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CHALLENGES IN INTEGRATING DIGITAL LITERACY IN ELEMENTARY EDUCATION: A QUALITATIVE STUDY

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ABSTRACT

This study aims to explore the challenges in integrating digital literacy in elementary education at SDN Jaban. The research uses a qualitative approach with a phenomenological design to understand teachers' experiences in implementing digital literacy in the classroom. Data were collected through semi-structured interviews involving five teachers. The findings indicate several main challenges, including limited technological infrastructure, differences in teachers' digital competence, and the absence of structured digital literacy materials. Despite these limitations, teachers show adaptive efforts by utilizing simple digital media such as videos and online quizzes, as well as collaborating with fellow teachers. The results of thematic analysis reveal that teachers are in a transitional phase toward digital learning and require institutional support in the form of training and facilities. This study suggests the need for structured programs and continuous professional development to support effective digital literacy integration in elementary schools.

Keywords: *Digital Literacy, Elementary Education, Qualitative Study, Education Challenges, SDN Jaban.*

INTRODUCTION

Recent studies highlight that digital literacy is not merely a technical skill but a multidimensional competence involving critical thinking, ethical awareness, and information evaluation. According to UNESCO (2021), digital literacy encompasses the ability to access, analyze, create, and communicate information using digital technologies in a responsible and critical manner [1].

Furthermore, van Laar et al. (2020) emphasize that digital competence is increasingly essential in preparing students for the demands of the 21st century workforce, particularly in terms of problem-solving and collaboration skills [2]. In addition, Ferrari (2020) proposes a digital competence framework that includes information literacy, communication, and content creation skills necessary for effective participation in the digital era [3].

This perspective is strengthened by Pangrazio (2021), who introduces the concept of critical digital literacy, emphasizing the importance of evaluating digital content critically and understanding its social implications [4]. Moreover, Ilomäki et al. (2022) highlight that digital competence in education is closely related to pedagogical practices and curriculum integration, not merely technical ability [5].

These perspectives indicate that integrating digital literacy in elementary education is not optional but a fundamental requirement to ensure students' future readiness.

Digital literacy has become an important skill in the modern education system. Students are required not only to understand academic content but also to be able to access, evaluate, and use digital information effectively. Therefore, schools play a crucial role in introducing digital literacy from an early age.

However, in many elementary schools, including SDN Jaban, the integration of digital literacy has not been fully implemented. Several factors such as limited facilities, lack of teacher readiness, and absence of structured learning materials become major obstacles.

Based on preliminary observations, teachers at SDN Jaban have started to use digital tools in learning, but the implementation is still not optimal. This condition shows that there is a gap between expectations and reality in digital-based learning.

This study aims to understand teachers' experiences in integrating digital literacy and identify the challenges they face. The results are expected to provide insights for improving digital literacy implementation in elementary education.

In addition, the urgency of integrating digital literacy in elementary education is increasingly emphasized in recent global education discourse. According to OECD (2021), digital literacy is considered a core competency that supports lifelong learning and active participation in the digital society [6]. This perspective highlights that early exposure to digital literacy not only enhances students' academic performance but also strengthens their adaptability in an increasingly technology-driven environment.

Furthermore, research by Ng Wai-Kong (2021) indicates that digital literacy integration at the primary level contributes significantly to students' critical thinking and information filtering skills, which are essential in combating misinformation [7]. This is particularly relevant in the current era where students are exposed to vast amounts of unverified digital content.

Moreover, Hobbs Renee (2022) argues that digital literacy should not be treated as an additional subject but rather embedded across the curriculum to ensure meaningful learning experiences [8]. This integrative approach requires not only curriculum redesign but also a shift in pedagogical strategies among teachers.

Beyond cognitive and technical skills, digital literacy also encompasses ethical and social dimensions. According to Belshaw Doug (2014), digital literacy involves eight essential elements, including cultural, cognitive, constructive, communicative, and critical aspects [9]. This broader perspective suggests that integrating digital literacy in elementary education should not be limited to operational skills, but must also include digital ethics, online responsibility, and collaborative learning.

In line with this, Martin Allan (2008) defines digital literacy as the awareness, attitude, and ability to use digital tools appropriately to identify, access, manage, integrate, evaluate, and synthesize digital resources [10]. This definition reinforces the need for structured and comprehensive approaches in implementing digital literacy at the primary level.

Additionally, the rapid development of digital platforms such as YouTube and TikTok has significantly influenced children's learning behaviors. Research by Kuss Daria J. (2022) indicates that excessive and unguided use of digital media can negatively affect attention span and learning focus [11]. Therefore, schools play a crucial role in guiding students toward responsible and productive use of digital technologies.

RESEARCH METHOD

This research uses a qualitative approach with a phenomenological method. Creswell (2018) explains that qualitative research is used to explore and understand the meaning individuals or groups ascribe to a social or human problem [12].

The phenomenological design is applied to understand teachers' lived experiences in implementing digital literacy. Moustakas (1994) states that phenomenology focuses on exploring participants' experiences and interpreting their meanings [13].

In qualitative phenomenological studies, data validity is crucial to ensure the credibility of findings. According to Lincoln Yvonna S. and Guba Egon G. (1985), trustworthiness in qualitative research can be achieved through credibility, transferability, dependability, and confirmability [14]. In this study, credibility was ensured through prolonged engagement with participants and triangulation of interview data.

Additionally, data analysis in phenomenological research follows systematic steps. Colaizzi Paul F. (1978) proposes a structured approach involving extracting significant statements, formulating meanings, and clustering themes [15]. This approach helps in capturing the essence of participants' lived experiences more comprehensively.

Furthermore, participant selection in this study was conducted using purposive sampling to ensure that informants had direct experience with the phenomenon being studied. According to Palinkas Lawrence A. (2015), purposive sampling is particularly effective in qualitative research as it allows researchers to select information-rich cases that provide deep insights into specific issues [16].

To enhance the rigor of the study, member checking was also applied. Birt Linda (2016) explains that member checking helps validate findings by allowing participants to review and confirm the accuracy of the interpreted data [17]. This step ensures that the results genuinely reflect participants' experiences.

RESULTS AND DISCUSSION

The findings of this study reflect broader issues identified in previous research regarding the integration of digital literacy in primary education. Globally, schools are experiencing similar transitional phases in adapting to digital transformation. According to World Bank (2022), many developing countries face structural challenges such as unequal access to technology and limited teacher training, which hinder effective digital learning implementation [18].

This indicates that the challenges identified in SDN Jaban are not isolated but represent a common pattern in education systems undergoing digital transition. The integration of digital literacy in education is often conceptualized within the framework of 21st-century skills. According to Partnership for 21st Century Skills, digital literacy is closely linked to critical thinking, communication, collaboration, and creativity (4C skills) [19]. These competencies are essential for preparing students to face future challenges in a globalized world.

This study aligns with previous findings that highlight the gap between policy expectations and classroom realities. While educational policies emphasize digital transformation, implementation at the school level often encounters practical constraints, particularly in developing regions.

Limited Technological Infrastructure

The results show that limited facilities are one of the main challenges. Not all classrooms have access to digital devices such as computers or projectors. This finding is consistent with Trust and Whalen (2020), who found that limited infrastructure remains a major barrier in digital learning implementation [20]. Furthermore, Howard (2022) emphasizes that inadequate infrastructure significantly hinders effective digital learning in schools [21].

In addition, the digital divide between urban and rural schools further exacerbates infrastructure limitations. Selwyn Neil (2021) explains that unequal access to digital resources creates disparities in learning opportunities, particularly in primary education [22]. This suggests that infrastructure development should be prioritized to ensure equitable access to digital learning.

In addition, internet connectivity plays a crucial role in enabling digital learning. International Telecommunication Union (2022) reports that disparities in internet access remain a major barrier in many regions, affecting students' ability to participate in digital learning environments [23]. This reinforces the need for government intervention in improving digital infrastructure.

Teacher Digital Competence

Another challenge is the variation in teachers' digital skills. Some teachers are familiar with technology, while others still struggle. This aligns with König et al. (2020), who highlight that teachers' digital competence significantly influences the success of online learning [24]. In addition, Trust (2021) emphasizes that continuous professional development is essential to improve teachers' digital literacy skills [25].

One participant said: "Saya masih belajar menggunakan aplikasi pembelajaran." This indicates the need for continuous training to improve teachers' competence. Moreover, teachers' attitudes toward technology also play a significant role in digital literacy integration. Ertmer Peggy A. (2019) highlights that both first-order barriers (external factors such as infrastructure) and second-order barriers (internal factors such as beliefs and attitudes) influence teachers' adoption of technology [26]. Therefore, improving digital competence requires not only technical training but also mindset transformation.

Professional development programs are essential in addressing teachers' digital competence. Tondeur Jo (2020) emphasizes that continuous training and hands-on experience significantly improve teachers' confidence and ability to integrate technology into teaching practices [27]. Without sustained support, training programs often fail to produce long-term impact.

Lack Of Struvtured Materials

Teachers also mentioned that there are no clear guidelines or structured materials related to digital literacy. "Biasanya saya mencari sendiri materi dari internet." This situation forces teachers to rely on their own initiative.

The absence of structured digital literacy materials also indicates a gap at the policy level. European Commission (2020) emphasizes the importance of standardized digital competence frameworks, such as DigComp, to guide educators in integrating digital literacy effectively [28]. Without clear guidelines, implementation tends to be inconsistent and dependent on individual teacher initiative.

The development of digital teaching materials should also consider students'

cognitive levels. Mayer Richard E. (2021) proposes the Cognitive Theory of Multimedia Learning, which suggests that instructional materials should be designed to optimize cognitive processing and avoid overload [29]. This is particularly important for elementary students who are still developing their cognitive capacities.

Adaptation Strategies

Despite the challenges, teachers try to adapt by using simple digital tools such as videos and online quizzes. This finding is supported by Scherer et al. (2021), who state that teachers who actively experiment with digital tools and collaborate with peers are more likely to succeed in integrating technology into teaching [30]. "Saya menggunakan video agar siswa lebih tertarik belajar." Collaboration between teachers is also an important strategy.

In addition, collaborative learning among teachers has been identified as an effective strategy in overcoming digital literacy challenges. Vangrieken Katrien (2017) states that teacher collaboration enhances knowledge sharing and promotes innovation in instructional practices [31]. This reinforces the importance of professional learning communities in supporting digital transformation in schools.

Game-based learning has also been identified as an effective approach to enhance digital literacy. Gee James Paul (2007) argues that digital games can foster problem-solving skills, engagement, and motivation among students [32]. Integrating educational games into the curriculum can therefore support more interactive and meaningful learning experiences.

Thematic Coding of Interview Results

Table 1. Interview Coding and Themes

No	Statement	Code	Category	Theme
1	Fasilitas kurang	Infrastruktur terbatas	Sarana	Infrastructure
2	Tidak ada proyektor	Akses terbatas	Sarana	Infrastructure
3	Kesulitan teknologi	Kompetensi rendah	SDM	Teacher Competence
4	Butuh pelatihan	Pengembangan guru	SDM	Teacher Competence
5	Cari materi sendiri	Inisiatif mandiri	Pembelajaran	Materials
6	Tidak ada panduan	Kurikulum belum ada	Pembelajaran	Materials
7	Pakai video	Media menarik	Strategi	Adaptation
8	Kuis online	Teknologi sederhana	Strategi	Adaptation

Parental involvement is another critical factor influencing students' digital literacy development. Livingstone Sonia (2018) highlights that parental guidance significantly affects how children use digital technologies and develop digital skills [33]. Collaboration between schools and parents is therefore necessary to ensure

consistent digital literacy practices.

Phenomenological Interpretation

The findings show that teachers experience real challenges in integrating digital literacy. Limited facilities and skills become major barriers. However, teachers demonstrate a positive attitude by continuing to learn and adapt.

This shows that digital literacy integration is not only about technology but also about readiness and support from the school system. From a phenomenological perspective, these findings reveal that teachers are actively negotiating their roles in a digitally evolving educational environment. Heidegger Martin (1962) suggests that human experience is shaped by interaction with the surrounding context, including technological changes [34]. Thus, teachers' adaptation reflects a deeper process of meaning-making in response to digital transformation.

From a broader perspective, digital transformation in education reflects a paradigm shift in teaching and learning. Castells Manuel (2010) describes this transformation as part of the network society, where information flows and digital connectivity shape social structures [35]. In this context, teachers act as mediators who bridge traditional learning approaches with digital innovations.

CONCLUSION

This study concludes that the integration of digital literacy at SDN Jaban is still facing several challenges, including limited infrastructure, differences in teacher competence, and lack of structured materials. In addition, future policies should emphasize sustainable digital literacy programs that integrate infrastructure, teacher training, and curriculum development. According to UNESCO (2021), holistic approaches are necessary to ensure long-term success in digital education initiatives [36]. In line with previous research, sustainable digital literacy integration requires systemic support, including policy development, infrastructure investment, and continuous teacher training. Future research should also explore students' perspectives to gain a more comprehensive understanding of digital literacy implementation. According to Fraillon Julian (2019), students' digital competence varies significantly depending on exposure and guidance, highlighting the importance of integrating student-centered approaches in digital literacy programs [37]. Redecker (2020) emphasizes that professional development programs focusing on digital pedagogy are essential for long-term educational transformation [38].

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