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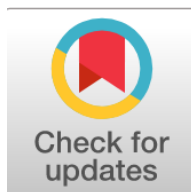
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Integrating Digital Media in Primary Education: Between Student Engagement and Implementation

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Abstract

This qualitative case study **General Background** investigates how educators utilize digital media to foster active student interest and deep comprehension within elementary learning environments. **Specific Background** Focused on a primary school in East Java, Indonesia, the research examines specific technology tools applied, student participation levels, and practical classroom hurdles encountered by teachers. **Knowledge Gap** Despite widespread policy pushes for digital modernization, previous implementations often remain superficial and overlook the contextual realities of technical constraints and mixed digital literacies. **Aims** This study aims to analyze the selection of digital applications, evaluate students' behavioral responses, and identify adaptive teacher strategies required to manage classroom integration effectively. **Results** Findings from classroom observations and semi-structured interviews reveal that platforms such as Canva, Quizizz, and Google Forms successfully elevate motivation, yet teachers concurrently face internet instability, facility shortages, and uneven student readiness. **Novelty** This work uniquely highlights a micro-level operational balance where an educator uses flexible measures—including online blending, parental collaboration, and administrative support—to sustain digital continuity. **Implications** These insights establish that successful instructional digitalization relies less on hardware availability and more on teacher adaptability, thoughtful pedagogical design, and localized institutional support.

Highlights:

- Utilizing interactive applications like Canva, Quizizz, and Google Forms successfully fosters student motivation and active participation during classroom activities.
- Educators frequently encounter structural barriers such as unstable internet connections, limited hardware facilities, and varied levels of student digital literacy.

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- Implementing flexible solutions—including parental cooperation, school support systems, and non-digital backups—ensures continuous and inclusive learning outcomes.

Keywords: Digital Media, Primary Education, Digital Learning, Instructional Strategies, Case Study

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I. Introduction

The development of information and communication technology (ICT) has brought about significant changes in the field of education. In the current digital era, the teaching and learning process is no longer confined to physical classrooms but has been expanded through the integration of various digital media that make learning more dynamic, flexible, and student-centered. Technology does not merely function as a visual aid but holds the potential to transform teaching approaches and enhance students' active participation in the learning process (Fabiola & Taufiq, 2021; Fahemeeda; Shaikh, 2017; Herawati & Taufiq, 2022; Ramadhan & Taufiq, 2025; Taufiq & Megawati, 2023). The use of various learning media such as videos, animations, quizzes through online applications, and collaborative platforms has become increasingly common in classrooms, as they can improve students' learning interest and facilitate better understanding of the material being taught, particularly among elementary school students.

The use of learning media still faces many complex problems. A teacher must balance the advantages of technology with the real difficulties found in the classroom, such as limited facilities, different levels of digital skills among teachers, and the need for good class control. Previous researchers have shown that similar challenges also happen in other levels of education, from secondary schools to universities, including unstable internet access, few available devices, and low teacher readiness to follow fast digital changes (Fiani & Taufiq, 2024; Melati et al., 2023; Mudra, 2020). The success of using learning media depends on both personal and institutional factors, such as the teacher's ability, school support, and students' readiness to learn through technology.

At present, digital literacy and project-based learning have become more important with the Kurikulum Merdeka and the Digital Literacy 2025 program. Even though these programs are made to promote educational improvement, researchers note that their practice still focuses mainly on using digital tools, while the critical and ethical sides of digital literacy have not yet gained enough attention. Consequently, implementation in practice tends to be superficial and lacks meaningful depth (Liansari et al., 2021; Novita et al., 2024). Therefore, it is essential to explore how the teacher truly integrates, adapts, and manages digital media in the classroom according to contextual needs.

The study was conducted within the framework of a primary school in East Java, a school under the auspices of the Muhammadiyah educational foundation. Since it was founded in 1974 and gained full accreditation, the school has shown a strong effort to use technology to support its learning activities. Early observations showed that the school has managed to connect the use of digital media with its learning goals. The students also showed great interest and excitement toward the media used by the classroom teacher.

Although there were some technical problems, the teacher tried to overcome them by creating other learning methods and working together with parents. This situation shows the balance between opportunities and challenges in using digital media at the elementary school level. This study aims to give a clearer and deeper understanding of how digital media are used in real classroom practice by looking at how the teacher deals with and balances these aspects. In addition, it offers a microcosmic reflection of the educational landscape in Indonesia. The present study is concerned with three primary research inquiries:

1. An investigation into the digital media utilized by educators is warranted, as well as an analysis of the correlation between these media and the learning objectives to which they are related.
2. What is the response of students to the integration of digital media in the educational environment?
3. A study of the challenges faced by teachers in integrating digital media is imperative to inform effective strategies for addressing these challenges.

Thus, this research emphasizes that the potential of digital media to enrich learning experiences can only be realized through thoughtful pedagogical planning, contextual sensitivity, and the strengthening of the teacher's role as a primary facilitator. Furthermore, this study is expected to contribute theoretically, particularly regarding the teacher's role as an adaptive agent in digital learning, as well as to offer practical guidance for schools, policymakers, and teacher training programs.

II. Methods

This study employed a qualitative approach with a case study design to obtain an in-depth understanding of how digital media are integrated into teaching practices in Indonesian elementary schools. The qualitative approach was chosen because it allows researchers to explore the complexity of the teaching and learning process contextually, emphasizing meaning, experience, and real situations rather than statistical generalization. The case study strategy was considered most appropriate because this research focused on a bounded system, namely the practice of a teacher in utilizing digital media at a primary school in East Java, Indonesia within its real-life context.

Research Site and Participants

This research was conducted at a primary school in East Java, a private Islamic elementary school located in Pasuruan Regency, East Java, Indonesia. The participant of this study was one classroom teacher who had more than five years of teaching experience. The teacher was selected through purposive sampling based on her teaching experience, active involvement in the use of digital media, and willingness to reflect on her instructional practices. Selecting one experienced teacher allowed for a deeper exploration of how digital media integration was carried out in the teaching and learning

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process, including the teacher's practices, perceptions, and adaptive strategies.

Research Duration

The study took place for one month in September 2025. This period was considered enough to carry out several classroom observations in different subjects and to conduct follow-up interviews. The set time also allowed the researchers to use triangulation, which is a method that collects and analyzes data from different sources to gain a better understanding of a situation. In this study, triangulation included looking at the lesson plans, classroom activities, and the teacher's reflections on how she used digital media in her teaching.

Data Collection Techniques

The data were collected through two primary techniques: semi-structured interviews and classroom observations.

1. Semi-Structured Interviews

To this end, a series of interviews were conducted with the teacher to explore her experiences, strategies, and perspectives regarding the use of digital media in the teaching and learning process. The inquiries were structured around four primary domains:

The following elements are imperative for the implementation of the aforementioned pedagogical approach:

- Pre-teaching planning
- Classroom implementation

The subsequent measures to be taken following the delivery of the lesson are as follows: (c) post-teaching follow-up, and (d) challenges and strategies to overcome them. The semi-structured format enabled in-depth exploration of specific topics, particularly regarding the teacher's rationale for selecting particular tools such as Canva, Quizizz, Kahoot, and Google Forms, as well as her methods of fostering student engagement during lessons. All interviews were conducted in Bahasa Indonesia and subsequently translated into English for the purpose of analysis.

2. Classroom Observations

Observations were conducted during learning activities involving the use of digital media. An observation sheet was developed to record key aspects such as media readiness, alignment with learning objectives, student responses, classroom management, and the teacher's strategies in addressing technical issues.

Field notes were used to document teacher and student activities, including the types of engagement, distractions, or confusion experienced by students. Furthermore, observations centered on the manner in which the instructor employed supplementary activities utilizing digital media, including online quizzes and digital poster creation.

Data Analysis

The data were analyzed using a thematic approach. The researchers carefully reviewed the interview transcripts and observation notes to find patterns, similarities, and differences. Both deductive and inductive methods were used in the process. The deductive approach came from the research questions, while the inductive approach allowed new ideas to appear from the classroom observations.

The analysis produced several main themes, such as how the media matched the learning goals, the level of student participation, ways to manage the class, technical and teaching challenges, the teacher's efforts to solve problems, and her views about the effectiveness of using digital media.

To make the results more reliable, the researchers used triangulation between the interview and observation data, and they also confirmed their interpretations with the teacher to keep the findings accurate. They kept an audit trail that included field notes, interview questions, and observation forms to ensure data dependability. The results were then presented with detailed explanations so that readers could decide how well the findings might apply to other situations.

Ethical Considerations

All ethical procedures were observed throughout the research process. Informed consent was obtained from the teacher before data collection began. The teacher's voluntary participation was respected, and her identity was kept confidential through anonymization in the research report. The collected data were used solely for academic purposes, upholding the principles of respect, privacy, and participant integrity in accordance with ethical standards for research involving human subjects.

III. Findings and Discussion

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Findings

This study aimed to address three primary research questions:

1. What types of digital media are used by the teacher, and how are they related to the learning objectives?
2. How do students respond to the use of digital media, and what forms of engagement or distraction emerge?
3. What challenges does the teacher face in integrating digital media, and what strategies are employed to overcome them?

Data were collected through semi-structured interviews and classroom observations conducted over a one-month period at the school. The findings encompass the entire learning process from pre-teaching preparation, classroom implementation, and post-teaching follow-up to the challenges encountered and strategies used to address them. Here are the findings

1. Digital Media Used and Their Alignment with Learning Objectives

Findings from observations and interviews revealed that the teacher at the school demonstrated a strong awareness of the importance of preparation before using digital media in teaching. The teacher carefully planned the use of media two to three days before each lesson. She stated:

"I usually prepare digital media two or three days before the lesson so I can test whether it works properly and aligns with the learning objectives." (Interview, September 2025)

This statement illustrates that the teacher did not use digital media randomly but based on clear pedagogical considerations. Every medium selected had to align with the core competencies and learning objectives. The teacher emphasized that digital tools were chosen not merely for their visual appeal or practicality but because they supported the achievement of learning goals:

"Not all materials are suitable for digital media. For example, role-playing in Bahasa Indonesia is better done through direct practice."

Thus, the teacher adaptively selected media based on the characteristics of the content and students' needs. In science lessons, for instance, she used animated videos to explain photosynthesis:

"For photosynthesis, animation is more suitable so students can visualize the process they cannot see directly."

In addition to videos, the teacher used Canva to create illustrated slides and digital worksheets (LKPD) due to their engaging design and accessibility for students. Game-based learning applications such as Quizizz, Liveworksheet, Wordwall, and Kahoot were utilized for assessment and reinforcement activities. She believed that digital quizzes maintained students' motivation because "children are more excited when the questions are presented like a game."

Moreover, the teacher considered students' diverse learning styles visual, auditory, and kinesthetic when choosing media:

"Students have different learning styles. So, I adjust the digital media to their characteristics so everyone can participate actively."

Observations indicated that before each class, the teacher checked devices such as the laptop and projector and prepared non-digital alternatives in case of technical issues. She also stored all materials in Google Drive, replacing the old habit of using flash drives, demonstrating a high level of professionalism and readiness in digital classroom management.

The teacher acted not only as a user but also as a designer of learning, using technology carefully to meet teaching goals. This result supports earlier research showing that the success of digital media depends on how well the teacher connects technology use with clear learning objectives, proper teaching methods, and the right choice of media formats (Nurlita & Taufiq, 2025; Saputra & Taufiq, 2024; Yulianti & Taufiq, 2023).

In conclusion, the use of digital media at the school shows a thoughtful practice that combines technology and teaching methods. The teacher's use of digital tools was not simply to follow a trend but was a careful plan to help students understand the lessons better. This result shows that the teacher had good digital literacy, which helped her choose, change, and use media effectively based on the class situation and students' needs. Therefore, the success of digital media in elementary education depends not only on having access to technology but also on the teacher's important role in creating learning activities that are meaningful, suitable, and inclusive. Through these efforts, the teacher was able to use technology as a bridge between learning materials and students' understanding, not just as an extra visual support.

2. Students' Responses and Engagement in Learning

One of the most notable findings at the school was the high level of student enthusiasm when digital media were used in class. Based on interviews and observations, students showed remarkable interest in tools such as Canva, Quizizz, Wordwall, Kahoot, and animated videos that helped visualize abstract concepts. The teacher explained:

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"The students are very enthusiastic, they often ask for every lesson to use digital media."

During classroom observations, when the teacher used a colorful Canva presentation, most students paid close attention to the projector screen. Some students even offered to help operate the devices or manage the digital quiz questions. The use of interactive and competitive learning tools like Quizizz and Kahoot has changed the learning atmosphere, creating a classroom environment that feels more active, engaging, and motivating for students.

These tools have been shown to motivate students, encouraging active participation and a pursuit of higher scores. Digital media also fostered a more collaborative atmosphere, encouraging broader participation. Previously passive students became more confident in asking and answering questions or commenting on the material displayed. The teacher noted:

"When using digital media, students become braver. They enjoy the visuals and aren't afraid of making mistakes."

Nevertheless, excessive enthusiasm occasionally led to distractions. The teacher remarked:

"Sometimes they get too excited and lose focus, so I have to ask guiding questions to bring them back to the material."

Observations revealed that the teacher calmly but firmly reminded students when the classroom became noisy, thereby maintaining a conducive environment. Prior to the initiation of the study, the researcher and the students established class agreements, which included guidelines such as taking turns to speak, maintaining silence during video playbacks, and proper usage of devices. These agreements were implemented to promote discipline and responsibility among the students.

In an effort to strike a balance between screen use and interpersonal interaction, the teacher integrated digital media with group discussions.

"I mix digital media with discussions so there's still face-to-face interaction. The students can still talk and exchange ideas."

This reflects her reflective and adaptive approach. She used digital media not merely to attract attention but to create meaningful learning experiences that involved collaboration, communication, and problem-solving. This finding aligns with some previous studies that emphasize that while digital tools enhance engagement, their success depends on effective classroom management to prevent distraction (Liansari et al., 2021; Taufiq et al., 2022).

Digital media also increased students' confidence. The teacher shared that some quiet students became more active during digital quizzes:

"Students who were usually shy became brave when playing digital quizzes. They felt proud when their answers were correct, especially when they got high scores."

Such positive reinforcement demonstrates the motivational function of digital tools, which encourage learning through play elements and instant feedback crucial for building intrinsic motivation in young learners.

By taking a supportive role, the teacher created an inclusive classroom that met the different learning abilities of her students. She actively gave extra help to those who had limited digital skills by assigning simple tasks and offering personal guidance. The use of reflective activities, classroom agreements, and teamwork among students helped maintain both focus and active participation. Overall, the evaluation of digital media use at the school shows that it improved classroom interaction in many ways. The main goal was to make learning more enjoyable and effective while still supporting the learning objectives.

3. Challenges in Digital Media Integration and Strategies to Overcome Them

Despite the evident benefits, digital media integration at the school also presented technical and non-technical challenges. The teacher adapted well but still faced recurring issues such as unstable internet connections and limited infrastructure:

"The main problems are internet connectivity and facilities, like the limited number of projectors."

Observation confirmed that not all classrooms were equipped with adequate devices, forcing the teacher to move between rooms or rely on personal equipment such as a mobile phone and hotspot. This dependency on external technical readiness posed a constant challenge.

Time constraints were another significant obstacle. The teacher explained:

"Sometimes the schedule is tight, and preparing good digital materials takes a lot of time."

Developing, testing, and customizing digital materials to fit student characteristics required extra preparation, especially when teaching multiple subjects. Combined with limited technical support, this made consistent innovation difficult.

Additionally, variations in students' digital literacy levels caused disparities. Some students were unfamiliar with using devices for learning:

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"Some students still get confused when asked to open a link or do a digital quiz, so I help and guide them."

To address these issues, the teacher implemented adaptive and preventive strategies. She always prepared a backup plan, stating:

"If the digital media fail, I immediately switch to direct practice so the lesson continues."

She also collaborated with the school's IT operator for technical assistance and sought support from colleagues and the principal through informal discussions and resource sharing. This demonstrated a strong spirit of collaboration and professional solidarity, vital for sustaining digital innovation at the elementary level.

Outside the classroom, some students had difficulty finishing their digital assignments because they did not have enough devices or stable internet at home. The teacher handled this problem by giving them extra time at school and keeping in touch with parents to make sure learning continued smoothly. The use of flexible strategies, which included both digital and non-digital methods, cooperation with other teachers, and active involvement of parents, shows that innovation can still grow even when there are many limitations.

The implementation of adaptive measures, encompassing a combination of digital and non-digital approaches, collaborative efforts with colleagues, and active engagement with parents, underscores the capacity for innovation to persist even within the confines of constraints.

The success of digital media integration at the school was contingent not solely on technological factors but also on the pedagogues' professional competence, creativity, and resilience in navigating the intricacies of digital learning. Her reflective, adaptive, and inclusive approach serves as a sustainable model for educational innovation in Indonesian elementary schools.

Discussion

The study conducted at a primary school in East Java, Indonesia, revealed that the utilization of digital media such as Canva, Quizizz, Kahoot, Wordwall, and animated videos has been effective in enhancing students' motivation, participation, and active engagement in learning. Digital media serve not merely as visual aids but also as motivational stimuli that foster curiosity, activeness, and collaboration among students. This finding aligns with the study by some previous studies which emphasize that the use of educational technology can improve student engagement when supported by appropriate pedagogical strategies (Taufiq et al., 2021; Yulianti & Taufiq, 2023),.

However, this higher motivation also brings new challenges, such as distractions and less concentration caused by the excitement of digital games. This result shows that the success of digital media depends on good classroom management and the teacher's ability to balance student engagement with the depth of the curriculum. The teacher in this study showed a thoughtful and flexible way of teaching, where digital media were not used too much but were mixed with group discussions and direct communication. This approach highlights that effective digital learning should be blended, combining the benefits of technology with the close interaction found in face-to-face learning. The challenges faced in using digital media in elementary schools such as limited facilities, lack of devices, preparation time, and differences in students' digital skills show that the digital transformation in these schools still has important gaps to overcome.

These obstacles are consistent with the findings of some studies arguing that educational digitalization policies risk becoming superficial if not accompanied by equitable infrastructure and sufficient teacher training (Fitriyani, F. Dewi, R. S. & Nahartini, 2020; Mudra, 2020). Therefore, technological readiness must go hand in hand with human resource preparedness to ensure that digitalization does not merely become a formality.

The teacher at the school showed strong professional responsibility by creating several adaptive strategies. These included making backup plans, using help from school staff, and working together with other teachers and parents. These efforts show the teacher's ability to handle the challenges of digital learning in a thoughtful and solution-focused way.

In the basic concept of digital literacy, the role of the teacher goes beyond simply teaching and becomes that of a digital mentor. This change helps the teacher guide students in understanding and using digital media effectively and responsibly. The findings show that the success of technology use in elementary schools depends not only on having devices and internet access but also on good teaching skills, school support, and a culture of cooperation. A teacher who can match media choices with students' needs and learning goals shows strong digital literacy, using technology to deepen learning instead of just decorating lessons.

In connection with the national digital literacy policy, this study gives an important message: educational modernization will only have a real impact if it includes fair access, teacher development, and continuous policy support. Consequently, the trajectory of digital education advancement at the elementary level should not be predicated exclusively on technological innovation but should also prioritize the cultivation of human capacity and the enhancement of socio-cultural sensitivity.

Thus, the findings from the school affirm that an ideal digital media-based learning environment is one that is interactive, inclusive, and contextual, where technology functions as a bridge connecting teachers, students, and knowledge not as a substitute for the human interaction that lies at the heart of education.

IV. Conclusions

This study highlights that the success of digital media integration in Indonesian elementary schools is not determined by the number of devices available, but rather by the teacher's ability to balance opportunities and limitations. The findings from the school show that digital media such as animated videos, Canva, and interactive quizzes not only increase students' interest in learning but also create a fun and participatory classroom environment. However, problems like unstable internet connections, limited devices, and different levels of students' digital skills require the use of flexible teaching strategies. The success of digital media in supporting learning depends on the teacher's role as a facilitator who can build a student-centered, interactive, and meaningful learning process.

Innovation, teamwork, and cooperation with parents further strengthen the teacher's role. The study highlights that technology is only a tool, while the real success of digital learning depends on the teacher's leadership in guiding the learning process. This research opens opportunities for future studies to expand the number of cases and explore more deeply how digital media are used in different school contexts.

A comparison between urban schools with better facilities and rural schools with fewer resources is important to understand the gaps in infrastructure, teachers' digital skills, and school support. Future studies also need to examine how digital media integration can affect students' learning results and motivation in the long term. Other research may focus on the role of parents and the school community in supporting digital learning at home, as well as reviewing national digital literacy policies to ensure equal access to technology. By involving more stakeholders, future research can help build a stronger understanding of how digital media can support inclusive and flexible education.

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