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The Utilization of Interactive Digital Media to Increase Learning Interest of Elementary School Students in Merdeka Curriculum Era

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Abstract

This study aims to examine the effectiveness of interactive digital media on student learning interest, the suitability of interactive digital media with the principles of differentiated learning in the Merdeka Curriculum, and the obstacles to implementation and its implications in learning practices in elementary schools. This study is a systematic review, conducted by comparing and analyzing articles retrieved from the Google Scholar digital database using the Publish and Perish application. Articles were searched using predetermined keywords, then excluded according to set parameters, resulting in eight reference articles. The results of the study indicate that the various uses of digital learning media in differentiated learning can increase student interest, participation, independence, and understanding; there is a need for interactive digital media to be appropriate in terms of selection and design, taking into account the characteristics of elementary school levels. However, the effectiveness of interactive digital media implementation still faces obstacles such as infrastructure limitations, limited digital skills of teachers, internet access gaps, student ability to use the digital media, and media is not aligned with learning objectives. This study recommends increasing teacher capacity and providing supporting facilities and collaborative efforts from various parties, including teachers, schools, and so that the use of interactive digital media is more optimal.

Keywords: *interactive digital media, learning interest, elementary school, Merdeka Curriculum*

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A. Introduction

In today's era of digital transformation, the world of education is experiencing significant changes in the way teaching materials are delivered to students. This change is due to the development of information technology, which has introduced various digital learning media that can support the teaching and learning process in a more engaging, interactive, and flexible way. Digital learning has been proven to stimulate student motivation, strengthen student engagement, and create a more enjoyable and contextual learning experience. (Huljanah & Zai, n.d.). However, one of the major challenges in primary education is low interest in learning, which impacts learning outcomes and active participation in the learning process. According to observations by Anggraeni (Anggraeni et al., 2021), it shows that students' interest during learning activities is very low, they lack enthusiasm and are not interested in learning activities so that students do not pay attention to the teacher when teaching, and students do not understand the lesson, which has an impact on low learning outcomes. Research by Rahmilawati Ritonga et al. shows that low learning interest among elementary school students significantly impacts the learning process. Students who are less enthusiastic are more likely to be passive, not concentrate, and participate less in class discussions, which results in less than optimal understanding of the material and unsatisfactory learning outcomes (Ritonga et al., 2025). It means that the low interest in learning among elementary school students arises from various influencing factors.

Teachers often struggle to generate student enthusiasm because the teaching methods used are still conventional, monotonous, and do not address the visual and kinesthetic aspects that are important for elementary school-aged children. Furthermore, the use of learning media that lacks variety and does not adapt to children's characteristics also contributes to low student participation in learning activities. According to the findings of Mega Amaliya's research which revealed that the low interest in learning in several groups of elementary school students was caused by monotonous learning methods, lack of media variation, and limited ability of teachers to utilize digital media effectively. (M. Amalia et al., 2024). Therefore, a more structured study is needed on how interactive digital media can be used in the context of the Merdeka Curriculum to increase the interest of elementary school students. In addition, relevant learning approaches and strategies are needed, as well as the ability to optimize the potential of technology, which will gradually stimulate students' interest in learning and ultimately optimize their learning outcomes. In line with Mega Amalia's research from the analysis of several journals, the use of interactive media has a significant effect on students interest in learning. It shows that students who are involved with interactive media tend to be more interested and motivated in the learning process compared to those who are not involved.

In addition, in terms of effectiveness, interactive media improves student learning outcomes (M. Amalia et al., 2024).

In the Merdeka Curriculum, students are required to be active, independent, and creative, so the use of interactive digital media can be the answer to encouraging student engagement and strengthening their interest in learning. In addition, learning in the Merdeka Curriculum is also more flexible, contextual, and student-centered. One of the main approaches in this curriculum is differentiated learning, which is learning that is tailored to the needs, interests, and readiness levels of students. Differentiated learning is not just an alternative strategy, but a necessity in order to realize independent, meaningful, and student-centered learning in the current era of educational transformation. The application of differentiated learning strategies has been proven to significantly increase students' interest in learning (Novianti, 2025). In addition, the Merdeka Curriculum also emphasizes project-based learning and character building through the Pancasila student profile. The use of interactive digital media serves as a tool that enables teachers to deliver material in a variety of ways that are tailored to the characteristics of the students. According to the results of research by Hamid, A. D., differentiated learning strategies provide teachers with the space to tailor the learning process to the needs, readiness, interests, and learning styles of students (Hamid, 2025). Such as conducting an initial assessment of student characteristics, developing flexible learning tools, and using various appropriate learning approaches and media. The availability of technological infrastructure such as stable internet networks, adequate digital devices, and teacher digital literacy are the main obstacles to its implementation. According to the findings of research by Amalia et al., digital media facilitates learning that is more interesting, interactive, and relevant to students' lives. However, challenges in the application of digital media are still found, such as limitations in technological infrastructure, low digital literacy among teachers that is not yet evenly distributed, as well as technical disturbances and digital distractions. Continuous training support and institutional policies are still needed to ensure the successful integration of digital media in learning (L. S. Amalia et al., 2025). Therefore, there must be synchronization between facilities, media availability, and educational units in terms of the use of digital media so that its application can be optimized. As in the research by Fadilla et al., ensuring the successful integration of digital media in learning requires strong infrastructure support, appropriate content development, and collaboration between teachers, schools, and related parties. (Fadilla et al., 2025). Not all teachers are yet able to design and use interactive media optimally. Therefore, training and mentoring in the field of technology is an important aspect that needs to be strengthened in order to support the optimal implementation of the Merdeka Curriculum.

Previous studies have shown that interactive digital media can increase students' interest in learning, motivation, and learning outcomes, but most of these studies do not relate to learning in the independent curriculum. Previous studies conducted by Dewi (2024) and Anam (2023) also show that the use of digital media such as learning videos and online learning applications can significantly improve student learning outcomes. However, the weakness of these studies is that they have not integrated the principles of differentiated learning as emphasized in the Merdeka Curriculum, nor have they thoroughly examined learning interest as main variable. In addition, previous research populations have largely focused on student learning outcomes as the main variable of the study, but there are still limited studies that address learning interest as the main variable in the Merdeka Curriculum. This gap indicates the need for new research that specifically examines how interactive digital media can be used to increase the learning interest of elementary school students in the context of the implementation of the Merdeka Curriculum.

The theoretical contribution of this study is the reinforcement of constructivist learning theory and learning motivation theory in the context of digital learning, particularly at the elementary school level. Practically, this research provides recommendations to teachers, principals, and policymakers on the appropriate, effective, and relevant use of digital media to increase student interest and engagement in learning. In addition, this research also provides guidance on how digital media can be optimally integrated into the design of the Merdeka Curriculum, which is oriented towards student needs, character building, and enjoyable learning. Considering the urgency and relevance of this topic, the main objective of this study is to explore and analyze the use of interactive digital media in increasing the learning interest of elementary school students in the era of the Merdeka Curriculum. Specifically, this study aims to analyze the effectiveness of interactive digital media in improving elementary school students' interest in learning, as well as the suitability of interactive digital media with the principles of differentiated learning in the Merdeka Curriculum. In addition, this study also examines the challenges in implementing interactive digital media in the learning process to provide an understanding of the importance of supporting infrastructure, developing relevant content, and collaboration between teachers and related parties to ensure the successful use of interactive digital media in learning. The benefits of this research are expected to be felt not only by academics and education practitioners, but also by students and the wider community, in an effort to create a learning environment that is more adaptive, enjoyable, and in line with the demands of the times.

B. Method

This study uses the Systematic Literature Review (SLR) method. This article will analyze several important recent contributions to the use of interactive digital media to increase the learning interest of elementary school students in the era of the Merdeka Curriculum. This type of research attempts to analyze a phenomenon comprehensively based on several relevant references and literature (Dekkers et al., 2022; Purssell & McCrae, 2020) The objective is to answer specific research questions by investigating an objective and comprehensive review of the topic of utilizing interactive digital media to increase elementary school students' interest in learning in the era of the Merdeka Curriculum based on a critical analysis of existing literature. According to (Mb et al., 2003) there are five stages (picture 1), as follows:1) Framing question, research questions are formulated based on the needs of the research topic. The questions in this study are: "How effective is interactive digital media in increasing student interest in learning? How does interactive digital media fit in with the principles of differentiated learning in the Merdeka Curriculum? How the obstacles to implementation?" 2) Identifying relevant work, this search was conducted using the Google Scholar search engine through the Publish or Perish application. Inclusion and exclusion criteria aim to evaluate whether the literature found can be used as data in the study. At the inclusion criteria stage, researchers set various criteria for selecting the literature to be used. The criteria are a) the literature must have been published within the last 3 years (2022-2025) because it is related to the implementation of the Merdeka Curriculum; b) literature must have been published within the last 3 years (2022-2025) because it is related to the implementation of the Merdeka Curriculum; c) it must discuss the use of similar interactive digital media in learning. must discuss the use of similar interactive digital media in learning; d) must present the influence or effectiveness of interactive digital media on learning interest; e) relevant to learning at the elementary school level; f) refers to the Merdeka Curriculum; g) available on open access or accessible through official repositories. Further screening based on article content, with exclusion criteria being (1) does not include empirical data, (2) focuses on non-elementary school levels, (3) the use of interactive digital media is administrative or non-learning, (4) does not affect learning interest, (5) is not related to the Merdeka Curriculum era. Assesing the quality of studies, assessment of the articles obtained to test their suitability; articles deemed unsuitable for certain reasons will be excluded. Search results using Google Scholar, several pieces of literature were obtained to serve as data for this study. These articles were analyzed using descriptive qualitative methods to observe, describe, classify, and synthesize findings that led to answers to the research questions. Summarizing the evidence, systematic analysis of articles considered

appropriate, comparing them and summarizing the analysi. Interpreting the findings, interpretation of the articles included to answer the questions formulated previously.

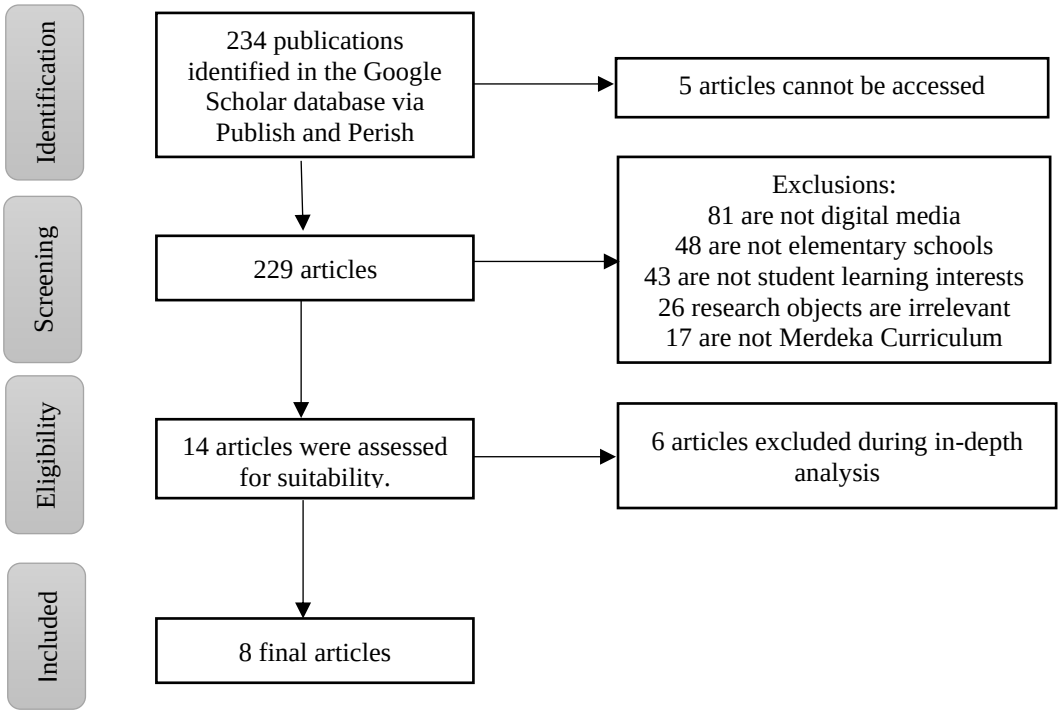

Figure 1. Flowchart of the article exclusion and inclusion process in the systematic review stages

C. Results and Discussion

The search results using Publish & Perish found 234 article titles in the Google Scholar database. This search used the keywords “use of interactive digital media,” “learning interest,” “elementary school,” and “learning interest” separately. Screening of articles based on the specified inclusion criteria resulted in 216 articles that were irrelevant to digital media, not specific to elementary school level, did not refer to the variable of learning interest, and were not related to curriculum learning. This resulted in 8 articles that met the eligibility criteria. The final stage was to identify the 8 final articles selected for analysis. This was because, in the 3-year period from 2022 to 2025, articles referring to the specific keyword “Merdeka Curriculum” were more difficult to find than articles on the use of digital media in learning in general. The research data included in this literature review is an analysis and summary of articles related to the use of interactive digital media in increasing the learning interest of elementary school students in the era of the Merdeka Curriculum. The results of the article review are presented in table below.

Table 1. Summary analysis of selected research results

No	Article title	Author	Citation
1.	Literature Analysis: The Development of Interactive Learning Media Using the Canva Application in Social Studies Learning in Elementary School	(Lahamado et al., 2025)	Interactive learning media are more engaging, motivate students, and simplify teacher tasks. However, training and supporting infrastructure are required.
2.	The Role of Digital Learning Media in Mathematics Education in the Era of Independent Learning: A Systematic Literature Review	(Ulya et al., n.d.) 2025	Digital learning media can support differentiated and contextual learning, significantly improve conceptual understanding, learning motivation, and student engagement, and encourage the development of 21st-century skills.
3.	Literature Analysis on the Impact of Digital Interactive Media on Thematic Improvement in Elementary School Students	(Nabila R. et al., 2025)	Digital interactive media has been proven to improve students understanding of teaching materials and encourage motivation to learn. However, there are challenges such as infrastructure limitations, teacher readiness, and access to technology.
4.	Systematic Literature Review: The Effect of Digital Learning Media on Differentiated Learning on Student Learning Motivation in Indonesia	(Nuraini & Kusaeri, 2025)	There was a significant increase in student learning motivation after the implementation of digital learning media.
5.	Wordwall Game-Based Mathematics Learning Strategy in Elementary Schools	(Nufus et al., 2025)	Using Wordwall learning media can increase student learning experiences, as it provides a fun and engaging way for students to engage in visual, auditory, and kinesthetic learning.

			However, teachers must have technological skills and be able to adapt to student needs.
6.	Literature Review: The Use of Powtoon Media in the Implementation of Differentiated Learning for Mathematics Subjects	(Norma et al., 2024)	Using Powtoon has a positive and significant impact on differentiated learning in mathematics lessons, with increased student motivation and engagement being one of its main contributions. However, adequate training and support for teachers is required.
7	Harnessing Flipbook-Based E-Modules to Foster Creativity in Science Education: A Systematic Review	(Dwi Herawati et al., 2024)	The use of flipbook-based IPAS e-module teaching materials has been proven to enhance learning motivation, student engagement in the learning process, thereby increasing student creativity and achieving the desired learning outcomes.
8	The Use of Digital Technology in Increasing Students Interest in Learning Indonesian Language in Elementary Schools	(Nayla Adhwa et al., 2025)	The integration of digital technology into the Indonesian language learning process in elementary schools can transform traditional teaching methods into more engaging and student-centered approaches in the Merdeka Curriculum.

Based on a review of all of these articles, the author found several key findings. First, consistent use of digital media can contribute positively to student interest and motivation to learn, especially through interactive, visual, engaging elements and enjoyable learning experiences. Second, the positive contribution of a significant increase in children's interest in learning has an impact on a significant improvement in student learning outcomes. Third, the effectiveness of digital media is highly dependent on the suitability of the content to the cognitive development level of students, adequate infrastructure, and the skills of teachers in integrating it into the learning process. To explore the contribution of interactive digital media in learning in the era of the Merdeka Curriculum, the results of the literature analysis were grouped into several main themes. These themes include the effectiveness of interactive digital media on student learning interest, the suitability of interactive digital media with the principles of differentiated learning in the Merdeka Curriculum, as well as implementation constraints and their

implications in learning practices in elementary schools. The following are the summarized results from the studies that have been reviewed:

Effectiveness of Digital Media on Student Interest in Learning

Based on Table 1, it shows that the use of interactive digital media can have a positive impact on the learning process, particularly in increasing student interest as the main result of the study. In the research results reviewed, there were three studies that revealed various types of digital media used in learning applications, such as Canva, Wordwall, Digital Comics, Animated Videos, and educational games, which were able to significantly improve conceptual understanding, learning motivation, and student participation. (Ulya et al., n.d.). Furthermore, the results of the study of (Nabila R. et al., 2025) Furthermore, Anisa's research shows that there are various types of interactive digital media, such as interactive PowerPoint, Canva-based animated videos, and Flash-based multimedia. Other studies also involve the development and implementation of digital learning media such as Liveworksheet, Quizwhizzer, and Canva in the context of differentiated learning. (Nuraini & Kusaeri, 2025). The many variations of digital learning media that are being implemented show that the selection and design of media are greatly influenced by context, material characteristics, and teacher creativity in designing digital learning experiences. These various types of interactive digital media are able to provide a more exciting, personalized, and meaningful learning experience for elementary school students. So that digital media is not just a complement, but has become an important component in designing active, enjoyable, and meaningful learning. (L. S. Amalia et al., 2025). All of that will be meaningful if balanced with a growing interest in learning within the students themselves.

All of these media have been proven to increase student interest and motivation, understanding of concepts and material, and significant student engagement. The various interactive digital media presented are able to generate interest and excitement among elementary school students, which fosters an interest in learning as a motivation for learning. Student interest in learning is a crucial factor in the learning process. Students who are highly interested in learning will find it easier to concentrate and understand the material being taught. Of course, with the support of learning media that is appropriate for the students' needs, learning will be more enjoyable, which will have a positive effect on student participation and independence. This will certainly be directly related to student achievement or learning outcomes. This is supported by several studies showing that there is a significant increase in student learning motivation after the implementation of digital learning media. (Nuraini & Kusaeri, 2025). It shows that increased student interest in learning is directly proportional to increased student creativity, so that it achieves the expected learning outcomes. (Dwi Herawati et al., 2024). The data obtained

shows that students who learn using interactive digital learning media show a significant increase in class participation and the emergence of student independence in learning. This is very important at the elementary school level, where independence, curiosity, and self-confidence play a key role in learning success.

One supporting study explains that the development of interactive website-based learning media through the Google Sites platform produces effective learning resources for student independence. (Arrasyid et al., 2025). It means that interactive digital media learning allows students to be actively involved in the learning process, rather than just being passive listeners or observers. Through this media, students can explore the material independently, choose their own learning path, and receive immediate feedback, all of which contribute to the growth of curiosity and motivation to learn. The various features of interactive digital learning media used become aspects that increase the student interest to pay attention to the information presented during learning. In addition, they are able to reduce boredom and increase students' focus in understanding the material. It means that these things can have a very positive influence on increasing student interest and learning outcomes as well.

Interactive digital media also supports the principle of multisensory learning. This means that students learn not only through reading and listening, but also through seeing, touching, and responding directly. This combination of visual, audio, and kinesthetic elements helps to strengthen students' memory and deepen their understanding of concepts. The use of Wordwall media can also enhance the learning experience for students, as it provides a fun way for them to be involved in visual, auditory, and kinesthetic learning. (Nufus et al., 2025). Furthermore, the use of interactive video-based multisensory media in learning has been proven effective in increasing student motivation, conceptual understanding, and learning outcomes. (Nazli et al., 2025). In addition, digital media also enables personalized learning. In short, personalized learning is a student-centered educational approach that prioritizes individual needs, preferences, and goals to optimize learning outcomes (Juniarni et al., n.d.). By utilizing technology, data analysis, and adaptive strategies, personalized learning can create tailored educational experiences that increase student engagement, motivation, and achievement. Each student can learn at their own pace, choose topics that interest them, or answer questions with varying levels of difficulty. This makes students feel more valued and involved in the learning process, which ultimately increases their interest and perseverance to continue learning.

The suitability of interactive digital media with the principles of differentiated learning in Merdeka Curriculum

Merdeka Curriculum emphasizes the importance of differentiated learning as a learning strategy that adapts content, processes, and learning products to the diverse needs, interests, and learning profiles of students. In the context of digital transformation in education, interactive digital media has become an increasingly strategic tool for realizing the principles of differentiation. Media such as interactive videos, educational applications, animations, simulations, educational games, and adaptive learning platforms enable flexible and personalized learning experiences. It means that digital media supports differentiated and contextual learning approaches, which are key characteristics of the Merdeka Curriculum (Ulya et al., n.d.). Interactive digital media is a highly effective tool in accommodating diverse learning needs based on requirements, student interest, and learning styles. This approach can increase student motivation, understanding, and skills. Differentiated learning based on digital media is effective in responding to student learning needs and is relevant for application in 21st-century learning. (Muzammil & Izzah, 2025). Furthermore, it is supported by the explanation that the use of digital learning media in the context of differentiated learning can make a valuable contribution to increasing student motivation in Indonesia (Nuraini & Kusaeri, 2025).

The Merdeka Curriculum emphasizes student-centered learning, which provides space for students to learn according to their abilities, interests, and needs. Each student has different characteristics and ways of learning, so not all students can be treated the same in terms of learning style. If the treatment does not suit the needs of the students, this can hinder their progress and prevent them from achieving optimal learning development. Interactive digital media addresses this challenge with the flexibility of learning media, especially interactive digital media. In selecting digital learning media for the Merdeka Curriculum, it is also necessary to consider the learning styles of students in the classroom in order to facilitate their needs. By creating learner-centered learning, it is hoped that meaningful and independent learning will be achieved. (Hafizah, 2023).

One of the reviewed studies mentioned that the use of Powtoon media has shown significant potential in supporting differentiated learning in mathematics (Norma et al., 2024). The study explained that Powtoon was chosen because it is a platform that makes it easy for users to create interesting animated videos, provides a new and effective way to present lesson material, and allows teachers to create differentiated content by adjusting the level of difficulty, speed, and presentation style to meet the diverse needs of students in the classroom. Other studies mention that the use of digital media such as the Canva application, which features attractive designs, content flexibility, and ease of integration

with project-based learning approaches and the Merdeka Curriculum, can increase student motivation, engagement, and learning outcomes, as well as develop 21st-century skills such as creativity, critical thinking, and visual literacy. (Lahamado et al., 2025). Another example in a literature study examined four scientific articles through Wordwall-based learning media implemented in elementary schools, which was able to improve students' learning experiences and support student engagement. (Nufus et al., 2025). Furthermore, other supporting studies explain that there are a number of reasons why flipbook technology is preferred over other digital learning resources, namely its interactivity, which allows students to engage more directly with the learning content. Students can easily navigate between pages thanks to user-friendly navigation features, which make learning more interesting and enjoyable. (Dwi Herawati et al., 2024). The above studies show that digital media can provide concrete examples of how differentiated learning with the help of digital media can be implemented in schools, especially at the elementary school level.

Various types of interactive digital media at the elementary school level have been proven to be applicable in learning under the Merdeka Curriculum, taking into account several aspects, including the suitability of the learning media used by teachers. Furthermore, it is explained that this curriculum gives teachers the freedom to choose teaching media that suit the characteristics of students and learning needs. (Lahamado et al., 2025). It means that teachers are encouraged to create differentiated, contextual learning that utilizes technology tailored to the characteristics of students, their grade levels, and school facilities. The selection of learning media must take into account the grade level of the students. Elementary schools certainly have their own criteria for adapting to the characteristics of elementary school-aged children. The selection of features, design, words, videos, animations, and all other components must be tailored to the level. Therefore, this study examines how several effective interactive digital media applied in elementary schools can foster positive outcomes ranging from interest in learning, engagement, independence, enjoyable learning processes, and optimal learning outcomes. Interactive digital media provide a more enjoyable learning experience that is easier for students to understand. (Nayla Adhwa et al., 2025). A teacher can develop application-based learning modules, where students with visual preferences can choose videos or infographics, while students with kinesthetic preferences can choose activities that require direct interaction with digital objects. Teachers can organize diverse classes at one time. The ability of digital media to provide many learning format options makes it easier to implement a differentiated approach. Students who feel they have the freedom to choose their learning methods tend to be more engaged, feel valued, and show higher motivation to learn. This is in line with the concept of personalized learning, which is an

approach that tailors the learning process to individual needs, interests, preferences, and learning speeds. (Ruri Keristanti et al., 2025). It means that the learning process facilitates the application of content, process, and product aspects in managing heterogeneous classes. Learning is adjusted to the needs and learning preferences of students so that learning objectives can be achieved optimally.

The learning process in the Merdeka Curriculum places greater emphasis on the abilities of each student, their learning interests, and learning styles, which can create a more inclusive and supportive learning environment. Teachers can use a variety of strategies in its implementation, such as tasks tailored to individual needs, individual or group learning projects, and paying attention to the learning styles of students. It means that students can learn in a more independent manner and in accordance with their respective learning styles. The potential use of digital learning media has been proven to increase learning effectiveness, but it also emphasizes the importance of using appropriate media to support differentiated learning, which is oriented towards students interests and potential talents. (Nuraini & Kusaeri, 2025). It means that teachers play an important role in selecting digital learning media that suits the student needs, therefore creating effective and optimal learning.

Digital media integration is carried out to address the diverse learning needs of students, in terms of learning styles, interests, and academic readiness levels. It has been proven that digital media-based differentiated learning can be an innovative approach that is adaptive to the diversity of student characteristics, while also responding to the demands of 21st-century learning, which emphasizes personalization, collaboration, and meaningful use of technology (Muzammil & Izzah, 2025). However, it should be noted that interactive digital learning media, especially educational games, must be designed in such a way that they are in line with the curriculum objectives and student needs. Educational games have proven to be effective at all levels of education, but the most effective types of games vary. For example, games that emphasize visualization and object manipulation are more effective for elementary school students, while more complex games with greater challenges are more suitable for middle school students. It shows that game design must take into account the characteristics and specific needs of each age group. (Nurhikmah et al., 2024).

Furthermore, the use of technology in the learning process is in line with the principles of the Merdeka Curriculum, which emphasizes differentiated and project-based learning. In this context, the existence of interactive digital media greatly contributes to the creation of a more in-depth learning experience, as well as encouraging an increase in students' overall interest and abilities (Nayla Adhwa et al., 2025). Digital media also supports the achievement of the Pancasila Student Profile, which is one of the programs

in the Merdeka Curriculum that aims to shape the student characters in accordance with Pancasila values through learning-based activities. This profile includes being faithful, devoted to God Almighty, having noble character, embracing global diversity, cooperating, being independent, and thinking critically. The integration of digital technology in Pancasila education has a significant positive impact on strengthening student character, especially in shaping the Pancasila Student Profile. (Armianti et al., 2024). Through interactive digital learning media, students are actively involved in learning that allows them to participate directly in activities based on Pancasila values. This involvement strengthens the students learning to be independent in managing their learning, improves critical thinking skills, and promotes noble character, where students not only understand theory but also apply Pancasila values in their daily lives and are accustomed to working together in project-based learning. The results of research on the development of Flipbook-based teaching materials show that they are very suitable for application in projects to strengthen the Pancasila profile of students in elementary schools. Flipbook teaching materials are designed for content related to sustainable lifestyles in accordance with the theme of the project to strengthen the Pancasila profile of students, which has been established by the government in the independent curriculum (Putra et al., 2023).

In this case, it shows that the use of interactive digital media not only has an impact on learning interest, but also helps shape the student character in accordance with national educational values. Digital media is not merely a tool, but an integral part of a holistic, innovative, and transformative learning strategy, especially in the context of implementing the Merdeka Curriculum. (Adiyansah & Safitri, 2023). Furthermore, it was explained that the use of visual media such as documentary videos and simulations helps students internalize Pancasila values in a more realistic and relevant way to their life context. However, these findings reveal significant challenges, particularly related to unequal access to technology and teachers' readiness to utilize digital technology effectively. (Armianti et al., 2024). It means that success still depends on wise use, learning planning, and the role of teachers or schools in facilitating it.

Challenges in Implementing Interactive Digital Media in the Learning Process

Analysis of the above study results shows consistent findings that the use of interactive digital media in learning in the era of the Merdeka Curriculum has proven to have a significant impact on increasing the learning interest of elementary school students. Although the potential for utilizing interactive digital media is enormous in improving the quality of learning in the era of the independent curriculum, its implementation is not without various obstacles and challenges, particularly in terms of the availability of technological infrastructure in schools, the low level of digital literacy

among some teachers, teacher readiness, and students' ability to operate digital media. (Herlina et al., 2024; Nabila R. et al., 2025). The supporting research shows that the challenges in implementing digital media include infrastructure limitations, uneven digital literacy among teachers, and technical disruptions and digital distractions. Therefore, continuous training and institutional policies are needed to ensure the successful integration of digital media in learning.(L. S. Amalia et al., 2025).

Several challenges in utilizing interactive digital media have been identified, with infrastructure being one of the most common obstacles or constraints in the use of interactive digital media in the learning process. Interactive digital media cannot function without a solid technical foundation, including unstable internet access, limited or uneven devices, and school network capacity that is not yet ready to handle the simultaneous use of applications or multimedia. The study conducted (Lahamado et al., 2025) The study conducted (Lahamado et al., 2025) revealed that the challenges faced were limited access to technology, teachers' digital literacy, and a lack of training to maximize the use of Canva. In this case, technical disruptions, such as unstable internet connections, device damage, and limited electricity supply, can cause the learning process to be disrupted and learning to no longer be optimal. Additionally, the article explains (Nuraini & Kusaeri, 2025) There are factors that cause user inequality, namely the lack of technological infrastructure in many schools, the lack of training and knowledge about technology for teachers, which is a significant obstacle, many teachers who do not yet have sufficient skills to use technology effectively in teaching, and difficulties in accessing the internet and electronic devices among students, which are also problems. The support of educational institutions in providing adequate equipment, improving internet connectivity, and providing regular training for teachers is essential for the success of this implementation. In addition, close collaboration between teachers, schools, and policymakers is necessary to create a more innovative and engaging learning system for elementary school students. (Nayla Adhwa et al., 2025). With solid collaboration from various parties, the use of digital technology can be an effective solution to encourage student interest in the learning process. Supporting research reinforces that collaboration between the government, schools, and communities is also necessary to create an inclusive and sustainable learning environment. (Nugroho et al., 2024).

Another obstacle that became a major problem was the limited skills of teachers in using digital media in the integration of technology in elementary schools. Although some teachers were able to master the technology independently, many other teachers still needed additional training to improve their digital competence. In addition, teachers who are not yet familiar with creating interactive digital content also pose a challenge in maximizing the potential of this media. It is explained that challenges such as the lack of

personalization and the time required for production require special attention in their implementation (Norma et al., 2024). According to one study (Lahamado et al., 2025) that examined Canva-based learning media, teachers have limited time to design media, and there is a lack of concrete examples of Canva learning media that can be directly adapted to the local curriculum. In addition, the use of digital media requires more time preparation, including designing engaging and interactive learning content. Digital skills training can help educators develop relevant digital pedagogy skills, which will help them adapt to increasingly complex learning needs and integrate digital technology into teaching. (Mustofa et al., 2024). It means that teachers need to master digital skills such as the use of various applications, software, or digital learning platforms in order to effectively integrate technology into learning. (Puspitaningrum et al., 2024). Because students who use digital learning media understand the material better, which can improve their academic performance. Therefore, as an implication, it is necessary to improve infrastructure and teacher training to optimize its use. (Karimah et al., 2024). Teachers who are not yet capable of mastering the use of various applications may experience difficulties when operating them, which can even make teachers less confident in teaching. Furthermore, it is important to develop structured digital skills training so that teachers are expected to be able to adapt to the learning needs of the 21st century. One supporting study explains that the challenges or obstacles encountered can be overcome through training and technical assistance, the formation of peer tutor groups, and institutional support from schools (Muzammil & Izzah, 2025). The positive treatment and response from teachers and students show that collaboration is one of the main factors in successfully overcoming challenges.

Whatever type of media is needed, the main requirement is that teachers can use it in the learning process. The expected value and benefits do not lie in the media itself but in the impact of its use by teachers when students interact with their environment. The existence of various sophisticated devices and other interesting learning applications is meaningless if teachers cannot utilize them in the learning process to improve the quality of learning. In this era of globalization, teachers must have technological skills and be able to adapt to the ever-changing needs of students and teachers (Nufus et al., 2025). Therefore, many suggestions have been made by previous studies, including the need for ongoing support in the form of teacher training, the development of more adaptive learning media, and improvements to technological facilities in schools. The importance of ongoing training programs and institutional policies that support technology integration is urgent in order to strengthen teachers' capacity to face the challenges of digital learning. (L. S. Amalia et al., 2025). This means that the success of teachers in integrating digital media into learning requires comprehensive support, a focus on

continuous development, the provision of adequate facilities and infrastructure, and skills in using technology in the learning methods applied. Thus, the use of interactive digital media in the learning process is not only an alternative, but a strategic solution in providing learning that is relevant to the needs of 21st century students (Nabila R. et al., 2025).

Another challenge in developing interactive learning media is ensuring that the tools created are aligned with learning objectives. Media design must be carefully planned to ensure integration between learning content, visual display, and interaction. In addition, as cited from (Nuraini & Kusaeri, 2025) the incompatibility of technology-based learning media with the school curriculum makes the adoption of technology less than optimal, as existing learning media are often not in line with the material taught in schools. According to one supporting study, the findings of research on educational games as a digital medium in learning show that interactive digital learning media are suitable and effective at various school levels depending on the suitability of the digital media selected to the needs of students. However, in order to maximize their effectiveness, special attention needs to be paid to the design of games as learning media, teacher support, and integration with the curriculum (Nurhikmah et al., 2024). Accessibility is also an important aspect to consider, to ensure that all students can use media easily and access services, media, or environments without barriers, including those with special needs, physical, sensory, or cognitive limitations, or certain socio-economic conditions. Rapid technological advances have made learning more effective and engaging, and have helped teachers deliver material through various digital learning media. Therefore, according to research (Puspitaningrum et al., 2024) support and collaborative efforts from various parties, including the government, schools, and the community, are needed to overcome several obstacles and ensure that every student has access to quality teaching materials to support their independence.

D. Conclusion

It can be concluded that the use of interactive digital media has been proven to contribute positively to increasing the interest of elementary school students in learning in the era of the Merdeka Curriculum. Student interest is the main foundation in sparking students' interest in the learning process so that students have a good understanding of the material and enjoy learning. Various studies show that media such as Canva, Wordwall, digital comics, educational games, animated videos, Liveworksheet, Quizwhizzer, Powtoon, e-modules, and interactive multimedia can significantly increase student interest in learning, conceptual understanding, and student engagement.

The use of interactive digital learning media in the context of differentiated learning can make a positive contribution to increasing students' interest in learning. The selection and design of learning media at the elementary school level certainly has its own criteria in accordance with the characteristics of elementary school-aged children. Digital media also reinforces the implementation of personalized learning, where students can learn at their own pace, according to their preferences and ability levels, and supports differentiated learning and the achievement of the Pancasila Student Profile. Thus, the use of interactive media also encourages student independence in learning, curiosity, and self-confidence, which are important foundations for learning in elementary school. However, the effectiveness of interactive digital media implementation still faces obstacles such as infrastructure limitations, teachers' limited digital skills, internet access gaps, students' ability to operate digital media, and digital learning media that are not aligned with learning objectives. Therefore, comprehensive and continuous support is needed in the form of teacher training in digital skills, the development of more adaptive learning media, improvements in technological facilities in schools, and institutional policies that support technology integration and collaborative efforts from various parties, including the government, schools, and the community, to overcome these gaps. Thus, the use of interactive digital media can be optimized as an effective, innovative, and relevant learning strategy. Accessibility and the principle of equality must be applied so that all students can learn effectively.

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