



Transformation of the Education Curriculum in the Digital Era towards Learning Quality

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ABSTRAK

Transformasi kurikulum pendidikan di era digital menjadi salah satu langkah penting dalam meningkatkan kualitas pembelajaran di sekolah. Perkembangan teknologi informasi dan komunikasi mendorong dunia pendidikan untuk menyesuaikan sistem pembelajaran agar lebih efektif, inovatif, dan sesuai dengan kebutuhan peserta didik abad ke-21. Penelitian ini bertujuan untuk menganalisis pengaruh transformasi kurikulum pendidikan di era digital terhadap kualitas pembelajaran. Metode penelitian yang digunakan adalah studi kepustakaan dengan mengkaji berbagai jurnal, buku, dan sumber ilmiah yang relevan mengenai kurikulum dan pembelajaran digital. Hasil penelitian menunjukkan bahwa transformasi kurikulum memberikan dampak positif terhadap proses pembelajaran, seperti meningkatnya kreativitas peserta didik, kemudahan akses informasi, penggunaan media pembelajaran interaktif, serta meningkatnya kemampuan berpikir kritis dan kolaboratif. Selain itu, penerapan teknologi dalam pembelajaran juga membantu guru dalam menyampaikan materi secara lebih menarik dan efisien sehingga peserta didik lebih aktif dalam proses belajar. Namun, implementasi kurikulum digital juga menghadapi beberapa kendala, seperti keterbatasan fasilitas teknologi, kurangnya kompetensi digital pendidik, dan kesenjangan akses internet di beberapa daerah. Oleh karena itu, diperlukan kerja sama antara pemerintah, sekolah, guru, dan masyarakat dalam mendukung pengembangan kurikulum berbasis digital agar kualitas pembelajaran dapat meningkat secara optimal

serta mampu menciptakan pendidikan yang adaptif, kreatif, dan berdaya saing di era globalisasi.

ABSTRACT

The transformation of the educational curriculum in the digital era has become an important step in improving the quality of learning in schools. The development of information and communication technology encourages the education sector to adapt learning systems to be more effective, innovative, and in accordance with the needs of 21st-century students. This study aims to analyze the influence of educational curriculum transformation in the digital era on the quality of learning. The research method used is a literature study by reviewing various journals, books, and relevant scientific sources related to curriculum and digital learning. The results of the study indicate that curriculum transformation has a positive impact on the learning process, such as increasing students' creativity, providing easier access to information, utilizing interactive learning media, and improving critical and collaborative thinking skills. In addition, the application of technology in learning also helps teachers deliver materials in a more interesting and efficient way so that students become more active in the learning process. However, the implementation of a digital curriculum also faces several obstacles, such as limited technological facilities, lack of teachers' digital competencies, and unequal internet access in some regions. Therefore, cooperation among the government, schools, teachers, and communities is needed to support the development of a digital-based curriculum in order to improve the quality of learning optimally and create adaptive, creative, and competitive education in the era of globalization.



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1. INTRODUCTION

Curriculum transformation in the digital era is a process of changing and adapting the curriculum system, leveraging developments in digital technology to support the quality of learning. This transformation aims to create learning that is more innovative, flexible, interactive, and aligned with the needs of 21st-century competencies. In the digital era, the curriculum is not only oriented towards mastery of material, but also focuses on developing students' critical thinking, creativity, communication, collaboration, and digital literacy skills. Curriculum transformation in the digital era is a strategic step in supporting modern learning through the integration of technologies such as Artificial Intelligence (AI), the Internet of Things (IoT), and Virtual Reality (VR). Furthermore, digital technology plays a crucial role in supporting the effective implementation of the Independent Curriculum through the use of digital learning media and online learning platforms. Therefore, curriculum transformation is a crucial part of improving the quality of education in the digital era.

Various studies have shown that curriculum transformation in the digital era has a positive impact on the quality of learning. Research (M. S. Putra, I. W. Lasmawan, I. G. P. Suharta, 2025) explains that digital education transformation can enhance students' creativity, critical thinking skills, and learning effectiveness through the innovative use of digital technology. Furthermore, research (Ramadhan, 2025) explains that modern education requires a student-centered, technology-based learning approach to improve the quality of learning in the digital age. Furthermore, research (Jepri, J., Edward, R., Thertina, E., & Permana, 2025) explains that the implementation of digital smart classrooms can increase student engagement, learning effectiveness, and provide a more adaptive learning experience. These research results indicate that curriculum transformation and digital technology are closely related in supporting the quality of learning in schools.

Other research also shows that implementing a digital-based curriculum can improve students' 21st-century competencies. Research (Juli Yansyah, M. E., Pahrudin, A., Jatmiko, A., & Koderi, 2024) explains that competency-based curriculum transformation can shape students with critical thinking skills, creativity, digital literacy, and character traits appropriate to the needs of the digital age. Furthermore, research (Arini Damayanti, Athifa Aabidah, 2025) states that an adaptive digital curriculum development model can increase learning flexibility and support technology integration in education. Furthermore, research (Hasmiza, 2025) shows that a digital technology-based curriculum model can create more innovative, interactive, and contextual learning for students. Thus, transforming the education curriculum in the digital era is a crucial effort to improve the quality of learning that is relevant to current developments.

Although digital curriculum transformation offers numerous benefits, several studies also point to various challenges in its implementation. The success of digital curriculum transformation is heavily influenced by teacher readiness, technological infrastructure, and students' digital literacy. Furthermore, research (Arini Damayanti, Athifa Aabidah, 2025) indicates that disparities in internet access and limited technological facilities in some regions remain major obstacles to digital curriculum implementation. Research (N. W. Ibrahim, N. Alilatulbariza, A. M. A. Alfattah, 2024) also explains that implementing innovative learning in the digital era requires adaptive learning strategies and ongoing educational policy support to optimally improve education quality. These research findings indicate that digital curriculum transformation requires support from various parties for effective implementation.

In addition to scientific research, various discussions between the community and education practitioners also indicate that curriculum transformation in the digital era remains a

contentious issue in Indonesian education. Discussions within the education community indicate that curriculum change often faces challenges such as teacher readiness, unequal access to technology, and the effectiveness of digital-based learning. Some people believe that technology can improve the quality of education if used appropriately and supported by adequate teacher competency. However, others believe that education quality is influenced not only by technology but also by the education system, the learning environment, and the readiness of human resources. Discussions at education forums also indicate that technology-based learning needs to be balanced with a humanistic approach so that students do not become solely dependent on technology for their learning. Therefore, transforming the education curriculum in the digital era requires a balance between technological innovation and strengthening the quality of human resources in education.

Based on the various research and study results, it can be seen that the transformation of the education curriculum in the digital era has a positive impact on the quality of learning, especially in improving learning effectiveness, creativity, digital literacy, and students' 21st-century skills. However, most previous studies have focused more on the implementation of digital technology in learning in general and have not specifically examined the relationship between the transformation of the education curriculum in the digital era and the quality of learning comprehensively. Furthermore, various obstacles remain, such as low digital competence of educators, limited technological infrastructure, and disparities in internet access, which affect the effectiveness of digital curriculum implementation. Therefore, the novelty of this research lies in the analysis of the transformation of the education curriculum in the digital era, focusing on its impact on the quality of learning by considering aspects of technology, educator competence, and the needs of 21st-century learners. This study aims to analyze the transformation of the education curriculum in the digital era and its impact on the quality of learning in educational environments.

2. METHOD

This study employed a qualitative approach using the library research method. The qualitative approach was selected because it enables researchers to obtain an in-depth understanding of the transformation of educational curricula in the digital era and its implications for learning quality. Library research was considered appropriate since the study focused on analyzing concepts, theories, empirical findings, and previous studies related to digital curriculum transformation and educational quality. According to (Taşkıran & Salur, 2021), qualitative research aims to explore and interpret social phenomena through the analysis of various sources of information.

The data used in this study consisted of primary and secondary data. Primary data were obtained from scientific journal articles discussing curriculum transformation, digital learning, and learning quality, whereas secondary data were collected from books, conference proceedings, policy documents, and other relevant academic sources. Data sources were selected purposively based on their relevance, credibility, and contribution to the research topic. The study involved no human participants because it was entirely based on documentary and literature sources.

The research procedure consisted of four stages. The first stage was data collection, which involved identifying and gathering relevant literature from databases such as Google Scholar, Scopus, SINTA, and other academic repositories. The second stage was data reduction and organization, in which the collected references were reviewed, classified, and selected according to the objectives of the study. The third stage involved data display and analysis through thematic categorization and descriptive interpretation of the findings obtained from previous studies. The final stage was conclusion drawing, where the synthesized findings were interpreted comprehensively to explain the influence of curriculum transformation in the digital era on learning quality.

To ensure the validity and reliability of the findings, data triangulation and source verification were employed by comparing information from various scientific references. The

analyzed data were interpreted descriptively using the interactive model proposed by (Legi et al., 2023), which consists of data collection, data reduction, data display, and conclusion drawing. Through this process, the study was expected to provide a comprehensive understanding of how digital-based curriculum transformation contributes to improving learning quality and developing twenty-first-century competencies among students.

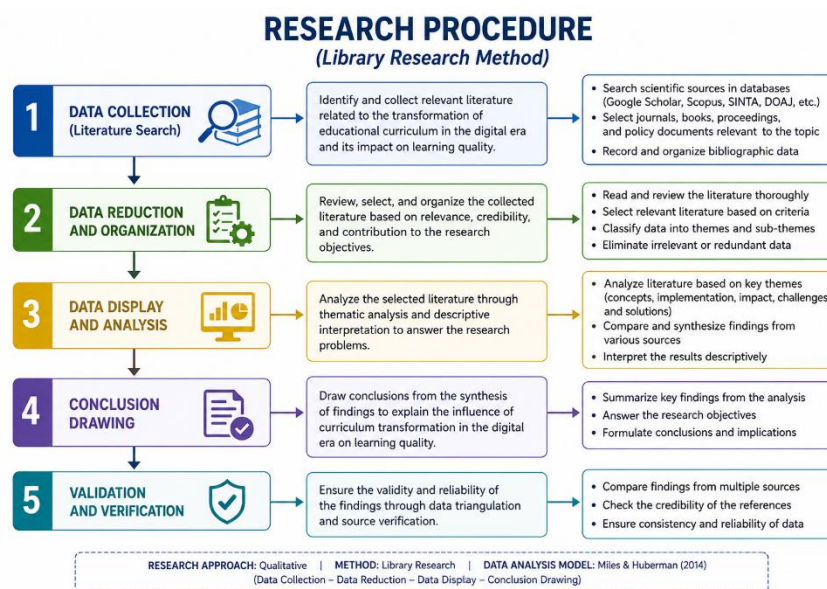


Figure.1 Research Procedure

3. RESULTS AND DISCUSSION

THE CONCEPT OF EDUCATIONAL CURRICULUM TRANSFORMATION IN THE DIGITAL ERA

Educational curriculum transformation in the digital era is the process of changing the curriculum system to adapt to developments in information and communication technology in education. This change aims to create more effective, innovative, adaptive learning that meets the needs of the 21st century. The curriculum in the digital era focuses not only on mastery of material but also on developing critical thinking skills, creativity, collaboration, communication, and digital literacy in students. Digital-based curriculum transformation is essential to support modern learning that utilizes technologies such as Artificial Intelligence (AI), Virtual Reality (VR), and the Internet of Things (IoT).

Research conducted by (M. S. Putra, I. W. Lasmawan, I. G. P. Suharta, 2025) shows that digital educational transformation has a positive impact on improving the quality of learning through the use of technology that supports students' creativity, collaboration, and critical thinking skills. The study explains that the use of digital learning media can create a more interactive and engaging learning process, thereby engaging students more actively in the learning process. Furthermore, research (Arini Damayanti, Athifa Aabidah, 2025) states that a digital curriculum development model can increase learning flexibility and help schools adapt to student needs and current developments. Furthermore, research (Ramadhan, 2025) explains that educational science plays a crucial role in supporting the transformation of modern education through a student-centered learning approach and pedagogical integration of technology. The results of this study indicate that digital curriculum transformation contributes significantly to improving the quality of learning in schools. explains that the integration of digital technology into the curriculum can increase the effectiveness of learning implementation through the use of

digital media and technology-based learning. Thus, curriculum transformation is a crucial part of improving the quality of education in the digital age.

Another study conducted by (Juli Yansyah, M. E., Pahrudin, A., Jatmiko, A., & Koderi, 2024) explains that competency-based curriculum transformation in the digital age can shape students with 21st-century skills, such as critical thinking, creativity, and digital literacy. This research emphasizes that curriculum development must be adapted to the needs of modern society so that students are able to face the challenges of globalization. The transformation of the education curriculum in the digital era provides significant opportunities for educators to develop more innovative and flexible learning systems. Furthermore, the use of digital technology in the implementation of the Independent Curriculum can enhance learning effectiveness through the use of digital platforms and interactive media. These three studies demonstrate that curriculum transformation in the digital era is closely linked to improvements in the quality and engagement of student learning.

Research on digital education also shows that the application of technology in learning has a positive impact on students' learning experiences. Research (Jonelle Angelo S. Cenita, 2023) explains that digital learning provides easy access to learning, enhances collaboration, and helps students learn independently through the use of digital technology. Furthermore, research (M. S. Putra, I. W. Lasmawan, I. G. P. Suharta, 2025) states that digital education transformation can improve learning quality if supported by teacher digital literacy and the availability of adequate technological resources. Research (Arini Damayanti, Athifa Aabidah, 2025) also explains that the implementation of the digital curriculum still faces several obstacles, such as limited infrastructure, disparities in internet access, and unequal distribution of digital competencies among educators. This indicates that the success of digital curriculum transformation is influenced not only by technology but also by the readiness of human resources and educational facilities.

Several discussions between the public and education practitioners also indicate that curriculum transformation in the digital era still faces various challenges in its implementation. Discussions in education forums indicate that curriculum changes often give rise to differing views regarding the effectiveness of learning and schools' readiness to implement digital-based learning systems. Furthermore, the public believes that educational quality is greatly influenced by equitable access to technology, teacher competence, and adequate educational facilities. Digital curriculum transformation requires synergy between the government, schools, and the community to optimally achieve learning objectives. Research (Ramadhan, 2025) also confirms that modern education requires a more humanistic, innovative, and student-centered learning approach in the digital era. Therefore, curriculum transformation requires careful planning to improve the overall quality of learning.

Based on the various research results, it can be seen that the transformation of the education curriculum in the digital era has a positive impact on the quality of learning, especially in improving creativity, learning effectiveness, digital literacy, and 21st-century skills of students. However, most previous studies have discussed the implementation of digital technology in learning in general and have not specifically examined the concept of education curriculum transformation in the digital era as a basis for developing learning quality. Furthermore, various obstacles are still found in the implementation of the digital curriculum, such as limited infrastructure, educator competence, and equitable access to technology. Therefore, the novelty of this study lies in the analysis of the concept of education curriculum transformation in the digital era, which focuses on the relationship between curriculum change and improving learning quality comprehensively. This study aims to analyze the concept of education curriculum transformation in the digital era and its impact on learning quality in educational environments.

IMPLEMENTATION OF A DIGITAL CURRICULUM IN THE LEARNING PROCESS

Implementing a digital curriculum in the learning process is an effort to implement a curriculum that utilizes digital technology as the primary tool in teaching and learning activities. The digital curriculum aims to create learning that is more flexible, innovative, interactive, and in line with technological developments in the modern era. In its implementation, the digital curriculum focuses not only on the use of technological devices but also on developing the digital competencies of students and educators. Implementing digital technology in learning can increase learning interest and help teachers deliver material more effectively. Furthermore, (Trismiani, 2024) explains that digital technology in the learning process can increase student motivation and engagement through the use of interactive learning media and digital-based educational applications. Thus, implementing a digital curriculum is a crucial part of the transformation of modern education.

Research on the implementation of the digital curriculum shows a positive impact on the quality of learning in schools. Research (Nisa, 2023) explains that the implementation of the Information and Communication Technology-based Independent Curriculum can increase the effectiveness of language learning through the use of e-books, podcasts, websites, and other digital media. Furthermore, research (Dirgantara W, Agus S, Widia W, 2021) shows that developing a virtual-based digital curriculum model can help schools adapt learning to the needs of 21st-century education. Furthermore, research (S, Giovani, 2025) explains that integrating digital transformation into the school curriculum has a positive impact on learning flexibility, increasing digital literacy, and developing students' critical thinking skills. These research results indicate that implementing a digital curriculum plays a crucial role in improving the quality of learning in the digital era.

Other research also shows that implementing a digital curriculum provides significant opportunities for students to gain more innovative and collaborative learning experiences. Research by (Ramadhani, 2025) explains that a technology-based curriculum can strengthen students' digital literacy through the use of interactive learning media and the use of technology in daily learning activities. Furthermore, research by Putra et al. (2024) states that the use of digital technology in elementary school learning can increase students' creativity, participation, and understanding of learning materials. Furthermore, research by (Trismiani, 2024) shows that implementing digital technology helps students become more active in the learning process due to the availability of various easily accessible digital learning resources. Thus, implementing a digital curriculum can create a more effective and student-centered learning process.

Although implementing a digital curriculum offers many benefits, various studies also indicate obstacles to its implementation. Research by (Fauziyah, Radeni Sukma Indra Dewi, 2025) explains that low teacher digital literacy, limited technological infrastructure, and a lack of institutional support are the main factors hindering the implementation of the digital-based Independent Curriculum. Furthermore, research (Siboro, 2026) shows that the implementation of the informatics curriculum in schools still faces obstacles, including a lack of competent educators and varying levels of student digital readiness. Research (Basyiruddin, M, Rukayah R, 2021) also explains that the implementation of the digital curriculum during the COVID-19 pandemic faced various challenges, particularly related to internet access and teacher readiness for online learning. These research findings indicate that the success of digital curriculum implementation is greatly influenced by the readiness of human resources and adequate educational facilities.

In addition to scientific research, various discussions among the public and education practitioners also indicate that implementing a digital curriculum remains a challenge in Indonesian education. Discussions among the education community indicate that the use of digital technology in learning requires the readiness of teachers, schools, and students to ensure optimal learning. Several education practitioners believe that digital technology can improve the quality of learning if supported by adequate teacher training and technological facilities. Furthermore, the community also highlights the importance of equitable access to technology to prevent

educational disparities between regions. Research by Septio and (S, [Giovani, 2025](#)) confirms that integrating digital transformation into the curriculum requires ongoing educational policy support. The study also explains that improving teachers' digital competencies is a crucial factor in the successful implementation of a digital curriculum in schools. Therefore, implementing a digital curriculum requires synergy between the government, schools, and the community in supporting technology-based educational transformation.

Based on these research findings, it is clear that implementing a digital curriculum in the learning process has a positive impact on improving the quality of learning, digital literacy, creativity, and 21st-century skills in students. However, most previous research has focused more on the use of digital technology in learning in general and has not specifically examined the implementation of a digital curriculum as an integrated learning system within the educational process. Furthermore, various obstacles remain, such as low teacher digital competency, limited technological resources, and disparities in internet access, which impact the effectiveness of digital curriculum implementation in schools. Therefore, the novelty of this research lies in its comprehensive analysis of digital curriculum implementation in the learning process, examining aspects of technology, educator readiness, and the quality of student learning. This study aims to analyze the implementation of digital curriculum in the learning process and its impact on improving the quality of learning in the digital era.

THE IMPACT OF CURRICULUM TRANSFORMATION ON LEARNING QUALITY

The impact of curriculum transformation on learning quality is a crucial issue in modern education. Curriculum transformation is defined as the process of changing, developing, and adapting the curriculum to the needs of the times, developments in science and technology, and the needs of students. Curriculum change aims to increase the effectiveness of the learning process, thereby producing students with 21st-century competencies such as critical thinking, creativity, communication, collaboration, and digital literacy. According to ([Dendodi, D., Nurdiana, N., Astuti Y. D, Aunurrahman, A., 2024](#)), curriculum transformation is a significant change in the content, methods, and learning systems to improve the quality of education and student learning outcomes. Furthermore, ([Tampubolon, R., Gulo, Y., Nababan, 2022](#)) explain that curriculum reform is carried out as a government effort to improve the quality of learning through the development of a more adaptive and innovative education system. Thus, curriculum transformation is closely related to improving the quality of learning in educational environments.

Various studies have shown that curriculum transformation has a positive impact on the quality of learning in schools. Research ([Dewi, W. C., Daryati., Prasetyaningrum E., 2025](#)) explains that the Independent Curriculum development strategy is able to improve the quality of learning through a more flexible, creative, and student-centered learning approach. Furthermore, research ([Fatmala, S., Lestari T., Zain, N., Hilaliyah, 2025](#)) shows that the implementation of the Independent Curriculum provides positive changes in the learning process because students are more active in discussions, practices, and exploration of learning materials. In addition, research ([Putri, Z. F., Putri, 2024](#)) that the transformation of the curriculum in Indonesia from the old curriculum to the Independent Curriculum has an impact on improving student competencies, especially in critical thinking skills and digital literacy. The results of this study indicate that curriculum changes can improve the quality of learning if supported by appropriate implementation strategies.

Other research also shows that curriculum transformation impacts learning quality by improving teacher competency and developing innovative learning methods. Research ([Aziz, M. E., Aryani, 2024](#)) explains that curriculum changes encourage teachers to adapt learning methods to be more creative and relevant to students' needs. Furthermore, research ([Aufaa, M. A., & Andaryani, 2023](#)) shows that the shift from the 2013 Curriculum to the Independent Curriculum influences teachers' management of learning, making it more flexible and contextual. Furthermore, research ([Hasanah, L., Permata Hati, S., Nurjaemah., AriyaniR., Dude, 2025](#)) explains

that curriculum transformation encourages learning that is more adaptive to technological developments and the needs of students in the modern era. Thus, curriculum transformation impacts not only students but also teachers' professionalism in implementing learning.

Although curriculum transformation has various positive impacts, several studies also point to challenges that impact learning quality. Research (Mere, K., 2024) explains that too frequent and inadequately prepared curriculum changes can cause teachers to struggle to adapt learning strategies, thus impacting the quality of classroom learning. Furthermore, research (Dendodi, D., Nurdiana, N., Astuti Y. D, Aunurrahman, A., 2024) shows that limited educational facilities, low teacher digital competency, and lack of training are major obstacles to implementing curriculum transformation. Research (Azahra, S., 2024) also explains that curriculum changes can negatively impact student achievement if not supported by adequate teacher preparedness and an adequate education system. These research results indicate that the success of curriculum transformation is greatly influenced by the readiness of human resources and educational infrastructure support.

In addition to scientific research, various discussions by the community and education practitioners also indicate that curriculum transformation remains a contentious topic in Indonesian education. Discussions from the education community indicate that curriculum changes often do not have a maximum impact on learning quality due to persistent gaps in teacher quality, educational facilities, and equitable access to technology. Some believe that the success of curriculum transformation is determined not only by changes to the learning system but also by teacher quality and school readiness to implement the new curriculum. Other discussions emphasized that modern curriculum-based learning needs to be balanced with character building and a humanistic approach so that students focus not only on technology but also on moral and social development. Therefore, curriculum transformation requires continuous evaluation and development to optimally improve learning quality.

Based on various research and studies, curriculum transformation has a significant impact on learning quality, both in enhancing student creativity, learning effectiveness, teacher competence, and the development of 21st-century skills. However, most previous research has focused more on curriculum change in general and has not specifically examined the impact of curriculum transformation on learning quality comprehensively, taking into account aspects of teacher readiness, technology, and student conditions. Furthermore, various obstacles remain, such as limited educational facilities, low digital competency of educators, and school unpreparedness for curriculum change. Therefore, the novelty of this research lies in analyzing the influence of curriculum transformation on learning quality by examining the relationship between curriculum change, educator readiness, and the effectiveness of the learning process in the digital era. This study aims to analyze the influence of curriculum transformation on the quality of learning in educational environments.

CHALLENGES AND SOLUTIONS FOR CURRICULUM DEVELOPMENT IN THE DIGITAL ERA

The challenges and solutions for curriculum development in the digital era are a crucial issue in modern education. Curriculum development in the digital era is the process of adapting the education system to developments in information and communication technology to make learning more relevant, innovative, and adaptive to the needs of the 21st century. A digital curriculum focuses not only on the use of technology in learning but also on developing students' digital literacy competencies, creativity, critical thinking, and problem-solving skills. According to (Nurjannah, N., 2022), the main challenge in curriculum development in the digital era is improving digital literacy while simultaneously shaping students' character so they can face the currents of globalization positively. Furthermore, (Machmud, I. K., Muhammad., Tyas Hestutami, S. H., 2024) explain that curriculum development in the digital era must adapt to students' needs, given the rapid technological developments and social changes. Therefore, curriculum development in the digital era requires innovative and adaptive strategies to optimally improve the quality of education.

Various studies have shown that curriculum development in the digital era faces various challenges related to the readiness of human resources and educational technology. Research (Setiyadi, M. W., Ardiansyah, A., Muharyati, Y., & Komalasari, 2025) explains that the main challenges in implementing the Independent Curriculum in the digital era include low digital competency of educators, limited technological infrastructure, and difficulties in adapting digital-based learning designs. Furthermore, research (Fournanda, A. C., Zahra, H., Anjelina, M. D., Setiawati, M., Utama, H. B., 2025) shows that curriculum management in the digital era still faces obstacles in the form of a lack of school readiness to utilize technology optimally in the learning process.

The results of this study indicate that digital curriculum development requires comprehensive preparation to run effectively. Other research also shows that curriculum development in the digital era offers significant opportunities to improve the quality of learning and student competencies. Research (Machmud, I. K., Muhammad., Tyas Hestutami, S. H., 2024) explains that digital-based curriculum innovation can improve students' digital literacy, creativity, and critical thinking skills through more interactive and flexible learning. Furthermore, research (Muh. Akhyar Al Haris All, Syamsu A Kamaruddin, & Ahmadin, A., 2024) shows that curriculum development that is adaptive to technology can create learning that is more relevant to the needs of the workplace and current developments. Furthermore, research (Nurjannah, N., 2022) explains that digital curriculum development can be a solution to improving the quality of education if supported by strengthening students' character and digital competencies. Thus, curriculum development in the digital era not only presents challenges but also opens up opportunities for improving the quality of education in Indonesia.

Despite the numerous opportunities, several studies have shown that curriculum development solutions in the digital era require the support of educational policies and the continuous improvement of educator competencies. Research (Setiyadi, M. W., Ardiansyah, A., Muharyati, Y., & Komalasari, 2025) explains that digital competency training for teachers is one of the main solutions to address the challenges of implementing a digital curriculum in schools. Furthermore, research (Fournanda, A. C., Zahra, H., Anjelina, M. D., Setiawati, M., Utama, H. B., 2025) shows that strengthening curriculum management and developing technology-based learning systems can help schools navigate educational changes in the digital era. The Independent Curriculum offers significant opportunities for creating innovative learning, but requires technological infrastructure support and teacher readiness for optimal implementation. These research findings demonstrate that curriculum development in the digital era requires collaboration between the government, schools, and the community to support technology-based educational transformation.

In addition to scientific research, various discussions with the community and education practitioners also indicate that curriculum development in the digital era remains a challenge in the Indonesian education system. Discussions within the education community indicate that frequent curriculum changes often make it difficult for teachers and students to adapt to the new learning system. Some believe that the success of curriculum development is determined not only by technology but also by the quality of teachers, the education system, and the equitable distribution of educational facilities. Other discussions highlight the importance of reforming the education system and improving the quality of educators so that the digital curriculum can be implemented effectively. Furthermore, they believe that learning in the digital era needs to be balanced with character building and a humanistic approach so that students do not become solely dependent on technology for their learning. Therefore, curriculum development in the digital era requires continuous evaluation and development to meet the challenges of modern education.

Based on various research and studies, curriculum development in the digital era faces various challenges, such as low digital competency among educators, limited technological infrastructure, disparities in internet access, and school preparedness to address changes in the education system. However, digital curriculum development also offers various opportunities and

solutions to improve the quality of learning, digital literacy, creativity, and students' 21st-century competencies. Most previous research has focused on the challenges of digital curriculum implementation in general and has not specifically examined the relationship between challenges and solutions for curriculum development in the digital era comprehensively. Therefore, the novelty of this research lies in its analysis of the challenges and solutions to curriculum development in the digital era by reviewing aspects of technology, educator competency, educational policy, and student needs in modern learning. This research aims to analyze the challenges and solutions to curriculum development in the digital era to improve the quality of learning in educational environments.

4. CONCLUSION

Transforming the education curriculum in the digital era is a crucial step in adapting the education system to technological developments and the needs of 21st-century learning. Digital-based curriculum changes have a positive impact on the quality of learning, particularly in improving the effectiveness of the learning process, student creativity, critical thinking skills, digital literacy, and collaboration and communication skills. The implementation of technology in learning can also create a more interactive, flexible, and innovative learning environment, enabling students to be more actively involved in the learning process.

However, curriculum transformation in the digital era also faces various challenges, such as limited technological infrastructure, gaps in internet access, low digital competency among educators, and a lack of school readiness to implement digital-based learning. Therefore, the success of curriculum transformation depends not only on the use of technology but also on the readiness of human resources, support from educational policies, and collaboration between the government, schools, teachers, and the community. With the development of an adaptive and innovative curriculum, the quality of learning is expected to improve optimally and produce students who are ready to face the challenges of the digital era.

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