

TRANSFORMATION OF INTERACTIVE LEARNING MEDIA IN THE PERSPECTIVE OF EDUCATIONAL INNOVATION AND INTELLECTUAL PROPERTY RIGHTS (IPR) PROTECTION

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ABSTRACT

The transformation of education in the digital era has encouraged the use of interactive learning media that are more adaptive, innovative, and technology-based. This study aims to analyze the transformation of interactive learning media from the perspectives of educational innovation and Intellectual Property Rights (IPR) protection. This research employed a qualitative library research approach by reviewing relevant literature published between 2016 and 2025, including scientific journals, books, and academic publications indexed in Google Scholar and SINTA. The selection of sources was based on relevance, credibility, and contribution to discussions on digital learning innovation and IPR in education. The findings indicate that interactive learning media such as Canva, Google Classroom, Quizizz, audiovisual media, and interactive multimedia contribute significantly to improving students' motivation, participation, creativity, and learning effectiveness. The study also reveals that digital educational transformation requires not only teachers' digital competence and institutional support but also awareness of copyright and legal protection for educational products. Furthermore, Intellectual Property Rights protection plays an important role in maintaining originality, preventing plagiarism, and encouraging sustainable educational innovation. This study contributes to the educational literature by offering an integrated perspective that positions interactive learning media not only as pedagogical tools but also as intellectual products that require legal protection within the framework of sustainable digital education.

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INTRODUCTIONS

The transformation of education in the digital era reflects a fundamental shift in learning systems through the integration of information and communication technology into educational practices. In the Society 5.0 era, digital technology has changed learning paradigms from conventional teacher-centered approaches toward more flexible,

interactive, and student-centered learning environments (Judijanto et al., 2024). Learning media are no longer viewed merely as instructional aids but as important components in creating innovative and adaptive educational experiences that support students' learning needs and digital competencies.

The development of digital technology has encouraged the widespread use of interactive learning media such as Canva, Google Classroom, Quizizz, animated videos, e-learning platforms, and interactive multimedia. These media contribute to improving students' motivation, participation, and understanding because learning becomes more communicative, visual, and engaging (Susilo, 2020). In addition, technology-based learning also supports the development of 21st-century competencies, including critical thinking, creativity, communication, and collaboration skills, which are essential in modern education. Consequently, teachers are required not only to master subject content but also to possess creativity and digital competence in designing innovative learning media (Safrudin & Sesmiarni, 2022).

The transformation of digital learning media also has implications for teachers' professionalism and educational innovation. Teachers increasingly function as facilitators and innovators who develop adaptive learning environments through digital technology. However, alongside these developments, new challenges have emerged regarding the protection of intellectual works produced by educators. Various digital learning products created by teachers contain originality and creativity that require legal protection through Intellectual Property Rights (IPR). Nevertheless, awareness regarding copyright protection and the legal use of educational products remains relatively limited in educational practice (Budiyanı & Sujarwo, 2020).

Previous studies generally focused on the effectiveness of digital learning media in improving learning outcomes or on the role of technology in educational innovation. However, limited studies have specifically examined the relationship between the transformation of interactive learning media and Intellectual Property Rights protection within the context of sustainable educational innovation. In fact, digital learning media are not only pedagogical tools but also intellectual products that possess legal, academic, and economic value.

Therefore, this study aims to analyze the transformation of interactive learning media from the perspectives of educational innovation and Intellectual Property Rights protection in the digital era. The novelty of this study lies in its focus on positioning interactive learning media simultaneously as educational innovation and as intellectual property requiring legal protection. This study also offers a more integrated perspective by connecting digital learning transformation, teachers' creativity, and IPR awareness as interconnected elements in supporting sustainable education in the modern era.

METHOD

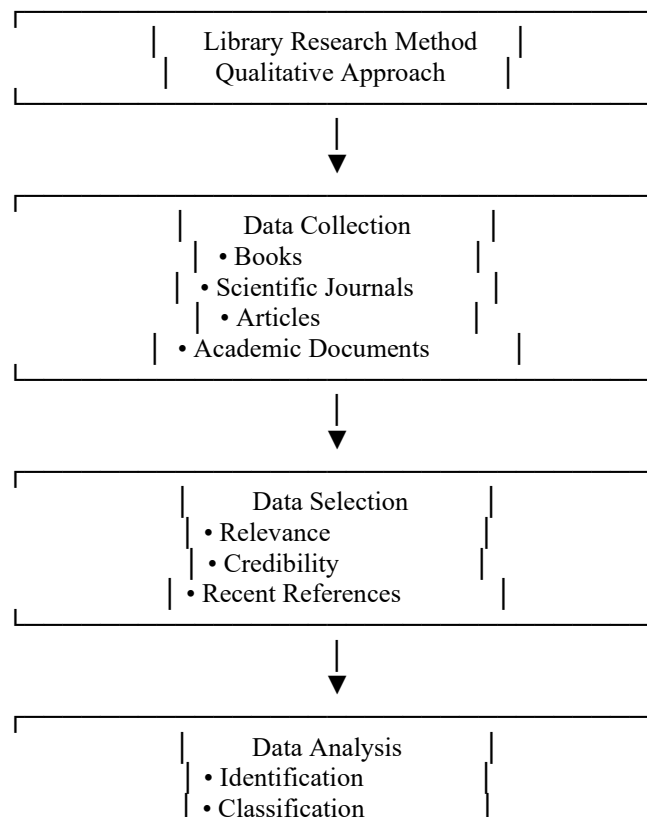
This study employed a qualitative approach using a library research design. The qualitative approach was selected because the study aims to analyze and interpret the transformation of interactive learning media from the perspectives of educational innovation and Intellectual Property Rights (IPR) protection in a comprehensive and in-depth manner. Library research was considered appropriate because the study focused on conceptual analysis and synthesis of various academic sources related to digital educational transformation and IPR issues in education (Haki & Prahastiwi, 2024). The data sources consisted of primary and secondary literature. Primary sources included scientific journal articles, books, and academic publications discussing interactive learning media, digital learning innovation, educational technology, and Intellectual Property Rights protection. Secondary sources consisted of supporting references such as conference proceedings, previous research findings, and relevant academic documents. The literature reviewed in this study was primarily published between 2016 and 2025 in order to ensure the relevance and recency of the discussion regarding digital transformation in education. The literature selection process was conducted systematically through several stages. First, the researchers identified relevant literature using keywords such as "interactive learning media," "digital educational transformation," "educational innovation," and "Intellectual Property Rights in education." The sources were collected from academic databases and platforms, including Google Scholar, SINTA-indexed journals, and other scholarly publications. In total, approximately 35 relevant sources were reviewed in this study.

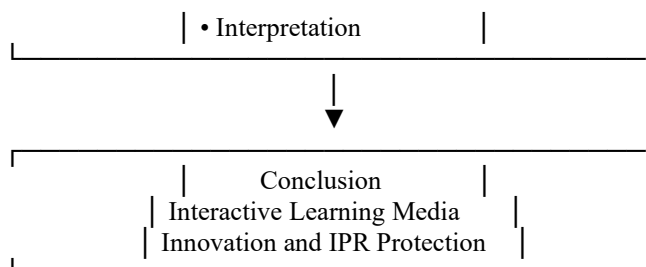
Second, the researchers applied inclusion and exclusion criteria to ensure the quality and relevance of the selected literature. The inclusion criteria included: (1) publications discussing digital learning media, educational innovation, or IPR protection in education; (2) scientific publications published within the last ten years; and (3) sources originating from credible academic journals, books, or scholarly publishers. Meanwhile, sources were excluded if they were not directly relevant to the research focus, lacked academic credibility, or contained repetitive discussions without significant contribution to the study.

Data collection techniques were conducted through documentation and literature review. The collected data were analyzed using descriptive qualitative analysis techniques, which involved identifying, classifying, comparing, and interpreting theories and findings from previous studies. The analysis emphasized comparison among studies to identify similarities, differences, and research gaps related to interactive learning media transformation and Intellectual Property Rights protection. The stages of data analysis consisted of four main steps: (1) literature identification and selection, (2) data reduction by selecting information relevant to the research focus, (3) data presentation through thematic classification and comparative analysis, and (4) conclusion drawing based on the synthesis of the reviewed literature. Through these procedures, the study aimed to produce a systematic and comprehensive understanding of the role of interactive learning media innovation and the importance of Intellectual Property Rights protection in supporting sustainable educational transformation in the digital era.

The following is a research method flowchart that can be included in the methodology section of the journal article:

RESEARCH METHOD FLOWCHART





Source: Adapted by the researcher from the qualitative library research framework developed by Haki and Prahastiwi (2024) and Adelliani, Sucirahayu, and Zanjabila (2023).

RESULT AND DISCUSSION

Result

Based on the results of the literature review analysis that has been conducted, it was found that the transformation of interactive learning media has a significant influence on improving the quality of education in the digital era. The research findings indicate that the use of technology-based learning media not only enhances learning effectiveness but also supports the development of teachers' creativity, students' 21st-century competencies, and awareness of the importance of Intellectual Property Rights (IPR) protection in education. The research findings can be seen in the following table.

Table 1. Research Findings on the Transformation of Interactive Learning Media from the Perspective of Educational Innovation and Intellectual Property Rights (IPR) Protection

No	Research Focus	Main Findings	Learning Impact	IPR Perspective	Supporting References
1	Transformation of Interactive Learning Media	Learning media have shifted from conventional methods to interactive digital platforms such as Canva, Google Classroom, Quizizz, and e-learning.	Learning becomes more flexible, communicative, and student-centered.	Digital learning products require legal protection as intellectual works.	Judijanto et al. (2024); Wibowo (2023)
2	Learning Effectiveness	Interactive multimedia, audiovisual media, and digital quizzes improve students' understanding, motivation, and participation.	Students become more active and engaged in learning activities.	Interactive learning products possess originality that should be protected.	Hasnawiyah & Maslena (2024); Hidayati et al. (2024)
3	Development of 21st-Century Skills	Technology-based learning supports critical thinking, creativity, communication, and collaboration skills.	Students become more adaptive to Society 5.0 and global educational demands.	Sustainable educational innovation requires IPR protection.	Zubaidah (2016); Sulaiman et al. (2024)
4	Teachers' Creativity in Digital Learning	Teachers are expected to become facilitators and	Teachers' professionalism and	Teachers' creative products deserve	Silvester et al. (2024);

5	Challenges in Digital Transformation	innovators in developing digital learning media. Digital transformation still faces limitations in infrastructure, internet access, and educators' digital competence.	digital competence improve. Digital learning implementation remains unequal across institutions.	copyright protection. Awareness of copyright and legal use of digital products is still limited.	Ramadhan (2024) Ayunda et al. (2024); Swara et al. (2020)
6	Urgency of Intellectual Property Rights (IPR)	IPR protection is essential to prevent plagiarism and maintain originality in educational innovation.	Educators are encouraged to create innovative learning media.	IPR provides legal, academic, and economic protection.	Budiyani & Sujarwo (2020); Yusuf (2023)
7	Opportunities for Sustainable Education	The integration of digital learning media and IPR protection supports adaptive and sustainable education systems.	Learning becomes more accessible and flexible.	Collaboration among educators, institutions, and government is required.	Judijanto et al. (2024); Alfi et al. (2023)

Source: Processed by the researcher based on literature review findings

Based on the findings above, it can be concluded that the transformation of interactive learning media plays an important role in supporting educational innovation in the digital era. Interactive learning media not only improve the effectiveness and quality of learning but also encourage the development of students' 21st-century competencies and teachers' creativity in designing innovative learning processes. In addition, Intellectual Property Rights (IPR) protection has become an essential aspect in maintaining the originality and sustainability of educational innovation. Therefore, collaboration among educators, educational institutions, and government is necessary to support the development of technology-based learning media while strengthening awareness of the importance of IPR protection in modern education.

Discussion

The findings of this study demonstrate that the transformation of interactive learning media is not merely a technological shift but also a fundamental transformation in educational paradigms. The integration of digital technology into learning processes has encouraged the transition from teacher-centered instruction toward more flexible, collaborative, and student-centered learning systems. This finding supports the argument proposed by Judijanto et al. (2024), who emphasize that digital transformation in education reflects the adaptation of educational systems to technological development and the demands of Society 5.0. However, this study extends previous research by highlighting that interactive learning media are not only instructional tools but also strategic instruments that reshape learning culture, communication patterns, and students' learning autonomy.

Compared with earlier studies that mainly focused on the effectiveness of digital media in improving learning outcomes, this study shows that the impact of interactive learning media is broader and more multidimensional. The use of Canva, Google Classroom, Quizizz, audiovisual media, and interactive multimedia does not only increase students' academic achievement but also promotes active participation, creativity, and independent learning. In line with Hasnawiyah and Maslena (2024), interactive learning environments can improve students' motivation and engagement because learning becomes more communicative and visually attractive. Similarly, Hidayati, Berliana, and Zaman (2024) argue that technology-based learning creates more enjoyable classroom experiences. Nevertheless, the present study emphasizes that the significance of interactive media lies in their ability to simultaneously stimulate students' cognitive, emotional, and collaborative dimensions, which are often difficult to achieve through conventional learning approaches.

Another important aspect identified in this study concerns the contribution of interactive learning media to the development of 21st-century competencies. Previous studies, such as Zubaidah (2016), mainly emphasized the importance of critical thinking and digital literacy in modern education. This study complements such perspectives by demonstrating that interactive learning media facilitate the integration of critical thinking, creativity, communication, and collaboration skills into classroom practices. In this context, digital learning media function not only as technological innovations but also as pedagogical strategies that prepare students to face increasingly complex social and professional challenges. Theoretically, this finding strengthens constructivist learning perspectives, which emphasize active participation and knowledge construction through interactive learning experiences.

Furthermore, this study reveals that teachers' roles in digital education are becoming increasingly complex. Teachers are no longer positioned solely as transmitters of knowledge but also as facilitators, innovators, and creators of adaptive learning environments. This finding is consistent with Silvester et al. (2024), who identify digital competence as an important indicator of teacher professionalism in modern education. However, this study further argues that teachers' creativity in designing digital learning media has direct implications for learning quality and students' engagement. Therefore, teachers' professional development should not only focus on pedagogical competence but also on technological creativity and digital innovation skills. Practically, this finding implies that educational institutions need to provide continuous digital training and institutional support to strengthen teachers' readiness in implementing technology-based learning.

Despite the positive impacts of interactive learning media, this study also identifies several critical challenges in digital educational transformation. Unequal technological infrastructure, limited internet access, and low levels of digital literacy among some educators remain major obstacles in implementing digital learning effectively. This finding supports Ayunda, Jannah, and Gusmaneli (2024), who argue that disparities in technological access contribute to inequalities in educational quality. However, this study highlights that the digital divide is not only a technical issue but also a structural and social problem that may widen educational disparities between urban and rural areas. Consequently, digital transformation in education cannot rely solely on technological innovation; it also requires equitable policies, institutional commitment, and sustainable infrastructure development.

A distinctive contribution of this study lies in its discussion of Intellectual Property Rights (IPR) protection within the context of educational innovation. Previous studies generally discussed interactive learning media from pedagogical and technological perspectives without examining the legal dimensions of educational products. This study demonstrates that digital learning media created by educators represent intellectual works with originality, creativity, and economic value, thereby requiring legal protection. In line with Budiyan and Sujarwo (2020), IPR protection is important for preventing plagiarism and maintaining the originality of educational products. Nevertheless, this study expands the discussion by arguing that IPR protection also has ethical and professional implications because appreciation for intellectual works can increase educators' motivation to innovate continuously.

Another important finding is the relatively low awareness of copyright and intellectual property protection among educators. Many digital learning products are distributed and utilized without clear acknowledgment of ownership or legal permission. This condition indicates that legal literacy regarding Intellectual Property Rights has not yet become an integral part of digital literacy education in many educational institutions. Theoretically, this finding suggests that discussions of educational innovation should not be limited to technological effectiveness but must also include ethical and legal dimensions. Practically, educational institutions and policymakers need to develop policies and training programs that strengthen educators' understanding of copyright protection and ethical digital practices.

Overall, this study confirms that the transformation of interactive learning media and Intellectual Property Rights protection are closely interconnected in supporting sustainable educational innovation. Interactive learning media contribute to improving learning effectiveness, students' competencies, and teachers' creativity, while IPR protection ensures the sustainability, legality, and appreciation of educational innovation. Therefore, collaboration among educators, educational institutions, and government is essential to create an adaptive, innovative, and legally protected digital education ecosystem capable of responding to future educational challenges.

CONCLUSION

The transformation of interactive learning media in the digital era has significantly contributed to educational innovation by creating more interactive, flexible, and student-centered learning environments. The use of digital learning media such as Canva, Google Classroom, Quizizz, audiovisual media, and interactive multimedia has been shown to enhance students' motivation, participation, understanding, and 21st-century competencies, including critical thinking, creativity, communication, and collaboration skills. In addition, teachers play an important role as facilitators and innovators in developing adaptive and meaningful digital learning experiences.

This study also highlights that the success of digital educational transformation depends on the availability of technological infrastructure, educators' digital competence, and institutional support. Furthermore, Intellectual Property Rights (IPR) protection is essential in maintaining the originality, legality, and sustainability of innovative learning media developed by educators. Therefore, strengthening digital literacy and awareness of IPR protection is necessary to support sustainable educational innovation in the modern era. This research implies that collaboration among educators, educational institutions, and government is required to promote technology-based learning innovation and strengthen the implementation of Intellectual Property Rights protection in education. Future research is recommended to conduct empirical studies on the effectiveness of interactive learning media and educators' awareness of IPR practices in different educational contexts.

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