnida, et al., Educational Transformation in the Digital Era, Indonesian Education Star Journal 2(1) 2024, 110-116.

²¹In this context, for more details, see Anna A. Arinushkina, et al., The Impact of Digitalization in a Changing Educational Environment, (Hershey: IGI Global, 2023).

²²Olaf Dorner & Stefan Rundel, Organizational Learning and Digital Transformation: A Theoretical Framework, in Dirk Ifenthaler, et al., Digital Transformation of Learning Organizations, (Switzerland: Springer, 2021), 63.

²³Chitra Krishnan, et al., Digital Transformation in Education: Emerging Markets and Opportunities, (Sharjah: Bentham Books, 2023).

²⁴David Thornburg, From the Campfire to the Holodeck: Creating Engaging and Powerful 21st Century Learning Environments, (San Francisco: Jossey-Bass, 2013).

²⁵Judith V. Boettcher & Rita-Marie Conrad, The Online Teaching Survival Guide: Simple and Practical Pedagogical Tips, (San Francisco: Jossey-Bass, 2021).

²⁶Priten Shah, AI and the Future of Education: Teaching in the Age of Artificial Intelligence, (San Francisco: Jossey-Bass, 2023).

²⁷Julie M. Wood & Nicole Ponsford, TechnoTeaching: Taking Practice to the Next Level in a Digital World, (Harvard: Harvard Education Press, 2014).

goals. One manifestation of this process is the transformation of non-digital or physical aspects into digital formats, enabling computerized systems to accelerate education. It touches on essential aspects of education, thus becoming a fundamental, primary step that is urgently needed for digital transformation. This condition is indeed a necessity that touches on the essential aspects of education itself.²⁸

The scope of digital transformation is vast, particularly creating a shift in dominant cultures in education. It has a significant impact on learning models, as analyzed by Afonso et al.²⁹ or also in higher education learning.³⁰ Even the learning paradigm – especially online – has also experienced a shift from teacher-centric to learner-centric, that academics consider to be a complementary factor in realizing educational goals.³¹ Thus, digital transformation is not simply about adopting and applying new technology, but rather designing strategies for maximum impact. In this context, digital transformation requires the following key pillars:³²

²⁸Lusila Parida, et al., Digital Transformation Management of Elementary School Education in Sintang Regency, *Perkhasa Elementary Education Journal* 10(2) 2024, 883-898.

²⁹Ana Afonso, et al., *Impact of Digital Transformation in Teacher Training Models*, (Hershey: IGI Global, 2022).

³⁰Rebecca J. Blankenship & Charlotte Baker, *Cases on Digital Learning and Teaching Transformations in Higher Education*, (Hershey: IGI Global, 2019).

³¹BV Ramana Murty & K. Narasimha Rao, Digital Pedagogy–An Opportunity or a Threat?, in *Proceedings of the International Conference on Digital Pedagogies (ICDP)*, 1-3 April 2019, (New Delhi: Nelson Mandela Marg, 2019), 1-5.

³²Akrim, Digital Transformation, Islamic Education, and Learning Paradigms: Assessing the Challenges and Opportunities for Developing Islamic Education, *Proceedings of the International Seminar on Islamic Studies* 6(1) 2025, 1457-1476.

Key Pillars of
Digital
Transformation

First, consumer and stakeholder experience. Educational innovation that focuses on consumers and stakeholders is one of the key pillars driving digital transformation. In this context, educational institutions need to adopt emerging technologies after exploring and aligning them with the expectations of consumers and stakeholders.

Second, human resources. This pillar must be developed by fostering a sense of security and support during the adoption of transformative technologies. Digital models can be successfully implemented only when educational human resources fully embrace them. Educational transformation can be achieved through a combination of human resource strategies, such as training, recruiting the right talent, and retaining existing talent.

Third, transformation. Digital transformation efforts are designed to bring about change across all areas of education. In this context, planning becomes crucial to ensure clear direction and pathways, particularly given the unpredictable nature of social transformation. Educational institutions need to provide the necessary tools and environments to support the success of digital transformation.

Fourth, innovation. Innovation is a highly urgent aspect and is directly related to digital transformation; however, the two are not identical. Innovation refers to efforts to generate ideas that trigger digital transformation by fostering open communication, collaboration, and creative freedom.

Fifth, leadership. This aspect indicates that educational leadership needs to be proactive and transformational in driving digital transformation. Leaders are required to think ahead, explore technologies from multiple perspectives, and inspire human resources to do the same.

Sixth, culture. In digital transformation, educational leadership needs to integrate the other five pillars, as this effort will foster a culture of innovation. The enthusiasm of human resources will, in turn, create positive experiences for consumers and stakeholders, while digital transformation initiatives are able to develop and grow more rapidly.

Figure 1: Six Pillars of Digital Transformation in Education

Humanization in Digital Transformation of Education

Humanization in digital transformation of education is a principle that positions educational subjects (students and educators) as the primary aspect utilizing digital technology. Essentially, it means humanizing humans, eliminating conditions, dependency, violence, and hatred from

humankind.³³ Thus, it is a principle that recognizes the central position of educational subjects in the digital transformation of education. The implication of digital transformation does not eliminate the human values of educational subjects, but rather strengthens the dignity, potential, and role of subjects (students and educators) in educational process.

Conceptually, humanization in digital transformation of education means prioritizing humanitarian values and justice in the process. It implies that education is not oriented toward technology as the primary goal, but rather positioned as a medium to facilitate meaningful, dialogical, and equitable learning processes.

In this context, educational subjects are viewed as having intrinsic value and the potential for growth and development.³⁴ The implication of education is not simply as an interaction between humans and machines or a digital-based information transfer process. It remains a crucible for the formation of personality, critical awareness, and moral responsibility in students. Thus, a humanistic digital transformation rejects mechanistic, dogmatic, and dehumanizing learning practices.

In pedagogical perspective, humanization emphasizes empathetic, participatory, and reflective educational relationships. Fundamentally, humanization in education is an effort to restore the state of the subject of education to their dignity and worth.³⁵ Therefore, digital learning platforms need to foster a dialogical mechanism between educators and students, fostering collaboration based on diverse abilities, learning styles, socio-cultural backgrounds, and even religions. In this context, the digital transformation of education is oriented toward personalizing learning, expanding access, and empowering students to construct their own understanding.

Philosophically, the value of humanization in digital transformation is based on the premise that education is a process of humanizing human beings; it is grounded in the subject of education and oriented toward the "self" of the subject. Education needs to be oriented toward recognizing the reality of the subject's self and bringing them closer to their environment.³⁶ The use of artificial intelligence (AI) in education must be guided by ethical values, justice, and social responsibility. It means that digital transformation must not replace the human role of educational subjects (e.g., teachers as educators, mentors, and role models) with technology. Then, this situation needs to be oriented towards strengthening the human role, making it more adaptive and contextual.

In the digital transformation of education, educational subjects are positioned as central to the development of science and technology. They are also responsible for moral and spiritual matters. Interestingly, this aspect enables educational subjects to discover deeper meaning and purpose in life and guide their actions in accordance with their moral and ethical values.³⁷ This transformation is aimed in forming educational subjects who are knowledgeable, civilized, and have noble morals, so that the progress of science and technology goes together with the strengthening of the values of faith and humanity.

³³Dwi Afriyanto, *Islamic Education: Prophetic & Integrative-Interconnective Approach*, (Sukabumi: Jejak Publisher, 2023), 66; Nilna Mayang Kencana Sirait, *Philosophy of Islamic Education*, (Medan: UMSU Press, 2024), 74.

³⁴Titin Kempa, et al., *Foundations of Education*, (Sumedang: Mega Press, 2024), 18.

³⁵Sugeng Fitri Aji, *Critical Transformative Islamic Educational Reasoning in the 21st Century*, (Wonosobo: CV. Mangku Bumi Media, 2019), 73.

³⁶Hamzah B. Uno & Nina Lamatenggo, *Performance Theory and Its Measurement*, (Jakarta: Bumi Aksara, 2012), 52.

³⁷Fedi Apriyadi & Dwi Noviani, *The Concept of Humanization in Elementary School Education*, *Journal of Islamic Religious Studies* 8(11) 2004, 79-88.

Method

Based on the research focus that emphasizes the exploration of humanist values within the digital transformation of Muhammadiyah education from a philosophical perspective, this research used a qualitative approach to understand and interpret these dynamics naturally, based on the perspective of the educational subject (emic). This research tends to be of the qualitative type with a phenomenological type that emphasizes its analysis on humanist values in the digital transformation of Muhammadiyah education related to construction of the philosophical basis of Muhammadiyah education system. The humanist values in the digital transformation of Muhammadiyah education emphasis is placed on the philosophical aspects and also the implementation level in the educational (learning) process.

In this study, Muhammadiyah education system is defined as the educational structure within an Islamic-minded educational institution, namely Muhammadiyah. The four Muhammadiyah educational institutions referred to in this study are two junior high schools (MTs), two senior high schools (MA), and two senior high schools (SMA). Geographically, these six Muhammadiyah educational institutions are located in Sumatera Utara Province, relatively far from each other. However, they are entering a phase of educational transformation based on the using of digital technology in administration and learning.

The data collection used the participatory observation techniques, so that understanding of exploration is obtained. The humanist values in the digital transformation of Muhammadiyah education are detailed and comprehensive. This technique allows researchers to observe and participate in various exploration activities. This study focused on the philosophical aspects and their implementation within the educational (learning) process. Another technique, in-depth interviews, was used, adhering to interview guidelines, to provide more comprehensive understanding of research data, including the philosophical aspects and implementation of digital transformation in education within the learning process.

This study determined the informants to be interviewed purposively, including: the principals, deputy principals of the curriculum, as well as several educators, and students in total 14 people. They were selected through a selection process with some criterias including: (1) issuing policies on the adoption of digital technology in education management and learning implementation; (2) conceptualizing and implementing digital transformation in Muhammadiyah educational institutions; and (3) implementation that utilizes digital technology in Muhammadiyah education.

The data analysis used the interactive data analysis model proposed by Miles, Hubermann, and Saldana, that consists of four stages: data collection, data condensation, data presentation, and conclusions. It can be seen as follow:

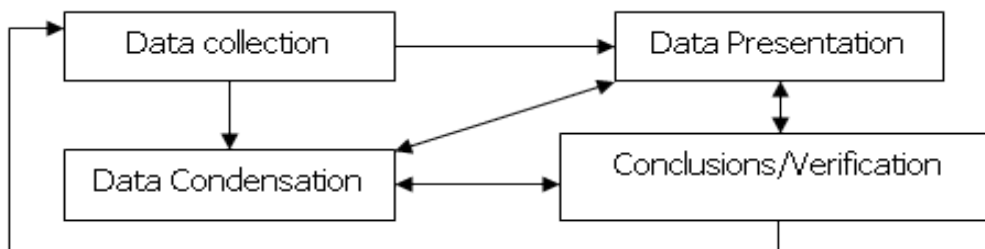


Figure 2: Interactive Model Data Analysis

Results

Humanistic Values in Digital Transformation at Muhammadiyah Educational Institutions

Digital transformation in Muhammadiyah education system is inevitable, and it is a historical necessity that must be implemented based on the development of information and communication technology. However, it should not be interpreted solely as a mechanistic process emphasizing performance effectiveness, system efficiency, or learning automation. It exists through the technical utilization of digital platforms while remaining grounded in the ideological principles of Muhammadiyah. These principles are integrated into the education system as part of the educational process.

In this context, Muhammadiyah education system maintains a strong normative and philosophical foundation. One of these foundations is humanist values, a translation of Muhammadiyah ideology. These humanist values remain firmly held to ensure that the digital transformation of Muhammadiyah education is firmly anchored in religious axiology. It means that this transformation must be oriented toward the glorification of human dignity as the primary subject of education with potential. The humanization of Muhammadiyah's digital transformation of education emphasizes that technology must be an educational medium that liberates and empowers students. A teacher at Muhammadiyah educational institution stated:

*"Technology in Muhammadiyah education system is not the primary goal. It is a tool that supports the realization of Muhammadiyah's educational goals. Technology is nothing more than a tool to develop the potential, dignity, and human dignity of students and educators in Muhammadiyah educational institutions."*³⁸

It is natural that Muhammadiyah education system prioritizes ethical, normative humanity. They believe that the sources of inspiration from Muhammadiyah's ideology and religion can influence the construction of the education system. Therefore, humanization in the context of their digital transformation of education stems from Muhammadiyah educational paradigm. The education system is essentially a process of humanizing human beings. One example is the orientation of learning practices toward developing students' human potential.

The integration of digital technology into education management and the learning process at Muhammadiyah educational institutions actually strengthens humanitarian values such as empathy, dialogue, justice, creativity, and moral responsibility. Education is even engineered to develop the human potential of its subjects. Also, the students enthusiastically participate in academic activities, especially those related to digital technology. It is inseparable from their orientation towards education as a means of improving humanity.

Naturally, they implement this orientation through the empowerment of educational subjects. Interestingly, they reject the "bank-style" educational model, that is deemed incapable of developing Muhammadiyah's educational subjects into active learners. Instead, they promote dialogical education, positioning students as active learners with the potential and ability to think critically and reflectively. This reinforces Muhammadiyah's educational approach, that emphasizes holistic aspects encompassing cognitive, affective, and psychomotor aspects. The structure of Muhammadiyah educational institutions continuously encourages the development of all educational subjects, from thoughts, feelings, and actions.

Within a digital framework, the learning platforms at Muhammadiyah educational institutions are designed to foster participation, collaboration, and reflection. Learning is oriented toward fostering thought, feeling, and action, rather than simply transmitting information one-way from educators. Therefore, this development is carried out in an integrated manner through

³⁸Results of an interview with one of the educators at the Muhammadiyah educational institution on November 27, 2025.

learning that touches the mind, heart, and behavior. One principal at Muhammadiyah educational institute stated:

*"Muhammadiyah education consistently raises the awareness of its students, enabling them to become individuals who are personally, socially, and spiritually responsible. Ultimately, they make a tangible contribution to society, from the smallest to the largest. This educational model is based on the values inherent in educational institutions. Within Muhammadiyah educational institutions, these are the values of Islam itself."*³⁹

Undoubtedly, the educational practices grounded in the noble values of Islamic religion make the culture of Muhammadiyah educational institutions more adaptive, open, and tolerant. Consequently, the digital transformation of education demands a greater balance between technological sophistication and pedagogical sensitivity; even the spirit of educational delivery remains anchored in devotion and social service. And surely, the mandate of preaching and enlightening the community or society rests on quality education. In this context, Muhammadiyah's educational ideology is continuously strengthened to empower the humanity of its subjects.

Therefore, the using of digital technologies such as artificial intelligence, big data, and learning analytics is directed at understanding the individual needs of educational subjects holistically. Muhammadiyah educational institutions do not utilize digital technology to control or standardize the learning process. Muhammadiyah's digital transformation of education has made their education more humane; thus tending to be open and acknowledging the diversity of social, cultural, and spiritual backgrounds of educational subjects. They consistently use digital technology as a medium to expand access, inclusivity, and equity in education, as well as empower the potential of educational subjects.

Muhammadiyah's digital transformation of education is closely integrated with (and based on) humanist values, representing a paradigm and action within the theological orbit. One vice principle also stated:

*"Humanity's reality fundamentally stems from our religious system, Islam. In Islam, Surah Al-Baqarah, verse 30; explains that God will create His representative. It is certainly a tribute to human potential. And this potential is also confirmed by the human ability to analyze empirical reality, as stated in Surah Ali Imran, verses 190 and 191."*⁴⁰

It means they believe that educational subjects have the potential to become caliphs and scholars. Therefore, they tend to view educational subjects as rational and moral beings. They will eventually be responsible for producing knowledge and technology that benefits society. The researchers observe that Muhammadiyah's digital transformation of education is deeply humanistic. The process not only produces students who are technologically literate but also possess strong character and transcendental awareness.

Thus, Muhammadiyah educational institutions utilize digital technology as a medium to strengthen the integration of knowledge, faith, and good deeds. Their commitment to uniting human potential and divinity is strong. They do not separate the cognitive dimension from spiritual and ethical values; the digital transformation does not shift or even change the normative goals of Muhammadiyah education. Instead, it is established as a driver and engineer of the educational process to empower and develop the potential of educational subjects.

Muhammadiyah's digital transformation of education remains bound by humanist values. They have firmly defined the limits of success in digitalizing education. They do not measure

³⁹Results of an interview with one of the principals of a Muhammadiyah educational institution on December 10, 2025.

⁴⁰Results of an interview with one of the deputy principals of a Muhammadiyah educational institution on December 14, 2025.

this success solely on the sophistication of the digitalization of the education and learning system. They affirm that digital technology is considered successful if the process strengthens the human relationships between educational subjects in learning. Muhammadiyah education creates a dialogical, reflective, and equitable digital ecosystem, ensuring that educational subjects do not lose their human and religious identity amidst technological transformation. Muhammadiyah's digital transformation of education is a strategic path for them to deepen the meaning of education. For them, education is a process of liberation from the shackles of dehumanizing paradigms and the holistic enhancement of the humanity of educational subjects.

Result and Discussion

Discussion

Construction of Digital Transformation of Education with a Humanist Paradigm

Based on research findings on digital transformation in Muhammadiyah educational institutions, it is clear that there are benefits to be gained from a religiously-minded educational system. These benefits refer to the functional value inherent in the educational process. The emergence of digital technologies such as artificial intelligence has transformed educational subjects, focused more on tasks requiring creativity and problem-solving. Data analytics using machine learning, for example, can open up new horizons and strategies to achieve Muhammadiyah's educational goals more effectively and efficiently.

The emergence of online learning is essentially a logical implication of the development of digital technology. Kennedy & Laurillard explained that online learning is practical for future learning.⁴¹ Even investing in digital technology in educational institutions can minimize the workload of educational subjects or automate the management of educational institutions through a combination of artificial intelligence and machine learning. Thornburg developed this framework to encourage the optimization of educational spaces through learning practices that involve all components.⁴² Even the success of digitalization in education requires adaptive strategies, policy support, and collaboration between schools, the government, and the community.⁴³

This digital transformation opens up the opportunities in education to maximize the axiological dimension and make it "down-to-earth." Since education becomes an investment in building a society's future based on empowerment and development of the potential of educational subjects. It is because digital transformation can be an effective tool for enhancing learning innovation.⁴⁴ Even as noted by ITU, UNESCO, and UNICEF, there are opportunities that educational institutions can realize when implementing technology as follows:⁴⁵

⁴¹ Eileen Kennedy & Diana Laurillard, *Online Learning Future: An Evidence Based Vision for Global Professional Collaboration on Sustainability*, (London: Bloomsbury Publishing, 2023).

⁴² David Thornburg, *From the Campfire to the Holodeck: Creating Engaging and Powerful 21st Century Learning Environments*, (San Francisco: Jossey-Bass, 2013), 17.

⁴³ Mulyono, et al., *Digitalization of Education: Opportunities and Challenges in Improving Quality at SMK PSM Randublatung*, *Indonesian Research Journal on Education* 5(1) 2025, 470-475.

⁴⁴ Rita Sahara Munte, et al., *Teacher Innovation Through Digital Transformation in Integrated Islamic-Based Schools*, *Journal of Education and Teaching Review* 7(3) 2024, 8900-8908.

⁴⁵ ITU, UNESCO, and UNICEF, *The Digital Transformation of Education: Connecting Schools, Empowering Learners*, September 2020, 6.

Elements of Opportunity	Financing: Global funding instruments have become increasingly sophisticated and can be applied to Islamic educational institutions, provided that they have access to accurate and reliable data.
	Technology: Technological advancements enable institutional identification and significantly expand the reach of facilities and buildings in a broader and more accessible manner.
	Accountability: New methodologies with innovative perspectives have emerged to monitor progress, improvement, and transparency in the delivery of educational institutional services.
	Focus: Oriented toward educational institutions as gateways for increasing investment aimed at serving the broader community.
	Awareness. A condition that encourages educational institutions to utilize their institutional capacity as a medium for community empowerment.

Figure 3: Elements of Opportunity Creation

This scheme demonstrates that digital transformation opens up opportunities for education to continuously create and improvise in developing educational subjects. It can support the acceleration of improving educational quality and realizing the ideal goals of education. Essentially, digital transformation in education can be constructed based on theological-philosophical values. It certainly encourages social transformation and the development of science and technology. However, these efforts must occur systematically, taking the following steps:⁴⁶



Figure 3: Stages of Digital Transformation in Education

The figure above shows the stages of digital transformation in educational institutions, demonstrating patterns and characteristics within each stage:

⁴⁶Akrim, Digital Transformation, Islamic Education, and Learning Paradigms: Assessing the Challenges and Opportunities for Developing Islamic Education, Proceedings of the International Seminar on Islamic Studies 6(1) 2025, 1457-1476.

- (1) the status quo stage, where digital transformation is not a revolutionary priority in educational management. In fact, in this stage, educational subjects' digital initiatives are relatively low, resulting in educational institutions being outdated.
- (2) the active stage, where digital transformation has "penetrated" the consciousness of educational institutions. They have begun to make improvements through optimizing digital technology. Therefore, educational subjects have many perspectives on solving problems, including improving education. This stage indicates a lack of seriousness on the part of educational institutions in integrating digital technology.
- (3) The intentional stage: educational subjects begin to understand digital technology. They seek compromise to implement digital transformation. Nevertheless, the culture of educational institutions is still not open to adopting digital technology, requiring innovative efforts to transform educational institutions.
- (4) the strategic stage: educational institutions have realized digital transformation in education, and educational subjects work collaboratively to achieve educational goals.
- (5) the targeted stage; educational institutions tend to be attractive in achieving digital culture-based educational targets. Typically, educational subjects are used to identify what needs to be done now or in the future.
- (6) the adaptive stage; where educational institutions have developed a digital transformation framework. Hence, it becomes a way of life through the using of digital technology to achieve educational goals.

The stages of digital transformation in education cannot be realized without the involvement of educational subjects. It means that educational subjects have a substantial role in determining the mechanisms, movement, and direction of digital transformation in education. However, on the one hand, it cannot be denied that technological progress has social implications that could lead to destructive transformations in the social structure of society.⁴⁷ Thus, empowering the humanity of educational subjects will certainly encourage the birth of a constructive social structure.

Humanization in the digital transformation of education has emerged as a fundamental idea. One of them emphasizes that digital technology cannot substitute for humanitarian values in the educational or learning process. Digital technology is positioned solely as a supporting tool to help achieve educational goals. The study has found that prioritizing humanitarian values in education actually fosters an orientation toward developing the creativity and personality of the subjects.⁴⁸ In essence, effective and inclusive education can be the main basis for building civilized and sustainable humanist values.⁴⁹

This idea is known as the humanization of education, a comprehensive, deconstructive reform effort based on humanist values, from educational planning to learning methods. The humanization of education model emphasizes the urgency of student-centered learning;⁵⁰ It contributes to strengthening moral values, religiosity, and spirituality in all educational activities. Therefore, the pillar of humanization plays a crucial role in the concept of character education

⁴⁷Ni Made Fanny Dianis Sviri & Kadek Dwi Arlinayanti, Changes in Educational Paradigms Through the Utilization of Technology in the Digital Era, *Metta: Journal of Multidisciplinary Science* 4(3) 2024, 50-63.

⁴⁸Kusnandi, *Articulating Educational Planning in the Digital Age*, *Journal of Educational Vehicles* 6(1) 2019, 1-14.

⁴⁹Muthi'ah Lathifah & Yakobus Ndonga, The Role of Education in Building Civilized Humanity, *Lencana: Journal of Educational Science Innovation* 2(3) 2024, 184-193.

⁵⁰Fedi Apriyadi & Dwi Noviani, The Concept of Humanization in Elementary School Education, *Journal of Islamic Religious Studies* 8(11) 2024, 79-88.

based on prophetic education.⁵¹ The humanization of education serves to maintain the essence of education as a process of developing individuals with character, ethics, and empathy in the digital age. It also encourages individuals to develop intellectual abilities, balance religiosity and spirituality, and contribute positively to society.⁵²

Nevertheless, Muhammadiyah educational institutions in the digital era have been able to build a humanization of education. They establish a balance between the using of technology and human social life. This construction positions education as the embryo and catalyst for the growth and development of intellectual, humanitarian, and divine potential. Taufiqurrochman & Aulia found that by integrating humanizing and prophetic values, education has great potential to overcome the crisis of dehumanization in conventional education systems, thereby contributing to the formation of a more just and humane society.⁵³

Interestingly, at Muhammadiyah educational institutions, the digital transformation of education is integrated with humanist values based on the Islamic religious (the Quran). The curriculum emphasizes the individual development of the subjects, particularly in spiritual, intellectual, and social aspects. It means that Muhammadiyah education system has adopted a holistic paradigm; education in the digital era requires rethinking the classic conflict between subject and object of education.⁵⁴ In fact, Muhammadiyah education system has transcended these “conflicts” through a holistic education paradigm.

Indeed, education oriented toward humanistic values can encourage students to actualize their potential and shift the permissive paradigm that assumes they lack ability. A research finding suggests that a balanced approach between technology and humanism not only increases student motivation and engagement but also strengthens interpersonal relationships in teaching and learning process.⁵⁵ In this context, Muhammadiyah's digital transformation of education tends to encourage the liberation of educational subjects through critical awareness.

It means that Muhammadiyah education system shares a similar concept with Paulo Freire's educational thinking. Muhammadiyah's humanization of education and Freire's perspective share similarities, particularly regarding liberating education and critical awareness as the primary goals of education. Freire's educational foundation rests on the fundamental principle that humans are born free and independent; they are masters of themselves, since the human nature is to be free.⁵⁶ Through their freedom, humans have the right to do whatever they choose, naturally armed with the awareness they possess. However, this existence is not instantly present and understandable; it requires effort to understand the existence in question.

Therefore, a dialectical process is necessary to uncover the nature of human existence, beginning with an examination of social realities that have given rise to a hegemonic and dominant structural and cultural order. Such conditions constitute a form of dehumanization, creating a reality that allows for the suppression of critical thinking and intellectual capacity

⁵¹Wahyu Ningsih, et al., Implications of the Pillars of Humanization of Prophetic Education in Character Education, *Morphology: Journal of Educational Sciences, Language, Literature, and Culture* 2(1) 2024, 277-286.

⁵²Siti Amaliati, et al., Fitrah as the Meaning of Humanization of Islamic Education, *Indonesian Journal of Humanities and Social Studies* 5(1) 2024, 267-282.

⁵³Muhammad Taufiqurrochman & Syafirda Azmi Aulia, The Urgency of Humanization and Prophetic-Based Education in the Current Era, *Central Journal of Education* 6(1) 2025, 65-76.

⁵⁴Boris V. Markov, Philosophy of Education in the Digital Era, *Open Journal for Studies in Philosophy* 4(2) 2020, 57-66.

⁵⁵Dwi Pita Reski, et al., Philosophy of Education in the Digital Age: The Balance between Technology and Humanism, *Didaktika: Journal of Educational Thought* 30(2) 2024, 290-295.

⁵⁶Paulo Freire, *Politics of Education; Culture, Power and Liberation*, Petert.: Agung Prihantoro & Fuad Arif Fudiyartanto, (Yogyakarta: Pustaka Pelajar, 2007), iv.

among educational subjects. Consequently, this construction produces a partial and incomplete understanding of both human existence and the reality of the universe.

The concept of the educational subject from the perspective of Muhammadiyah education is grounded in and oriented toward the fulfillment of the subject's own existence. In this context, the subject occupies a central position in both contemporary and future life realities. The educational process is ultimately directed toward the development of humanization—an effort to humanize individuals in order to realize and affirm their existence—based on the reality of their religiosity. This process, which takes place within the educational system, is supported by the distinctive consciousness inherent in Muhammadiyah. For instance, research findings indicate that Muhammadiyah education is currently manifested through the revitalization of *tauhid*-based education, the adoption of an integrative and holistic educational paradigm, and the strengthening of the spirit of *al-Maun* theology.⁵⁷

There is a fundamental difference with Freire's concept of humanism in education. Education is oriented toward fulfilling human existence itself to affirm its existence. This goal is realized through an intense dialectic between humans and natural reality. The dialectical process must involve critical awareness (conscientization) within the context of reflective action to grasp the implicit meaning of reality and to distinguish between good and evil. This critical awareness also serves as a meeting place between the individual and society; so that liberation is not merely individual but also a sustainable collective one, achieving authentic existence and humanization.⁵⁸

The critical awareness created in the subject of Muhammadiyah education is a form of awareness that implies critical attitudes in understanding reality. It includes a complete understanding of reality and concrete action to change it into something better and more humane while still relying on divine values. Since the transformation of Muhammadiyah education system is strongly integrated with religious values, they continue to link and combine religious and general knowledge.⁵⁹

While the goal of Muhammadiyah education is to cultivate the qualities of piety and worship in humans, as a consequence of being a created being. Within this context, it is the formation of *al-insan al-kamil* (a state of being that will achieve happiness in this world and the hereafter).⁶⁰ Therefore, in Muhammadiyah, humanism, as the process of humanizing humans, is understood as a fundamental concept of humanity that does not stand in a free position. It implies the understanding, meaning, or elaboration of the meaning of "humanizing humans" in relation to theological values.⁶¹ Thus, humanism in the construction of Muhammadiyah's digital transformation of education has a transcendental aspect; and it is very different from Freire's concept of liberatory education, that oriented towards humanism that is free from the transcendental dimension.

Transcendence is an ontological principle of Muhammadiyah education system. In digital transformation, its construction is achieved through the using of epistemology accompanied by that ontology. The implication is that the Muhammadiyah education system is not trapped in

⁵⁷Suyatno, The Relevance of Muhammadiyah Education in Facing the Smart Society 5.0 Era, *Basicedu Journal* 8(2) 2024, 1190-1199.

⁵⁸Ratri Ayu Bethari, Existence and Freedom in Paulo Freire's Thought: Towards Humanization Through Critical Consciousness, *Paradigma: Journal of Philosophy, Science, Technology, and Socio-Culture* 30(3) 2024, 1-12.

⁵⁹Nor Laila & Rony Edward Utama, Muhammadiyah Islamic Education, *al-Madrasah: Scientific Journal of Elementary Madrasah Education* 7(1) 2023, 286-298.

⁶⁰Mohamad Ali, Dissecting the Objectives of Muhammadiyah Education, *Prophetica* 17(1) 2016, 43-56.

⁶¹Hasan Hanafi, et al., *Islam and Humanism*, (Yogyakarta: Pustaka Pelajar, 2007), ix.

formalism and pseudo-abstraction. God is positioned as the "Universal Principle," then the digital transformation in Muhammadiyah education system is subject to transcendental ethics. Transcendence as an ontological dimension of the education system goes beyond mere subjectivism in educational construction.

The orientation of Muhammadiyah's digital educational transformation can be understood and combined as a unified dimension between humanitarian subjectivism and religious transcendence. It prevents the emergence of naivety and formalism, that understand socio-human reality solely through material awareness. Thus, the Muhammadiyah educational system is formed from a synergistic effort to reconcile religious ideology through digital transformation. In fact, the normative basis of the educational system movement is not based on secular humanism, but rather on transcendental humanism.

Conclusion

The digital transformation of education at Muhammadiyah educational institutions is a crucial element in creating more dynamic, active, and enjoyable educational management and learning. Technology-based education, especially at Muhammadiyah educational institutions navigate the Industrial Revolution 4.0 era, is open and adaptive. In fact, this progress does not create an ethical dilemma between freedom and control, the threat of alienation of educational subjects, or the gap in access to technology by educational subjects.

Humanization in digital transformation of education further strengthens Muhammadiyah educational institutions' commitment to upholding humanitarian values across all educational subjects. They firmly affirm that digital technology serves only as a tool to achieve educational goals. Digital technology is not a substitute for educational interactions created within the human context. Education is constructed holistically, integrating all the skills needed in the 21st century. It implies that educational subjects can develop in accordance with their humanity while maintaining the values of justice, inclusivity, and humanity. The digital transformation of education that incorporates humanist values is capable of producing students who are digitally literate, have character, morals, and possess transcendental awareness. Humanism in Muhammadiyah's digital transformation of education is strongly tied to religious aspects, that is called transcendental humanism.

This study recommends that educational subjects continuously improve their competencies, skills, and mastery of digital technology. Muhammadiyah educational institution administrators are also expected to act as facilitators capable of integrating technology with Islamic-based and religious character. This role remains within the framework of the educational subjects' humanity.

References

- Akrim, Digital Transformation, Islamic Education, and Learning Paradigms: Assessing the Challenges and Opportunities for Developing Islamic Education, Proceedings of the International Seminar on Islamic Studies 6(1) 2025, 1457-1476.
- Ana Afonso, et al., Impact of Digital Transformation in Teacher Training Models, (Hershey: IGI Global, 2022).
- Andi Haris, et al., *21st Century Teacher Skills in Reducing Learning Loss in Students: A Phenomenological Study in Senior High Schools in Sumbawa Regency*, Mandala Education Scientific Journal 8(1)2022, 628-638.
- Anna A. Arinushkina, et al., *The Impact of Digitalization in a Changing Educational Environment*, (Hershey: IGI Global, 2023).

- BV Ramana Murty & K. Narasimha Rao, Digital Pedagogy—An Opportunity or a Threat?, in Proceedings of the International Conference on Digital Pedagogies (ICDP), 1-3 April 2019, (New Delhi: Nelson Mandela Marg, 2019).
- Boris V. Markov, Philosophy of Education in the Digital Era, *Open Journal for Studies in Philosophy* 4(2) 2020, 57-66.
- Chitra Krishnan, et al., Digital Transformation in Education: Emerging Markets and Opportunities, (Sharjah: Bentham Books, 2023).
- David Thornburg, From the Campfire to the Holodeck: Creating Engaging and Powerful 21st Century Learning Environments, (San Francisco: Jossey-Bass, 2013).
- David Thornburg, From the Campfire to the Holodeck: Creating Engaging and Powerful 21st Century Learning Environments, (San Francisco: Jossey-Bass, 2013).
- Dirk Ifenthaler, et al., Digital Transformation of Learning Organizations, (Switzerland: Springer, 2021).
- Dwi Afriyanto, Islamic Education: Prophetic & Integrative-Interconnective Approach, (Sukabumi: Jejak Publisher, 2023).
- Dwi Pita Reski, et al., Philosophy of Education in the Digital Age: The Balance between Technology and Humanism, *Didaktika: Journal of Educational Thought* 30(2) 2024, 290-295.
- Dyanti Mahrurnisya, Learner Skills in the 21st Century, *Jupenji: Indonesian Journal of Education* 2(1) 2023, 101-109.
- Eileen Kennedy & Diana Laurillard, Online Learning Future: An Evidence Based Vision for Global Professional Collaboration on Sustainability, (London: Bloomsbury Publishing, 2023).
- Eka Febryani Siskawandari, et al., The Future of Muhammadiyah Management: Adaptation of AIK in the Digital Era, *Ekoma: Journal of Economics, Management, Accounting* 4(5) 2025, 8319-8326.
- Fadia Puja Ainun, et al., Identification of Digital Transformation in the World of Education Regarding Opportunities and Challenges in the Era of Disruption, *Journal of Citizenship* 6(1) 2022, 1570-1580.
- Fedi Apriyadi & Dwi Noviani, The Concept of Humanization in Elementary School Education, *Journal of Islamic Religious Studies* 8(11) 2004, 79-88.
- Fedi Apriyadi & Dwi Noviani, The Concept of Humanization in Elementary School Education, *Journal of Islamic Religious Studies* 8(11) 2024, 79-88.
- Hamzah B. Uno & Nina Lamatenggo, Performance Theory and Its Measurement, (Jakarta: Bumi Aksara, 2012).
- Harianto Ghany Rakhman, et al., The Role and Challenges of Muhammadiyah in the Digital Era, *Masterpiece: Journal of Islamic Studies and Social Sciences* 3(3) 2025, 313-321
- Hasan Hanafi, et al., Islam and Humanism, (Yogyakarta: Pustaka Pelajar, 2007).
- ITU, UNESCO, and UNICEF, The Digital Transformation of Education: Connecting Schools, Empowering Learners, September 2020, 6.
- Judith V. Boettcher & Rita-Marie Conrad, The Online Teaching Survival Guide: Simple and Practical Pedagogical Tips, (San Francisco: Jossey-Bass, 2021).
- Julie M. Wood & Nicole Ponsford, *TechnoTeaching: Taking Practice to the Next Level in a Digital World*, (Harvard: Harvard Education Press, 2014).
- Kusnandi, *Articulating Educational Planning in the Digital Age*, *Journal of Educational Vehicles* 6(1) 2019, 1-14.
- Linda Safira, et al., The Main Strengths of Muhammadiyah Educational Institutions in Conquering Educational Challenges in the 4.0 Era, *Journal of Social Sciences and Education* 7(1) 2023, 370-377.
- Loso Judijanto, et al., Digital Transformation in the World of Education: Integration of Technology in the School Curriculum, *Jurnal Ilmiah Edukatif* 11(1) 2025, 37-46.
- Loso Judijanto, et al., Digital Transformation of Pedagogy in Higher Education Based on Bibliometric Studies of Publications in the Last Decade, *Belaindika Journal: Learning and Educational Innovation* 7(1) 2025, 48-56.
- Lusila Parida, et al., Digital Transformation Management of Elementary School Education in Sintang Regency, *Perkhasa Elementary Education Journal* 10(2) 2024, 883-898.
- Mohamad Ali, Dissecting the Objectives of Muhammadiyah Education, *Prophetica* 17(1) 2016, 43-56.

- Muhammad Taufiqurochman & Syafirda Azmi Aulia, The Urgency of Humanization and Prophetic-Based Education in the Current Era, *Central Journal of Education* 6(1) 2025, 65-76.
- Mulyono, et al., Digitalization of Education: Opportunities and Challenges in Improving Quality at SMK PSM Randublatung, *Indonesian Research Journal on Education* 5(1) 2025, 470-475.
- Muthi'ah Lathifah & Yakobus Ndonga, The Role of Education in Building Civilized Humanity, *Lencana: Journal of Educational Science Innovation* 2(3) 2024, 184-193.
- Najlaa Khayyirah Alkhowarizmi, et al., Educational Transformation in the Digital Era: Challenges and Opportunities in Improving the Quality of Learning in Indonesia, *Student Research Scientific Journal* 3(4) 2025, 759-764.
- Ni Made Fanny Dianis Sviri & Kadek Dwi Arlinayanti, Changes in Educational Paradigms Through the Utilization of Technology in the Digital Era, *Metta: Journal of Multidisciplinary Science* 4(3) 2024, 50-63.
- Nilna Mayang Kencana Sirait, *Philosophy of Islamic Education*, (Medan: UMSU Press, 2024).
- Nor Laila & Rony Edward Utama, Muhammadiyah Islamic Education, *al-Madrasah: Scientific Journal of Elementary Madrasah Education* 7(1) 2023, 286-298.
- Nurul Istiqomah & Na'imah, Education Transformation: Paradigm Shifts in Learning in the Age of Technology, *Journal of Educational Sciences* 9(3) 2025, 1546-1557.
- Paulo Freire, *The Politics of Education; Culture, Power and Liberation*, Petert.: Agung Prihantoro & Fuad Arif Fudiyartanto, (Yogyakarta: Pustaka Pelajar, 2007).
- Pitri Maharani Efendi, et al., The Relevance of the Independent Curriculum to Ki Hadjar Dewantara's Conception: A Critical Study from a Philosophical-Pedagogical Perspective, *Jurnal Elementaria Edukasi* 6(2) 2023, 548-561.
- Priten Shah, *AI and the Future of Education: Teaching in the Age of Artificial Intelligence*, (San Francisco: Jossey-Bass, 2023).
- Ramadhan Ridlo Fadlulloh Iswandi & Mudji Kuswinarno, Transformation of Human Resource Development in the Digital Era, *Initiative: Journal of Economics, Accounting and Management* 4(1) 2025, 250-262.
- Ratih Setiawati, et al., Technological Transformation in Education in the Era of the Industrial Revolution 4.0: Technological Dilemmas from a Philosophical Perspective, *Cendikia: Journal of Education and Teaching* 1(5) 2023, 219-225.
- Ratih Setiawati, et al., Technological Transformation in Education in the Era of the Industrial Revolution 4.0: Technological Dilemmas from a Philosophical Perspective, *Cendikia: Journal of Education and Teaching* 1(5) 2023, 219-225.
- Ratri Ayu Bethari, Existence and Freedom in Paulo Freire's Thought: Towards Humanization Through Critical Consciousness, *Paradigma: Journal of Philosophy, Science, Technology, and Socio-Culture* 30(3) 2024, 1-12.
- Rebecca J. Blankenship & Charlotte Baker, *Cases on Digital Learning and Teaching Transformations in Higher Education*, (Hershey: IGI Global, 2019).
- Rhyno Fairuz Melin, Technology in Education: Building Discourse on Future Indonesian Education, *Khatulistiwa: Journal of Education and Social Humanities* 4(2) 2024, 195-203.
- Rifa Hanifa Mardiyah, et al., The Importance of Learning Skills in the 21st Century as a Demand in Human Resource Development, *Lectura: Journal of Education* 12(1) 2021, 29-40.
- Rita Sahara Munte, et al., Teacher Innovation Through Digital Transformation in Integrated Islamic-Based Schools, *Journal of Education and Teaching Review* 7(3) 2024, 8900-8908.
- Safry Andi, et al., Progressive Education Paradigm: Concept, Essence, and Innovation of Muhammadiyah Learning in the Digital Era, *Innovative Multidisciplinary Journal* 9(12) 2025, 355-372.
- Sindi Septia Hasnida, et al., Educational Transformation in the Digital Era, *Indonesian Education Star Journal* 2(1) 2024, 110-116.
- Siti Amaliati, et al., Fitrah as the Meaning of Humanization of Islamic Education, *Indonesian Journal of Humanities and Social Studies* 5(1) 2024, 267-282.
- Siti Hajar Halili, Technological Advancements in Education 4.0, *The Online Journal of Distance Education and e-Learning* 7(1) 2019, 63-69;

- Sugeng Fitri Aji, *Critical Transformative Islamic Educational Reasoning in the 21st Century*, (Wonosobo: CV. Mangku Bumi Media, 2019).
- Suyatno, *The Relevance of Muhammadiyah Education in Facing the Smart Society 5.0 Era*, *Basicedu Journal* 8(2) 2024, 1190-1199.
- Syaiful Bahri, *Muhammadiyah's Challenges and Strategies in Facing the Development of Educational Science in the Digital Era*, *Aladalah: Journal of Politics, Social, Law and Humanities* 3(1) 2025, 215-223.
- Tiana Dwi Marisa, et al., *Muhammadiyah's Challenges in Islamic Education Innovation: Welcoming the Digitalization Era with Quality Knowledge*, *Moral: Journal of Islamic Education Studies* 2(1) 2025, 201-213.
- Titin Kempa, et al., *Foundations of Education*, (Sumedang: Mega Press, 2024).
- Umar al Faruq, *Opportunities and Challenges for Muhammadiyah Education in the 4.0 Era*, *Ar-Risalah: Islamic Media, Education and Islamic Law* 18(1) 2020, 13-30.
- Wahyu Ningsih, et al., *Implications of the Pillars of Humanization of Prophetic Education in Character Education*, *Morphology: Journal of Educational Sciences, Language, Literature, and Culture* 2(1) 2024, 277-286.
- Yayu Sri Rahayuningsih & Tatang Muhtar, *Digital Pedagogy as an Effort to Improve 21st Century Teacher Competence*, *Basicedu Journal* 6(4) 2022, 6960-6966.
- Zahra Nabila Iqbal, et al., *The Role of Human Resources in Improving School Performance in the Digital Era*, *Journal of Management and Education Science* 1(3) 2024, 68-73.