

Integrating Technology in The Development of Interactive Media and Learning Resources for The Digital Era

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Article History	Abstract
<p>Received : 18 Februari 2025 Revised : 09 Maret 2025 Accepted : 10 April 2025</p>	<p><i>The rapid progress of science and technology requires education to adapt through innovative and effective learning processes. Media and learning resources play a critical role in supporting students' understanding and engagement, preventing monotonous and uninteresting learning activities. This study aims to analyze the development and functions of learning media and resources in achieving educational objectives. A qualitative method with library research was employed, focusing on the exploration of theories and best practices in media and resource utilization. The results show that well-designed media serve communicative, motivational, and perceptual functions, while learning resources must meet criteria such as practicality, flexibility, and alignment with learning objectives. The discussion emphasizes that the proper selection and application of media enhance student participation, motivation, and achievement. In conclusion, the integration of creative and adaptive learning media and resources is essential to foster effective knowledge transfer and ensure meaningful learning outcomes in modern education.</i></p>
	<p>Keywords: <i>Learning Media; Learning Resources; Educational Innovation</i></p>

INTRODUCTION

Education is a fundamental pillar in shaping human quality and fostering a democratic, inclusive, and competitive society. In the context of national development, education plays a key role in improving the Human Development Index (HDI) by enhancing the quality of human resources with comprehensive competencies in knowledge, attitudes, and skills. The paradigm shift in education in the era of globalization and digitalization demands innovation in curricula and adaptive learning methods to meet the challenges of modern times (Ramadhani et al., 2024; Setiawan et al., 2024).

Government Regulation No. 19 of 2005 on National Education Standards emphasizes the importance of Graduate Competency Standards (SKL), which encompass three key domains: attitudes, knowledge, and skills. This provision aligns with Bloom's taxonomy, which categorizes learning outcomes into cognitive, affective, and

psychomotor domains, serving as the foundation for designing holistic educational goals (Damayanti & Mediatati, 2023).

Current curricula and teaching strategies aim not only at knowledge transfer but also at building character, creativity, and critical thinking skills (Hasbiyallah & Nasir, 2023; Nasir et al., 2023; Robaeah et al., 2020). Recent studies highlight that education based on democratic and participatory values strengthens student quality, enabling them to face the challenges of the Society 5.0 era with collaborative and problem-solving skills (Triyanto et al., 2024).

In today's digital era, technology has become an integral part of everyday life. This phenomenon has also impacted the education sector, where technology has been used to improve the quality of learning and make it more interactive (Ramadhani et al., 2022). However, many challenges remain in integrating technology into the development of interactive media and learning resources.

The importance of technology integration in the development of interactive media and learning resources is undeniable. Technology can make learning more interactive and engaging, thereby increasing student motivation and interest. Furthermore, technology can help increase accessibility and flexibility, allowing students to learn anytime, anywhere.

Moreover, the use of innovative technology-based learning media, such as flipbook makers, interactive videos, and digital applications, has proven to enhance student motivation and learning outcomes. These innovations support the creation of effective, relevant, and engaging learning environments in line with the principles of the Merdeka Curriculum (Nasir et al., 2022, 2023; Prahastina et al., 2024).

Previous research has shown that integrating technology into the development of interactive media and learning resources can improve the quality of learning. However, this study differs from previous research because it focuses on developing interactive media and learning resources that are more specific and contextual to the needs of students in the digital age. This research aims to develop interactive media and learning resources that can improve the quality of learning in the digital age. By utilizing appropriate technology, this research can help increase student motivation and interest in learning, as well as enhance the accessibility and flexibility of learning.

The importance of this research extends beyond the education sector, but can also impact the development of more competent human resources prepared to face the challenges of the digital age. Thus, this research can contribute to the development of education in Indonesia and improve the quality of human resources. By integrating technology into the development of interactive media and learning resources, this research can help improve the quality of learning, making it more interactive and engaging. Therefore, this research is crucial for improving the quality of education in Indonesia and preparing students to face the challenges of the digital age (Mart et al., 2023).

RESEARCH METHODS

The research employs a qualitative approach with a library research method to explore the role and development of learning media and resources in achieving educational objectives. This approach was chosen to provide a holistic understanding of theoretical concepts, strategies, and functions of educational media. The primary data sources consist of government regulations, educational theories such as Bloom's taxonomy, and recent journal articles on innovative learning media. Secondary data sources include textbooks, reports, and supporting documents relevant to national education standards and media development.

Data collection was carried out through document analysis, systematically reviewing and categorizing key concepts from academic journals, policy documents, and books. The data analysis technique involved content analysis, focusing on identifying themes related to the functions, criteria, and effectiveness of learning media and resources. These steps ensured that the findings provide a comprehensive understanding of how creative and adaptive media can enhance meaningful and effective learning processes, particularly in line with the Merdeka Curriculum and the challenges of the digital era (Supriatna et al., 2023).

RESULTS AND DISCUSSION

The rapid development of science and technology demands that education systems adapt through the implementation of innovative and interactive learning media. Learning media in the digital era is no longer merely a tool, but also a means of creating meaningful learning experiences. As Sudjana stated, learning media serves to clarify messages, increase attention, and motivate students to be active in the learning process (Nurhayati et al., 2019; Sudjana., 2019).

Literature studies show that technology-based interactive media, such as instructional videos, digital simulations, and educational apps, can create communicative, motivational, and perceptual learning. Sukardi stated that learning that integrates technology can encourage the development of students' cognitive, affective, and psychomotor aspects in a more balanced manner, as interactive media can accommodate various learning styles.

Learning resources in the digital era play a crucial role in supporting student independence. According to Sigit Pramono, good learning resources should provide students with opportunities to explore knowledge according to their interests and needs. In this context, digital learning resources such as e-books, interactive modules, and online learning platforms enable students to learn anytime and anywhere, in line with the principle of modern learning flexibility.

The integration of technology in the development of learning media also encourages the development of 21st-century skills. Critical thinking, communication,

collaboration, and creativity can be developed through the use of technology-based media (Alifah & Sukartono, 2023; Marini et al., 2025). For example, the use of augmented reality-based simulations or interactive videos not only facilitates the understanding of abstract concepts but also enhances students' problem-solving abilities.

This discussion reinforces the finding that selecting appropriate media and learning resources will increase student motivation, participation, and achievement. According to Krathwohl, learning success is measured not only through cognitive aspects, but also through the formation of attitudes (affective) and skills (psychomotor), all of which can be facilitated through interactive media (Nasir et al., 2024).

Technology-based learning media also helps teachers create a dynamic and contextual learning environment. According to Plato's theory, adapted to modern educational concepts, students' potential can develop optimally if the learning environment supports their moral and intellectual development (Greene, 1923; Karatsiori, 2023). Thus, interactive media can be a means of building student emotional engagement while simultaneously directing learning that is relevant to real life.

Overall, the development of interactive media and learning resources in the digital era must be carried out through a creative and adaptive approach. This aligns with the educational vision of ensuring meaningful learning outcomes while preparing students to face global challenges. Collaboration between teachers, media developers, and educational stakeholders is key to creating learning that is relevant to modern needs (Muhammadiyah et al., 2022; Obi et al., 2023; Thi et al., 2022; Zamiri & Esmaeili, 2024).

Developing interactive media and learning resources in the digital age requires a creative and adaptive approach to improve the quality of learning and make it more engaging. Here are some ways to develop interactive media and learning resources in the digital age (Budiarto & Joebagio, 2020; Kustyarini et al., 2020): (1) Creative approach: (a) using multimedia technology such as video, animation, and simulation to make learning more interactive and interesting. (b) Developing game-based and interactive learning content to increase students' motivation and interest in learning. (c) Using social media and online platforms to increase accessibility and flexibility of learning.

(2) Adaptive approach: (a) develop a learning system that is adaptive and responsive to students' needs and abilities. (b) Using analytical technology to monitor student progress and provide personalized feedback. (c) Develop learning content that can be adapted to students' needs and abilities. (3) How to develop interactive media and learning resources: (a) using interactive media development software such as Articulate Storyline, Adobe Captivate, and Lectora Inspire. (b) Develop HTML5-based learning content that can be accessed via mobile devices. (c) Using online learning platforms such as Learning Management Systems (LMS) to manage and monitor student progress. By using a creative and adaptive approach, interactive media and learning resources can be developed to improve the quality of learning and make it more interesting and interactive.

CONCLUSION

The development of digital technology demands that education systems continue to innovate through the development of interactive, creative, and adaptive media and learning resources. Studies show that technology-based learning media can increase student motivation, engagement, and achievement by providing more communicative and contextual learning experiences. Digital learning resources, such as online platforms, e-books, and interactive simulations, provide students with flexibility in time and place to learn independently according to their needs.

The use of appropriate media, such as interactive video, animation, and augmented reality technology, has been shown to accommodate various student learning styles and support the development of 21st-century skills, including critical thinking, communication, collaboration, and creativity. These findings align with the opinions of Sudjana, Sukardi, and Sigit Pramono, who emphasized the importance of selecting media and learning resources that are appropriate to learning objectives, practical, and flexible. Overall, the integration of technology in the development of learning media serves not only as a complement but also as a catalyst that enriches learning interactions. This is an effective strategy for creating meaningful and relevant learning processes that meet the needs of education in the digital age.

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