Educational System Reform as an Inclusive Step in Addressing Social Change and the 5.0 Industrial Era

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ABSTRACT

The rapid development of technology and the continuous social changes demand that the education system constantly adapt to remain relevant to the times. The Industrial Era 5.0 emphasizes the collaboration between technological sophistication and human values, making educational renewal an absolute necessity. This transformation is not only focused on the integration of technology but also on strengthening human values in the learning process. This article discusses the urgency of reforming the education system in response to the complexities of current social challenges. An inclusive approach is positioned as the main strategy to create a learning environment that values diversity, optimizes the potential of each individual, and produces a generation of innovative and competitive learners. This renewal includes the development of an adaptive curriculum, the enhancement of educators' competencies, and the utilization of technology that favours the humanitarian side. With this step, education is expected to become the main pillar in building an inclusive and resilient society in the future.

Keywords: *education transformation, era 5.0, social inclusion, human values, curriculum reform, technology integration, role of educators*

1. INTRODUCTION

The rapid advancement of the times has a significant impact on the social structure of society. The industry 5.0 era marks the transition from the dominance of automation to the synergy between humans and intelligent technology. In this era, the emphasis on human values, sustainability, and personalized approaches becomes crucial, including in the field of education.

Amid the currents of globalization, digitalization, and cultural changes, the education system is required to be more inclusive and adaptive (UNESCO, 2020). The world of education is no longer sufficient to produce graduates with academic skills alone; it must also prepare individuals who are resilient in facing the ever-changing world of work and social life. However, challenges still loom, such as rigid curriculum structures,

disparities in access to education, and low digital literacy skills among educators and students.

In such a situation, the renewal of the education system becomes a strategic step that cannot be overlooked. Reform does not only encompass technological aspects but also an inclusive approach that ensures all layers of society receive relevant and meaningful education. Therefore, this paper aims to examine the importance of educational reform in response to social transformation and the era of Industry 5.0, as well as to present concrete strategies for building an inclusive and responsive education system (OECD, 2021).

2. METHOD

This study employs a qualitative approach with a descriptive method to provide an exploratory space in understanding the dynamics of educational system reforms amidst ongoing social and cultural changes. Data were collected through literature review, including academic journals, recent news articles, reference books, and official documents from educational institutions and the government.

Data were analysed using thematic techniques, which included stages of information reduction, classification of findings based on themes, preparation of descriptive narratives, and drawing conclusions relevant to the study's focus. Data validity is maintained through triangulation techniques, namely by comparing various credible and up-to-date sources to obtain a comprehensive and accurate picture of the Indonesian education system's response to challenges in the 5.0 Industrial era through an inclusive approach.

3. RESULTS AND DISCUSSION

3.1. Characteristics in the Era of Industry 5.0

Integration of technology and human values. The synergy between Technology and Human Values in the 5.0 Industrial Era, also known as Society 5.0, marks a shift from mere automation towards collaboration between humans and intelligent technology. This concept was first proposed by the Japanese government to address various social challenges, such as inequality and an aging population, by prioritizing technology that adds value to human life (Siagian, 2023). In this approach, technologies such as artificial intelligence (AI), the Internet of Things (IoT), and robotics are not merely tools to replace humans, but partners in realizing social solutions. Therefore, the utilization of technology must align with ethical values, empathy, and social responsibility. although AI technology has been widely adopted, the level of student understanding of the technology is still diverse. Most college students (more than 70%) feel that they understand AI well enough, but an in-depth understanding of how these technologies work and their impact on everyday life the academic world is limited. In the context of education, the integration of technology is not only aimed at enhancing technical skills but also at strengthening character education, such as empathy and critical thinking abilities.

The importance of personalization in the education system. The importance of personalization in the education system. Personalized education has become an important foundation in this era. With the support of technology, the learning system can adjust to the interests, talents, and unique needs of each student, thereby increasing learning motivation and academic results. Technologies like AI and big data enable teachers to understand students' learning patterns specifically, allowing for more effective learning

strategies to be designed. This personalization also contributes to realizing inclusive education by providing equal access for all students, including those with special needs. However, its implementation still requires serious attention to ethics and the protection of students' personal data, as well as collaboration among stakeholders to ensure transparent and fair practices.

3.2. Weaknesses of the Education System in Indonesia Today

One of the fundamental problems in the Indonesian education system is the continued use of a rigid curriculum that is not adaptive to the changes of the times or technological advancements. The curriculum's focus, which is too theoretical and oriented towards one-way teaching from the teacher, results in a lack of development of 21st-century skills, such as critical thinking, creativity, and the ability to collaborate. As a result, graduates tend to be unprepared to face the demands of the real world in the 5.0 Industrial era, which requires high adaptability and mastery of technology and humanitarian values simultaneously.

Minimal Access to Inclusive Education. In limitations of facilities and infrastructure many educational institutions, especially in remote areas, are not yet equipped with adequate facilities to support students with special needs. This includes building accessibility, learning aids, and an environment that is friendly to people with disabilities. Shortage of trained teachers, the lack of training for educators in dealing with students with special needs presents its own challenge. Without adequate training, it is difficult for teachers to create a learning environment that optimally supports the principle of inclusivity. Social stigma and lack of community awareness, society still harbours negative views towards children with special needs. The lack of public education causes discrimination and ostracism towards these students, which results in parents' reluctance to send their children to school. Inequality of access in remote areas, remote areas still do not have adequate inclusive education infrastructure. The distribution of inclusive-friendly schools is also uneven, making it difficult for students with special needs to receive appropriate education.

3.3. Strategies for Discussing the Education System

Integration of technology and AI in the learning process. Facing the complexities of the Industry 5.0 era, the integration of technology and AI becomes a strategic solution in reforming education. This technology is capable of supporting more adaptive, personalized, and needs-based learning.AI also helps lighten the administrative burden on teachers, allowing them to focus more on nurturing and guiding students (AICI UMG, 2024). AI-based virtual tutors enable the learning process to take place without the constraints of space and time, reinforcing the concept of lifelong learning. However, its success greatly depends on the readiness of educators, so technological training needs to be continuously intensified.

Adaptive and future competency-based curriculum. The future curriculum must reflect flexibility and relevance to the needs of the times. The focus is no longer just on the transfer of theoretical knowledge, but on the development of critical skills, creativity, and digital literacy (Trilling & Fadel, 2009). A concrete example is the Merdeka Curriculum, which emphasizes project-based learning and differentiation according to students' interests (Kemendikbudristek, 2022).The curriculum also needs to incorporate ethical and humanitarian values so that students are not only intellectually competent but also emotionally and socially (Schwab, 2016). However, the implementation of such a

curriculum requires ongoing teacher training, the availability of facilities, and acceptance of changes in the education system.

Teacher training relevant to new technology. The role of teachers now is not only as educators but also as learning innovators. Therefore, training that focuses on digital skills and the utilization of AI is highly needed (UNESCO, 2021). The training must be applicative, covering the use of Learning Management Systems (LMS), digital content creation, and learning data analysis. In addition to technical skills, teachers should also be given an understanding of digital ethics. Programs like the Digital Talent Scholarship have had a positive impact, but the challenge of equal access to training still needs to be addressed through cross-sector collaboration (Kemkominfo, 2022).

Provision of educational access for vulnerable groups

Inclusive strategies are very important in ensuring that all groups receive their right to education, especially those from marginalized backgrounds. Measures such as infrastructure development in underdeveloped areas, distribution of digital learning devices, and provision of scholarships and social assistance have become integral parts of efforts to equalize education (Kemendikbudristek, 2023). Education for people with disabilities also needs to be supported with special educators, adaptive curricula, and assistive technology such as screen readers. The UNICEF report (2022) emphasizes that economic and social barriers are the main causes of restricted access to education for marginalized groups, so policy interventions need to be directed there.

3.4. Positive Impact of Inclusive Reforms

Along with social developments and the challenges presented by the Industry 5.0 era, inclusivity has become a key principle in designing a more equitable education system. Vulnerable groups, such as children from low-income families, people with disabilities, children in remote areas, and minority groups, often face barriers in accessing quality education. Therefore, it is important to design strategies that can overcome these barriers and ensure that access to education for them remains open, especially within the framework of inclusive and equitable education.

Therefore, it is important to design strategies that can overcome these obstacles and ensure that access to education for them remains open, especially within the framework of inclusive and equitable education. One strategy that can be implemented is to improve educational infrastructure in underdeveloped areas, including by providing digital learning facilities that can be accessed both online and offline. One of the strategies that can be implemented is to improve educational infrastructure in underdeveloped areas, including by providing digital-based learning facilities that can be accessed both online and offline. Government programs such as Sekolah Penggerak and Digitalisasi Sekolah are efforts to provide information and communication technology (ICT) facilities and internet connectivity in schools that previously had difficulty accessing them (Kemendikbudristek, 2023). In addition, the private sector can also play an important role in expanding access to learning technology, for example by providing learning devices and digital modules for free to underprivileged students.

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disabilities is also a key priority. Strategies such as providing teaching assistants, tailored curricula, and assistive technologies like screen readers and sensory devices have proven to be very helpful in ensuring the active participation of individuals with disabilities in the learning process (UNESCO, 2020). Moreover, training for teachers and educational staff in understanding inclusive learning methodologies needs to be strengthened so that they can create a learning environment that better supports diversity.

According to the UNICEF report (2022), economic and social factors are the main barriers for children from marginalized groups to continue their education. Therefore, the provision of scholarships, social education assistance, and efforts to raise public awareness about the importance of inclusive education must be an important part of the strategy to equalize access to education.

Therefore, the provision of scholarships, social education assistance, and efforts to raise public awareness about the importance of inclusive education must be an important part of the strategy for equitable access to education. Overall, providing fair access to education for vulnerable groups in the era of Industry 5.0 requires a holistic and cross-sectoral approach, involving affirmative policies, adaptive technology, and strong social support. Overall, providing equitable access to education for vulnerable groups in the era of Industry 5.0 requires a holistic and cross-sectoral approach, involving affirmative policies, adaptive technology, and strong social support. With the implementation of the right strategies, education can become a tool to reduce social inequality and create a more inclusive and sustainable future.

4. CONCLUSION

The Era of Industry 5.0 presents both opportunities and significant challenges for the education sector, especially in the effort to combine advanced technology with human values. The renewal of the education system that upholds the principle of inclusivity is key to ensuring that all groups in society, including vulnerable ones such as people with disabilities, children from underprivileged families, and minority communities, have access to decent and equitable education.

The use of technology such as artificial intelligence, IoT, and big data analytics in education opens up more personalized, adaptive, and needs-based learning spaces for students. However, the success of technology integration is highly determined by the readiness of educators, infrastructure support, and policies that ensure data security and ethics.

However, the success of technology integration is highly determined by the readiness of educators, infrastructure support, and policies that ensure data security and ethics. A flexible and future-oriented curriculum, such as critical thinking skills, creativity, and social and emotional abilities, is essential for students to cope with the dynamics of modern life. A flexible curriculum oriented towards future competencies, such as critical thinking skills, creativity, and social and emotional abilities, is essential for students to cope with the dynamics of modern life. Therefore, enhancing teachers' capacity becomes very important so that they can play the role of facilitators in an engaging learning process that is relevant to the needs of the times.

Overall, realizing fair and inclusive access to education requires synergy between the government, educational institutions, the private sector, and society. With strong commitment and collaboration, education can become a transformative tool in reducing social disparities and shaping an inclusive, resilient, and competitive society in facing the future.

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NOVELTY

This article offers a new perspective on addressing the challenges of the industrial era 5.0 by strengthening an education system that is not only technology-oriented but also emphasizes an inclusive and humanist approach at the same time. The novelty of this research lies in the integration of three main aspects: future competency-based adaptive curricula that combine technical skills and social values, the ethical use of intelligent technologies to support personalization and equity in learning, and concrete strategies to expand access to education for vulnerable groups. This article contributes the ideas on how education can be a tool for sustainable social transformation amid the development of modern technology.

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