

Transformation of the Indonesian Education System through Strengthening Education Management, ICT, Quality, and Character Education

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Abstract: *Indonesia's education system has undergone a long historical evolution, beginning with the colonial era, progressing through nationalization after independence, and continuing into the digital age. In the 21st century, global demands have encouraged substantial reforms in educational management, ICT integration, curriculum development, and the revitalization of national philosophical values. This article presents a comprehensive review of national academic publications (2021–2025) to map developments, challenges, and reform directions within Indonesia's education system. Findings indicate that the major obstacles include weak school management, digital inequality, low teacher competencies, uneven access to education, and insufficient integration of philosophical foundations into educational practice. Conversely, opportunities for improvement arise from the expansion of ICT-based management systems, the modernization of school governance, the strengthening of character education, and the adoption of progressive educational principles. The study concludes that Indonesia's educational transformation requires a synergistic approach combining managerial reform, technological advancement, philosophical grounding, and increased educator competence.*

Keywords: *Transformation of Indonesian education, educational management, ICT, quality, character education.*

Abstrak: Sistem pendidikan Indonesia berkembang melalui proses historis panjang, mulai dari pengaruh kolonial, nasionalisasi pendidikan, hingga era digital saat ini. Memasuki abad ke-21, tuntutan global mendorong transformasi besar dalam manajemen pendidikan, integrasi ICT, pembaruan kurikulum, serta revitalisasi nilai-nilai filosofis nasional. Artikel ini menyajikan kajian komprehensif terhadap artikel ilmiah nasional (2021–2024) untuk memetakan perkembangan, permasalahan, dan arah pembenahan sistem pendidikan Indonesia. Analisis menemukan bahwa tantangan terbesar mencakup rendahnya kualitas manajemen sekolah, kesenjangan digital, lemahnya kualitas guru, ketidakmerataan pendidikan, dan kurangnya integrasi filosofi pendidikan dalam praksis pendidikan. Di sisi lain, peluang penguatan pendidikan muncul dari pemanfaatan ICT, manajemen modern, penguatan pendidikan karakter, pengembangan sistem informasi manajemen, serta penerapan prinsip progresivisme dalam pendidikan. Artikel ini menyimpulkan bahwa transformasi pendidikan Indonesia hanya dapat terjadi melalui sinergi antara pembaruan manajerial, teknologi, filosofi nasional, dan penguatan kompetensi pendidikan. Rekomendasi diarahkan pada penguatan tata kelola sekolah, investasi digital, perbaikan distribusi guru, dan reformasi kurikulum berbasis karakter dan teknologi.

Kata kunci: Transformasi pendidikan Indonesia, manajemen pendidikan, ICT, mutu, pendidikan karakter.

Introduction

Indonesia's education system is an entity that continues to develop and undergo changes according to historical, political, social, economic, and global dynamics (Hidayat et al., 2025). During the colonial period, education functioned as a tool of social and political control that only provided limited access to certain groups, thus giving birth to structural inequality in the acquisition of knowledge (MH et al., 2022). Fundamental changes occurred after independence when the government began to develop the national education system as an instrument of nation building, strengthening national identity, and equitable access for all citizens (Agogbua & Umeozor, 2024).

However, the complexity of Indonesia's education problems is not easy to solve (Rafsanjani & Rozaq, 2024). Various studies show that until now there are still significant gaps in the quality of education services, the quality of educators, learning facilities, and the equitable distribution of educational opportunities between regions (Fitri, 2021). The shift in the educational paradigm towards 21st century competencies also requires the adaptive ability of schools to develop modern, effective, and data-based management in order to face rapid social and technological changes (Chiasson & Freiman, 2022).

Entering the digital era, information and communication technology (ICT) has become a new pillar in educational transformation (Budiarto et al., 2024). ICT integration not only serves to expand access to information, but also supports administrative efficiency, transparency of school management, improvement of learning quality, and data-driven decision-making (Handayani et al., 2022). However, the use of ICT is still limited by infrastructure inequality, uneven human resource capabilities, and the readiness of different educational institutions (Van De Werfhorst et al., 2022). The COVID-19 pandemic has further emphasized this digital disparity, especially in basic education that faces technological limitations, teacher competence, and lack of parental support (Faturohman & Gunawan, 2021).

The government has responded to these challenges through various policies such as the Independent Curriculum, strengthening character education, improving teacher professionalism, and school digitalization programs (Masitoh & Purbowati, 2024). This policy aims to respond to global demands while remaining rooted in the nation's philosophical values (Zhao et al., 2024). However, its implementation in the field still faces obstacles, especially in unintegrated education management, policy inconsistencies, and weak continuous supervision (Mustakim et al., 2024).

In the midst of the demands of globalization, technological change, and social dynamics, there is a need to reaffirm the philosophical values of national education (Rajaram, 2021). Ki Hadjar Dewantara's thoughts on learning independence, the role of the environment, and student-centeredness offer an important foundation for building a relevant and characterful education (Hufron & Junaedi, 2021). The integration of these values becomes increasingly relevant when education not only pursues academic achievement, but also shapes the character, morality, and independence of students (Gamage et al., 2021).

Therefore, Indonesia's education transformation requires a more comprehensive and systemic approach (Hunaepi & Suharta, 2024). Strengthening school management, using ICT strategically, improving the quality of teachers, equitable access, and revitalizing character education must run synergistically (Izzah et al., 2024). This literature review was compiled to map the direction of development, main challenges, and strategies for improving the Indonesian

education system based on national scientific publications published in 2021–2025. These findings are expected to provide a comprehensive picture of the current state of education and offer a research-based perspective to support the formulation of more effective educational policies and practices.

Method

This study uses a systematic literature study approach to analyze the direction of the transformation of the Indonesian education system in the context of education management, ICT integration, quality of education, and character strengthening. This method was chosen because it allows researchers to collect, review, and synthesize relevant research findings comprehensively so that a comprehensive picture of national education issues in the period 2021–2025 is obtained. The stages of the research are described as follows.

Source Identification and Collection

The initial stage is carried out by searching national scientific articles indexed on online journal portals such as:

- a. Google Scholar,
- b. Sinta,
- c. Garuda Ministry of Education and Culture,
- d. and journals of national higher education institutions.

The inclusion criteria used include:

- a. Articles published in the range 2021–2025,
- b. discuss topics related to education management, ICT, educational quality, curriculum, educational philosophy, or character education,
- c. in the form of research articles (qualitative, quantitative, or literature studies), and
- d. have full access to analysis.

Through the selection process, scientific articles that meet the criteria and are relevant to the research focus are obtained.

Classification of Main Themes

Each article that has been collected is then analyzed in advance to identify the core topic. The researcher used open coding techniques to group themes based on the dominant issues in each article. From this process, the article is divided into five thematic categories:

- a. history of the development of Indonesian education,
- b. education management,
- c. digitalization of education and ICT,
- d. Character Education and Philosophy of Education,
- e. quality of education and access inequality.

This classification aims to simplify the synthesis process so that the patterns of findings between studies can be clearly identified.

In-Depth Thematic Analysis

The analysis was carried out with a thematic content analysis approach to explore the core ideas, main findings, and recommendations from each article. At this stage the researcher:

- a. read each article thoroughly,

- b. marking relevant sections using the highlighting technique,
- c. grouping findings into subthemes,
- d. and compare the similarities and differences between articles.

This process allows researchers to find relationships between variables, policy patterns, systemic constraints, and transformation opportunities discussed in various literatures.

Literature Synthesis and Argument Formulation

The results of the analysis of various articles were then synthesized using the narrative synthesis approach. The preparation of the synthesis is carried out by:

- a. integrating findings between articles,
- b. placing the results of the study in the framework of national education transformation,
- c. formulating the relationship between management, ICT, quality, and character education,
- d. and summarize the direction of education reform based on research trends 2021–2025.

This synthesis produces a comprehensive overview of the state of Indonesian education, the main challenges faced, and strategies to strengthen the education system based on the latest scientific references.

Validation and Verification of Findings

To increase the credibility of the study, a cross-check was carried out on the content of the article with:

- a. comparing findings between journals to avoid interpretation bias,
- b. confirm the consistency of data in national trends in education,
- c. and ensure the suitability of the findings with the theoretical framework used (education management, systems theory, progressivism, ICT education).

This validation process helps ensure that the results of the study have a strong scientific basis and can be accounted for.

Result and Discussion

Historical Development of the Indonesian Education System

The long journey of Indonesian education shows that there is a close relationship between political, social, and ideological dynamics and educational practices. During the colonial period, education was designed to meet colonial administrative interests, so access was exclusive and stratigraphic. This historical inequality leaves a structural legacy that still affects the quality of education to this day (MH et al., 2022). After independence, the government formulated the direction of national education through various regulations, including the National Education System Law, with the aim of building a whole Indonesian people. However, history shows a pattern of policy discontinuity, where changes in government often result in rapid changes in curriculum and educational approaches. This has an impact on inconsistency in implementation at the level of educational units.

(Balya, 2024) emphasizing that Pancasila, from an ideological point of view, is the philosophical basis in determining the values, goals, and direction of the implementation of national education. However, this philosophy is often only reflected in policy documents, not

fully internalized in learning practices. Thus, Indonesia's history of education reflects not only the increase in access, but also the tension between the ideal vision and field practice.

Education Management as the Key to School Quality

The quality of school management is a determining factor for the success of education, more than just the quality of the curriculum or facilities. Poor management can lead to inefficiencies, lack of innovation, and low quality of educational services. (Mulyati & Suryaman, 2025) emphasized that data-based management and strategic planning have an important role in efforts to improve the quality of learning.

(Hartono et al., 2023) He explained that modern education management requires school principals to have visionary leadership, the ability to drive teacher collaboration, and implement continuous supervision. School principals no longer only play an administrative role, but also as instructional leaders who affect the quality of learning in the classroom. In addition, (Sudarma, 2022) emphasizing that schools need to be seen as an interconnected system. This means that various components of teachers, students, curriculum, infrastructure, and the environment must interact harmoniously. A single component weakness can weaken the entire system. This systemic approach is an important foundation for comprehensive education reform.

Integration of ICT and Management Information Systems

The development of ICT has changed the way schools operate, from administrative data management to learning design. (Handayani et al., 2022) shows that the use of ICT in Madrasah Aliyah Baabussalaam is able to increase the effectiveness of school administration, accelerate reporting, and strengthen institutional accountability. The implementation of the Management Information System (SIM) in schools has been proven to be able to increase academic data transparency, improve teacher performance, and facilitate monitoring of student progress (Sumbaryani et al., 2023). With digitalization, schools can do:

- a. real-time student data collection,
- b. Manage grades and attendance automatically,
- c. facilitate intensive communication with parents,
- d. and provide an application-based evaluation system.

However, ICT integration still faces obstacles in the form of limited infrastructure, uneven digital skills of teachers, and inequality between urban and rural schools. Therefore, successful digitalization requires strategies to strengthen human resource capacity, provide internet networks, and consistent policy support.

Post-pandemic Education Challenges

The COVID-19 pandemic is a critical point that shows the readiness of the education system to face change. (Fatuohman & Gunawan, 2021) It found that elementary schools experienced many obstacles, especially limited internet access, lack of learning devices, low digital competence of teachers, and varied parental involvement. This inequality increases the quality gap between schools with adequate facilities and schools in the 3T area. Post-pandemic, new challenges have emerged, namely the need to restore learning (learning recovery) while ensuring the resilience of the education system to future disruptions.

In addition, the pandemic affects the formation of children's characters. (Rohmawati & Suryani, 2023) emphasizing that learning from home reduces children's exposure to social

habits and moral values. In comparison, Japan has a consistent approach to moral habituation from an early age in school and family, offering examples of character practices that can be adapted by Indonesia.

Quality Problems and Education Gaps

The quality of Indonesia's education is greatly influenced by structural factors that are still unresolved. The uneven distribution of teachers causes inequality in the quality of learning between regions. Schools in remote areas often lack qualified teachers, while schools in cities are overstaffed by educators. In addition, basic learning facilities such as classrooms, libraries, and laboratories are not always available or feasible.

(Fitri, 2021) highlighting the low competence of teachers as one of the causes of the suboptimal quality of learning. Not all teachers master the competency-based pedagogy, learning technology, or formative assessments required in modern education. On the other hand, frequently changing regulations, limited funding, and an evaluation system that still focuses on exam results have also slowed down the development of the quality of education. Most schools are still focused on meeting administrative standards rather than learning innovation.

Philosophy of Education and the Relevance of Ki Hadjar Dewantara's Thought

Ki Hadjar Dewantara's thinking is relevant in the context of modern education because it emphasizes learning independence, student-centeredness, and the importance of an educational environment that supports character development. (Arifin, 2024) shows that the principles of KHD are very compatible with the approach of progressivism that is the basis of various global education reforms.

The concept of the four educational environments, namely family, school, community, and state, underlines that character formation cannot be imposed only on schools. This view is increasingly important in the midst of the weakening of children's social interaction due to digitalization. The Independent Learning Policy actually adopts many KHD principles, but its implementation still faces challenges such as teacher competency gaps and diverse school contexts.

Comparison with the Japanese Education System

Japan is an example of a country that has succeeded in building a structured education system with a strong emphasis on a culture of discipline, cooperation, and character education. (Harton, 2022) noted that Japan has a strong alignment between school, family, and society in the formation of moral values.

(Rohmawati & Suryani, 2023) added that early childhood education in Japan relies on habituation activities, not just academics, such as tidying up things, queuing, maintaining cleanliness, and respecting others. This approach forms character from an early age and makes the school culture very strong. Indonesia can learn from Japan's consistency in applying moral values practically, not just normatively. However, the adoption of the Japanese model must be adjusted to the socio-cultural context of Indonesia.

Conclusion

This literature review shows that the transformation of the Indonesian education system is a multidimensional process influenced by historical factors, policies, school management, technological integration, the quality of educators, and the philosophy of national education. The results of the analysis of the 2021–2024 national scientific articles show that although various reform efforts have been made by the government, especially through the Independent Curriculum, school digitalization, and character strengthening programs, structural and cultural challenges still hinder the optimization of policy implementation. From all these findings, it can be concluded that Indonesia's education reform requires an integrated approach that involves increasing the capacity of school management, equitable distribution of ICT infrastructure, strengthening teacher competence, and consistency in the implementation of national philosophical values. Transformation cannot only rely on policy changes, but requires a collaborative strategy that touches all aspects of the education system.

References

- Agogbua, V. U., & Umeozor, J. U. (2024). Educational policy reforms for sustainable development and national security. *UNIZIK Journal of Educational Management and Policy*, 6(5), 83–90.
- Arifin, M. M. (2024). *Peran Filsafat Pendidikan Ki Hadjar Dewantara dalam Membangun Sistem Pendidikan Indonesia Berbasis Progresivisme*. *Antropocene: Jurnal Penelitian Ilmu Humaniora*, 4 (2), 42–46.
- Balya, H. (2024). Reaktualisasi Pancasila Sebagai Landasan Filosofis Hukum Nasional. *GOVERNANCE: Jurnal Ilmiah Kajian Politik Lokal Dan Pembangunan*, 11(1).
- Budiarto, M. K., Rahman, A., & Efendi, A. (2024). Proposing information and communication Technology (ICT)-Based Learning transformation to create competitive human resources: A theoretical review. *Multidisciplinary Reviews*, 7(4), 2024076.
- Chiasson, M., & Freiman, V. (2022). Rethinking the 21st-century school: New citizens' skills for the digital era and their interaction with mathematics teaching and learning. In *Mathematics and Its Connections to the Arts and Sciences (MACAS) 15 Years of Interdisciplinary Mathematics Education* (pp. 69–107). Springer.
- Faturohman, N., & Gunawan, A. (2021). Tantangan lembaga pendidikan dasar dalam penyelenggaraan pendidikan pasca pandemi covid-19 di Kabupaten Serang. *Geneologi PAI: Jurnal Pendidikan Agama Islam*, 8(2), 433–442.
- Fitri, S. F. N. (2021). Problematika Kualitas Pendidikan di Indonesia. *Jurnal Pendidikan Tambusai*, 5(1), 1617–1620.
- Game, K. A. A., Dehideniya, D., & Ekanayake, S. Y. (2021). The role of personal values in learning approaches and student achievements. *Behavioral Sciences*, 11(7), 102.
- Handayani, D., Badriah, S., & Erihadiana, M. (2022). Sistem Informasi Manajemen Pendidikan Berbasis ICT di Madrasah Aliyah Baabussalaam Kota Bandung. *JURNAL SYNTAX IMPERATIF: Jurnal Ilmu Sosial Dan Pendidikan*, 2(6), 631–641.
- Hartono, D. (2022). Perbandingan Sistem Pendidikan Indonesia dan Sistem Pendidikan Jepang: Memajukan Pendidikan Bangsa. *Jurnal Exponential (Education For Exceptional Children)*, 3(2), 363–373.
- Hartono, D., Akhmadi, W., Jalali, J., Supiyati, R., & Ummah, S. R. (2023). Sistem Manajemen Pendidikan Modern Guna Pengembangan Pendidikan Di Sekolah. *Jurnal Multidisiplin Indonesia*, 2(6), 1315–1320.
- Hidayat, M. T., Suryadi, S., Latifannisa, N., Sari, S. N., & Rino, R. (2025). Evolution of The Education Curriculum in Indonesia. *Journal of Innovation in Educational and Cultural*

- Research*, 6(2), 381–395.
- Hufron, M., & Junaedi, M. (2021). Reflection of Ki Hajar Dewantara's Character Education Philosophy on Independent Learning. *Edukasia Islamika*, 6(2), 226–243.
- Hunaepi, H., & Suharta, I. (2024). Transforming education in Indonesia: The impact and challenges of the Merdeka belajar curriculum. *Path of Science*, 10(6), 5026–5039.
- Izzah, I., Mulyadi, M., Walid, M., Padil, M., & Wahyudin, A. (2024). Strategic Management of Schools for Excellence: Integrating Quality Culture and Character Development in Leading Educational Institutions. *AL-ISHLAH: Jurnal Pendidikan*, 16(4), 4654–4668.
- Masitoh, S. D., & Purbowati, D. (2024). Enhancing Teacher Professionalism in Indonesia: Challenges and Strategies for Digital Technology Utilization in the Society 5.0 Era. *HEUTAGOGIA: Journal of Islamic Education*, 4(2), 219–236.
- MH, M. W., Abadi, S., Zein, A. A., & Novia, T. (2022). Studi Historis Perkembangan Sistem Pendidikan Di Indonesia. *Al-Afkar, Journal For Islamic Studies*, 83–90.
- Mulyati, I., & Suryaman, M. (2025). Integrasi manajemen pembiayaan dan fasilitas pembelajaran dalam meningkatkan mutu pendidikan sekolah: Tinjauan dan sintesis empiris. *Jurnal Tahsinia*, 6(4), 548–559.
- Mustakim, M., Suastra, I. W., & Lasmawan, I. W. (2024). The independent curriculum in educational theory review: Challenges and solutions. *Realita: Jurnal Bimbingan Dan Konseling*, 9(2), 2480–2501.
- Rafsanjani, T. A., & Rozaq, M. A. (2024). Educational problems in Indonesia. *Solo Universal Journal of Islamic Education and Multiculturalism*, 2(02), 135–144.
- Rajaram, K. (2021). Transformation in higher education: Twenty-first-century teaching and learning competencies. In *Evidence-Based Teaching for the 21st Century Classroom and Beyond: Innovation-Driven Learning Strategies* (pp. 1–19). Springer.
- Rohmawati, O., & Suryani, L. (2023). Membangun Karakter Anak Usia Dini Berbasis Sistem Pendidikan Jepang. *JIP-Jurnal Ilmiah Ilmu Pendidikan*, 6(12), 9774–9786.
- Sudarma, U. (2022). Pendidikan karakter dalam mewujudkan sumber daya manusia berdaya saing menuju Indonesia Emas 2045. *Sharia: Jurnal Kajian Islam*, 1(1), 37–55.
- Sumbaryani, I. R., Sutanara, F., & Ranahcita, R. N. (2023). Peran sistem informasi manajemen sekolah dalam meningkatkan efektivitas perencanaan dan evaluasi pembelajaran. *Jurnal Literasi Digital*, 3(2), 89–98.
- Van De Werfhorst, H. G., Kessenich, E., & Geven, S. (2022). The digital divide in online education: Inequality in digital readiness of students and schools. *Computers and Education Open*, 3, 100100.
- Zhao, Y., Zhao, M., & Shi, F. (2024). Integrating moral education and educational information technology: A strategic approach to enhance rural teacher training in universities. *Journal of the Knowledge Economy*, 15(3), 15053–15093.