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Social Reality of Teachers' Use of Digital Learning Media in Facilitating Science Learning at State Elementary School 4 Karangtengah, Trenggalek Regency

Budi Setiawan[1], Imam Sujono[2], M. Abdul Roziq Asrori[3]

Universitas Bhinneka PGRI, Tulungagung, Indonesia
tunggakjati7@gmail.com[1], imam.sujono@ymail.com[2],
roziq@ubhi.ac.id[3]

Abstract. The integration of digital technology in education has transformed instructional practices at the elementary school level, particularly in Social and Natural Sciences (IPAS), a subject characterized by abstract and complex concepts. Digital learning media provide opportunities to enhance students' understanding through visual, interactive, and contextual learning experiences. However, the use of digital media in elementary schools remains inconsistent due to variations in teachers' digital competence and institutional support. This study aims to explore the social reality of teachers' utilization of digital learning media in facilitating IPAS learning at SD Negeri 4 Karangtengah, Trenggalek Regency. This study employed a qualitative approach with a case study design. The participants consisted of teachers directly involved in IPAS instruction. Data were collected through classroom observations, in-depth interviews, and documentation. Data analysis followed the Miles and Huberman interactive model, including data reduction, data display, and conclusion drawing. Data credibility was ensured through source and technique triangulation. The findings indicate that teachers prepared digital learning media by selecting content aligned with IPAS materials, adjusting to available school facilities, and considering their own digital skills. The use of digital media supported students' conceptual understanding by presenting learning materials in a more engaging and concrete manner. However, implementation was not yet optimal due to limited technological skills, resistance to change, and infrastructure constraints. Overall, teachers demonstrated positive perceptions of digital learning media and acknowledged their potential to support effective IPAS learning.

Keywords: Digital Learning Media, Social Reality, IPAS Learning, Elementary Education.

1 Introduction

The rapid advancement of digital technology has brought profound changes to educational systems worldwide, influencing not only how knowledge is accessed but also how teaching and learning processes are designed and implemented. In the context of elementary education, digital technology has become an increasingly important com-

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ponent of instructional practices, as it offers new opportunities to present learning materials in more engaging, interactive, and meaningful ways. Teachers are now expected to integrate digital learning media into classroom instruction in order to respond to the learning characteristics of students who grow up in a technology-rich environment.

Learning media play a crucial role as a communication tool between teachers and students in the teaching and learning process. Through appropriate media, abstract concepts can be transformed into concrete representations that are easier for students to understand. This function of learning media is particularly important at the elementary school level, where students are still in the concrete operational stage of cognitive development and require visual and contextual support to construct understanding. Digital learning media, such as videos, animations, interactive presentations, and educational applications, provide rich multimodal experiences that can enhance students' attention, motivation, and comprehension.

In the Indonesian elementary school curriculum, Social and Natural Sciences (IPAS) is an integrative subject that combines concepts from natural sciences and social studies. IPAS aims to develop students' understanding of natural phenomena, social interactions, and their interrelationships in everyday life. However, IPAS content is often perceived as challenging because it involves abstract concepts, processes, and phenomena that cannot always be directly observed by students. Conventional teaching methods that rely heavily on verbal explanations and textbooks are often insufficient to support deep conceptual understanding. Therefore, the integration of digital learning media is considered a strategic approach to facilitate IPAS learning.

Previous studies have shown that digital learning media can improve students' conceptual understanding, learning motivation, and engagement. Visual and audiovisual media help students visualize abstract concepts, while interactive media encourage active participation and inquiry-based learning. Moreover, digital media can support differentiated instruction by accommodating diverse learning styles and learning paces. Despite these potential benefits, the implementation of digital learning media in elementary schools remains inconsistent and uneven.

One of the main factors influencing the use of digital learning media is teachers' digital competence. Teachers' ability to select, design, and utilize digital media effectively depends on their technological skills, pedagogical knowledge, and attitudes toward technology. In addition, institutional factors such as infrastructure availability, internet access, school policies, and professional development opportunities also play a significant role. In many elementary schools, limited facilities and insufficient training hinder teachers from fully integrating digital media into their instructional practices.

At SD Negeri 4 Karangtengah, the use of digital learning media in IPAS instruction reflects this complex situation. While some teachers actively integrate digital media into their lessons, others rely primarily on conventional teaching approaches due to limited digital skills, lack of confidence, or resistance to change. This variation illustrates a social reality in which teachers' beliefs, competencies, experiences, and working conditions interact to shape classroom practices. Understanding this social

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reality is essential for identifying both the opportunities and challenges of digital media integration in elementary education.

Most existing research on digital learning media focuses on measuring learning outcomes or effectiveness through quantitative approaches. However, fewer studies explore teachers' lived experiences, perceptions, and contextual challenges in using digital learning media, particularly in IPAS learning at the elementary school level. To address this gap, the present study aims to explore the social reality of teachers' use of digital learning media in facilitating IPAS learning at SD Negeri 4 Karangtengah. By examining how teachers prepare, utilize, and perceive digital learning media, this study is expected to provide insights that can inform teacher professional development and school-level policies related to digital learning implementation.

2 Methodology

This study employed a qualitative research approach using a case study design. The qualitative approach was chosen to obtain an in-depth understanding of the social reality surrounding teachers' use of digital learning media in facilitating IPAS learning at the elementary school level. A case study design allowed the researcher to explore real-life contexts and capture complex interactions between teachers' competencies, perceptions, and institutional conditions.

2.1 Research Design

The research was designed as a single-case study conducted in a public elementary school. This design enabled an intensive examination of teachers' practices and experiences related to the preparation and utilization of digital learning media in IPAS instruction. The case study approach was considered appropriate because the phenomenon under investigation is context-dependent and cannot be separated from its natural setting.

2.2 Research Site and Participants

The study was conducted at SD Negeri 4 Karangtengah, located in Trenggalek Regency, Indonesia. This school was selected purposively because it represents a typical elementary school that has begun integrating digital learning media into classroom instruction. The participants consisted of classroom teachers and subject teachers who were directly involved in teaching IPAS.

Participants were selected using purposive sampling based on the following criteria: (1) actively teaching IPAS, (2) having experience using digital learning media, and (3) willingness to participate in the study. This sampling technique ensured that the data collected were relevant to the research objectives.

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2.3 Data Collection Techniques

Data were collected using three complementary techniques: classroom observations, in-depth interviews, and documentation.

Classroom observations were conducted to examine teachers' actual practices in using digital learning media during IPAS lessons. The observations focused on the types of media used, instructional strategies, student engagement, and classroom interactions.

In-depth interviews were conducted to explore teachers' perceptions, experiences, and challenges related to digital learning media. Semi-structured interview guidelines were used to allow flexibility while ensuring consistency across participants. Interviews were conducted individually and recorded with participants' consent.

Documentation was used to support and validate data obtained from observations and interviews. Documents included lesson plans, digital teaching materials, school policy documents, and photographs of learning activities.

2.4 Data Analysis

Data analysis followed the Miles and Huberman interactive model, which consists of three interrelated steps: data reduction, data display, and conclusion drawing. During data reduction, raw data were selected, coded, and categorized based on emerging themes. Data display involved organizing the data into narrative descriptions and thematic matrices. Conclusion drawing was conducted by interpreting patterns and relationships among themes.

The analysis process was iterative, meaning that data collection and analysis occurred simultaneously to allow continuous refinement of findings.

2.5 Trustworthiness of the Study

To ensure the trustworthiness of the findings, several strategies were employed. Credibility was enhanced through triangulation of data sources and data collection techniques. Member checking was conducted by confirming key findings with participants. Transferability was supported by providing rich descriptions of the research context. Dependability and confirmability were ensured through careful documentation of research procedures and data analysis processes

3 Results and Discussion

3.1 Teachers' Preparation of Digital Learning Media

The findings reveal that teachers' preparation of digital learning media was conducted through several stages, including identifying learning objectives, selecting appropriate media, and adjusting materials to students' characteristics and available school facili-

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ties. Teachers emphasized that digital learning media must be aligned with IPAS content to ensure that learning objectives are achieved effectively.

Teachers commonly selected digital media such as instructional videos, digital presentations, and simple interactive applications. Videos were considered effective in explaining abstract concepts related to natural phenomena, while digital presentations were used to structure learning materials systematically. Interactive applications were used selectively, depending on teachers' digital competence and technological availability.

The level of preparation varied among teachers. Teachers with higher digital competence demonstrated greater creativity in designing learning media, including combining videos, images, and short quizzes. In contrast, teachers with limited digital skills relied on ready-made materials obtained from online platforms. This finding indicates that digital competence plays a crucial role in shaping teachers' instructional planning.

From a theoretical perspective, this finding supports the view that teachers are not merely users of technology but active designers of learning experiences. Effective preparation of digital learning media requires pedagogical knowledge, content knowledge, and technological knowledge. Therefore, teachers' readiness to integrate digital media reflects the interaction between these competencies..

3.2 Utilization of Digital Learning Media in IPAS Learning

The utilization of digital learning media in IPAS learning was observed to enhance classroom interaction and student engagement. During lessons supported by digital media, students showed increased attention and participation compared to conventional teaching methods. Visual representations helped students understand abstract concepts more concretely, while animations and videos stimulated curiosity and interest.

Digital learning media also facilitated contextual learning by connecting IPAS concepts with real-life situations. For example, videos depicting natural phenomena enabled students to observe processes that could not be directly experienced in the classroom. This contextualization helped students construct meaning and develop a deeper understanding of learning materials.

Furthermore, digital media supported differentiated instruction by accommodating diverse learning styles. Visual learners benefited from images and videos, while auditory learners responded positively to narrated explanations. This finding aligns with the theory of multimedia learning, which emphasizes that learning is more effective when information is presented through multiple channels.

However, the utilization of digital learning media was not consistent across all classes. Some teachers used digital media only as supplementary tools, while others integrated them throughout the learning process. This variation reflects differences in teachers' confidence and experience in using digital technology..

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3.3 Challenges in Implementing Digital Learning Media

The findings indicate that digital learning media contributed positively to students' learning experiences in IPAS lessons. Students were more motivated and actively involved when digital media were used. Teachers reported that students asked more questions and participated more actively in discussions.

Digital learning media also helped reduce students' learning difficulties, particularly in understanding abstract concepts. By visualizing processes and phenomena, digital media made learning more accessible and meaningful. This supports previous research suggesting that digital media can improve conceptual understanding and learning motivation.

Nevertheless, the impact of digital learning media depended on how effectively teachers integrated them into instruction. Media that were not aligned with learning objectives or used without clear guidance did not produce optimal learning outcomes. This finding highlights the importance of pedagogical considerations in technology integration.

3.4 Challenges in Implementing Digital Learning Media

Despite the benefits, several challenges hindered the optimal use of digital learning media. One major challenge was limited technological skills among some teachers. Teachers with low digital competence experienced difficulties in operating devices and designing interactive media, leading to minimal use of technology in classrooms.

Resistance to change also emerged as a challenge. Some teachers preferred conventional teaching methods and were reluctant to adopt digital approaches. This resistance was influenced by fear of making mistakes, lack of confidence, and limited training opportunities.

Infrastructure constraints further complicated implementation. Limited access to digital devices, unstable internet connections, and insufficient technical support restricted teachers' ability to use digital media effectively. These challenges indicate that technology integration requires not only individual competence but also institutional support..

3.5 Teachers' Perceptions of Digital Learning Media

Overall, teachers expressed positive perceptions of digital learning media and recognized their potential to enhance IPAS learning. Teachers viewed digital media as tools that could make learning more interesting, interactive, and relevant to students' lives.

However, teachers also emphasized the need for continuous professional development to improve their digital competence. They expressed a desire for training programs that focus on practical skills and pedagogical integration of technology. Teachers believed that with adequate support, digital learning media could be used more effectively and sustainably.

This finding highlights the importance of professional development and supportive school policies in fostering positive attitudes toward technology integration. Teach-

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ers' perceptions are shaped by their experiences, competencies, and working conditions, which collectively form the social reality of digital learning media use.

4 Conclusion

This study concludes that digital learning media play a crucial role in facilitating IPAS learning at the elementary school level. Digital media support students' understanding by making learning more visual, interactive, and contextual. However, effective implementation depends on teachers' digital competence, infrastructure availability, and institutional support. Continuous training and adequate facilities are essential to optimize the use of digital learning media in elementary education.

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Conflict of Interest

The authors declare that there are no conflicts of interest regarding the publication of this article.

Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

Artificial Intelligence (AI) Disclosure

[To be confirmed by the authors] The authors declare that no generative AI or AI-assisted technologies were used in the preparation of this manuscript.

Research Ethics

Ethical review and approval were not required for this study because [brief justification].

Informed Consent Statement

Informed consent was obtained from all participants involved in the study.

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