

Analysis of the Need for Digital Teaching Materials in Indonesian Language Learning in Elementary Schools

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ABSTRACT

The integration of digital technologies in education has become increasingly essential, particularly in supporting interactive and student-centered learning. This study aims to analyze the needs of primary school teachers regarding the use of digital teaching materials in Indonesian language instruction. A qualitative descriptive approach was employed involving 24 classroom teachers from 10 primary schools in Lebak Regency, Indonesia, selected through simple random sampling. Data were collected using structured interviews and analyzed thematically to identify recurring patterns and themes. The findings indicate that most teachers still rely on conventional teaching materials such as textbooks, visual aids, and simple instructional media. Teachers expressed a strong need for digital teaching materials, particularly those utilizing Augmented Reality (AR) to support topics such as essay writing, speed reading, and grammar structures. These materials are expected to enhance student engagement, simplify abstract content, and promote 21st-century learning competencies. The study provides practical recommendations for stakeholders and curriculum developers to create accessible and interactive digital resources tailored to teachers' needs in the digital era.

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1. INTRODUCTION

Digital technology has played a significant role in the integral process of individual life, both at school and in society. The teaching profession is expected to reflect changes that integrate technology, particularly to enhance student learning experiences and digital technology mastery (Fauzi & Sastra Khusuma, 2020). Educators need competence to encourage Indonesian participation in digital technology, so that they can utilize technology effectively and develop students' digital competence (Sondakh et al., 2021). In Indonesia, the implementation of Curriculum 13 in schools still requires adequate preparation in terms of facilities and infrastructure to support learning. One component that plays an important role is teaching materials. Teaching materials are important as a source of knowledge and insight for students (Imamah & Susanti, 2021). It should be noted that the distribution of teaching materials in Indonesia is not proportional to the number of schools in existence; the unequal

distribution of teaching materials results in an imbalance in supporting the teaching and learning process carried out by educators. Besides that, conventional teaching materials have many shortcomings, such as being easily damaged and monotonous. It requires space to be carried until it is no longer interesting in the eyes of students, making teaching materials a problem that needs to be studied further. Thus, we need teaching materials that are able to correct these potential deficiencies, one way is by creating digital teaching materials that are integrated with technology so that later educators can access them easily, with an attractive appearance, and encourage students to have a different experience than before (Yaniawati, Al-Tammar, Supianti, Md Osman, & Saeful Malik, 2021).

As integrated and unified technology continues to evolve (Wei et al., 2019), there is an increasing need for aesthetic and innovative digital media art to enhance the application of technology and support advancements in the digital technology sector (Ismail, Fauzan, Yerizon, & Arnawa, 2021). One approach to introducing new innovations in teaching and learning is through the use of digital teaching materials. Indonesian language learning, in particular, greatly benefits from digital teaching materials. This aligns with the objectives of Indonesian language education, which aim to develop students who are scientifically literate, capable of solving problems, and able to logically evaluate and validate information (Tobing, Somakim, & Susanti, 2020). However, Indonesian language education often encounters challenges in helping students grasp abstract concepts within the learning materials (Rufaidah, Umamah, Sumardi, Marjono, & Surya, 2021). Integrating technology, such as visuals, into Indonesian language learning has proven to be more effective than conventional classroom methods. This approach can foster greater student interest in learning the language while enhancing their understanding of real and concrete knowledge (Sen & Leong, 2020).

Foreign speakers learn Indonesian for both academic and practical purposes (Siroj, 2015), aligning with the objective of Indonesian language learning, which is to enhance students' ability to communicate effectively in both spoken and written forms (Sargent & Calderón, 2021). Generally, foreign speakers studying Indonesian achieve UKBI (Uji Kemahiran Bahasa Indonesia) proficiency standards at the secondary level, scoring between 405 and 480. However, those working in social fields requiring frequent communication, such as research, education, and healthcare, are expected to meet intermediate-level UKBI standards. Foreign speakers are required to comprehend and use Indonesian proficiently to communicate effectively (Downie, Gao, Bedford, Bell, & Kuit, 2021a).

To support this, the Indonesian government enacted Government Regulation No. 34 of 2021, mandating Indonesian language education and training facilities for foreign workers. BIPA (Bahasa Indonesia bagi Penutur Asing) practitioners play a crucial role in designing appropriate learning programs for foreign workers. Certain provinces, such as Central Java, have received numerous foreign nationals, including those seeking employment as foreign workers (TKA). Local governments have established regulations, such as the requirement for a work permit (Izin Mempekerjakan Tenaga Kerja Asing/IMTA), for hiring foreign workers. Furthermore, Presidential Decree No. 63 of 2019 stipulates that Indonesian must be used in national and international forums within Indonesia, emphasizing the importance of Indonesian language education for foreign workers. As of April 2023, data from the Ministry of Manpower recorded 7,383 foreign workers arriving in Indonesia, with a total of 35,049 arrivals between January and April 2023.

Teaching materials play a vital role in achieving educational goals (Downie, Gao, Bedford, Bell, & Kuit, 2021b). As an integral component of the learning process, teaching materials support the effective implementation of education by enhancing student engagement and learning outcomes. Well-designed teaching materials simplify the delivery of content for educators and improve students' ability to grasp the material provided. These materials serve as a guide for learning activities, ensuring alignment with the intended objectives. When teaching materials include well-structured content, such as materials, examples, exercises, reflections, and competency assessments, they significantly contribute to achieving optimal learning outcomes (Fominykh, Weidlich, Kalz, & Hybertsen, 2022a).

Teaching materials function as a bridge between teachers and students, helping both parties deepen their understanding of the material. These resources consist of various learning tools, messages,

or information designed to meet learning needs and competencies. The development of teaching materials supports students in maximizing learning outcomes by improving time efficiency, accelerating the learning process, and minimizing the educator's role in delivering information. The way students engage and interact with teaching materials greatly influences their ability to construct knowledge (Fominykh, Weidlich, Kalz, & Hybertsen, 2022b). By interacting with teaching materials derived from various resources, students can gain a deeper understanding, making the learning experience more memorable and easier to comprehend (Williams, 2020).

Teaching materials are systematically organized tools, information, and texts used to achieve learning objectives (Rachmavita, 2020). These materials may include ideas, facts, concepts, principles, or theories related to specific subjects. Examples of teaching materials include textbooks, presentation slides, videos, and assignments. Effective teaching materials help students understand lessons more easily. Therefore, educators must be skilled in developing engaging and innovative teaching materials (Puspaningtyas & Marchamah Ulfa, 2020). Teaching materials can be categorized into four types: printed, audio, audiovisual, and interactive materials, along with other supplementary resources (Septiani & Rejekiningsih, 2020). Teachers should create teaching materials that are both interesting and comprehensible to ensure that students find learning enjoyable and not burdensome (Yulianci, Nurjumiati, Asriyadin, & Adiansha, 2021). High-quality teaching materials should align with the difficulty level of the subject, be easy to understand, and captivate students' interest.

The integration of digital technology has significantly facilitated students' comprehension of abstract concepts. Numerous studies highlight that teaching materials-based learning fosters creativity, interest, and academic performance, particularly in the context of Indonesian language education (Masyhura, 2022). Digital teaching materials refer to digitally formatted books that offer an engaging presentation through the inclusion of videos, animations, educational games, online articles, and scanned traditional texts (Vioreza, Supriatna, & Hakam, 2022). These materials, which complement instructional methods, should incorporate textbooks, curriculum frameworks, task descriptions, and software for teaching purposes (Lie et al., 2020). Furthermore, they function as a medium for teacher-student interaction in both online and offline learning settings (Simaremare & Purba, 2021). Their interactivity potential makes them essential in offering students an engaging and innovative learning experience, which subsequently boosts motivation (Mourtzis, Angelopoulos, & Dimitrakopoulos, 2020).

Research has documented several advantages of digital teaching materials, such as enhancing student interactivity, ensuring universal accessibility, enabling learning without spatial or temporal constraints, and providing access to abundant resources. These materials influence students' enthusiasm, comprehension, and critical thinking. Additionally, digital formats allow students to access content, directions, and learning resources anytime and anywhere, encouraging independent learning (Karakose, Polat, & Papadakis, 2021). As technology-savvy students engage with these materials, their interest and positive attitudes towards learning improve, thanks to interactive and technology-driven educational experiences (Hamzah, Nasir, & Wahab, 2021).

Teaching materials play a critical role in achieving educational objectives. They are an integral component of the learning process, facilitating effective teaching and improving student engagement and outcomes. Designed to simplify the transfer and reception of learning content, teaching materials serve as a guiding framework for structured learning activities, ultimately contributing to successful outcomes when properly developed. Acting as a bridge between educators and learners, these materials encompass various resources such as content, exercises, reflections, and assessments that foster knowledge acquisition and retention (Argadinata & Gunawan, 2019).

The development of teaching materials emphasizes optimizing learning efficiency and minimizing reliance on educators by offering well-organized content. They also encourage active student interaction and help shape knowledge through various accessible resources (Witono & Lakonawa, 2017). Effective teaching materials should provide comprehensive, systematic information that aids learners in conceptualizing and mastering the content being taught. These materials can range from printed books to audiovisual and interactive formats, catering to diverse learning needs.

In the 21st century, educators must adapt to rapid technological advancements by creating innovative, engaging, and varied teaching materials that align with modern demands (Yates, Starkey, Egerton, & Flueggen, 2021). Digital technologies, including mobile learning and instant messaging, have transformed traditional teaching by introducing interactive multimedia tools. Teachers must harness these advancements to design learning experiences that are visually appealing and capable of sustaining student interest. However, many schools still rely heavily on printed materials, highlighting the need for a broader adoption of digital resources to ensure a more dynamic and engaging educational process (Azionya & Nhedzi, 2021)..

Digital teaching materials encompass features like videos, animations, and educational games, making them appealing and effective in conveying content (Bednjanec, Bednjanec, & Galović, 2024). As tools for facilitating communication between teachers and students, these materials enhance both online and offline learning experiences while promoting interactivity and engagement (Shuai et al., 2021).. The incorporation of digital materials into education can attract student interest, improve comprehension, and foster positive attitudes towards learning, thus playing a pivotal role in modern educational practices.

2. METHOD

This study employed a qualitative descriptive design to explore the perceived needs of primary school teachers for digital teaching materials in the context of Indonesian language instruction. The qualitative approach was chosen to allow for an in-depth understanding of participants' experiences, perceptions, and expectations regarding the integration of digital resources in teaching.

2.1 Participants

The study involved 24 classroom teachers from 10 different public primary schools in Lebak Regency, Banten Province. Participants were selected using simple random sampling to ensure diverse representation across various educational settings.

2.2 Data Collection Instruments

Data were gathered using a structured interview guide comprising four key questions:

1. What types of teaching materials are commonly used in Indonesian language learning?
2. Do you believe digital teaching materials are necessary for 21st-century learning?
3. Which topics in Indonesian language instruction would benefit most from digital teaching materials?
4. What types of digital teaching materials would you prefer to use?

The interview guide was reviewed and validated by two education technology experts to ensure relevance, clarity, and alignment with the research objectives.

2.3 Data Collection Procedures

Interviews were conducted individually with teachers and recorded with their consent. Each interview lasted approximately 20–30 minutes. Additional field notes were taken to contextualize responses and observe instructional settings.

2.4 Data Analysis

Thematic analysis was conducted following the six phases proposed by Braun and Clarke (2006):

1. Familiarization with data
2. Generating initial codes
3. Searching for themes
4. Reviewing themes

5. Defining and naming themes
6. Producing the report

Themes were developed inductively from teacher responses. Triangulation of interview responses and field observations was used to ensure the validity of the findings.

3 FINDINGS AND DISCUSSION

This study aimed to map the needs of elementary school teachers regarding digital teaching materials for Indonesian language learning, with the intention of informing future instructional media development aligned with 21st-century learning demands. Data were gathered through structured interviews with 24 classroom teachers from 10 public elementary schools in Lebak Regency, Indonesia. Thematic analysis of the responses yielded four core themes: (1) reliance on conventional teaching materials, (2) perceived necessity of digital teaching resources, (3) specific content areas requiring digital support, and (4) teacher preferences for Augmented Reality (AR)-based materials.

3.1 Use of Conventional Teaching Materials

When asked, *“What types of teaching materials are commonly used in Indonesian language instruction?”*, most teachers reported frequent use of conventional or analog materials. These include pictures, textbooks, visual aids, home-made media, concrete objects, **and** contextual resources drawn from the school environment. Teachers also mentioned using thematic books as primary instructional references.

This finding indicates that current instructional practices remain largely traditional, lacking integration with modern technology. While these materials are accessible and practical, they are often limited in providing rich, interactive, and contextualized learning experiences. Moreover, heavy reliance on printed materials constrains access to broader information sources, especially when teaching abstract content that requires visualization or real-time interaction.

These limitations are particularly significant in the context of Education 4.0 and 5.0, which emphasize digital competency, interactivity, and personalized learning experiences. The continued use of conventional materials suggests a gap between classroom practices and global trends in technology-enhanced education.

3.2 Perceived Necessity of Digital Teaching Materials

The second theme centers on the perceived need for digital teaching materials. In response to the question, *“Do you believe digital teaching materials are necessary for 21st-century learning?”*, nearly all teachers stated unequivocally that digital materials are essential. According to them, such resources can provide students with engaging, interactive, and meaningful learning experiences.

Teachers believe that digital materials have the potential to simplify complex content, offer visual representation, and support differentiated instruction. Furthermore, they argued that digital materials can stimulate students' curiosity, promote autonomous learning, and increase their motivation to participate actively in lessons.

This perception aligns with global educational discourse advocating for the integration of digital tools to enhance learning outcomes (O'Doherty et al., 2018). Despite the enthusiasm, some teachers acknowledged challenges related to infrastructure, such as limited access to devices and internet connectivity, as well as a lack of training in using educational technologies.

3.3 Topics in Indonesian Language Learning That Require Digital Support

When asked, *“Which Indonesian language topics would benefit most from digital teaching materials?”*, teachers identified several areas that they perceive as difficult to teach using traditional approaches. These include:

- Essay writing
- Reading comprehension
- Speed reading
- Distinguishing standard and non-standard sentences
- Identifying main ideas and supporting details in texts

Such topics often involve abstract thinking or procedural knowledge that is not easily conveyed through printed texts alone. Teachers indicated that digital teaching materials—particularly those incorporating animations, interactive exercises, or visual storytelling—would make these topics more accessible to students.

Additionally, teachers expressed interest in integrating the Indonesian language with interdisciplinary content (e.g., science-related texts, environmental themes, or cultural narratives), which would benefit from media that can visually and contextually enrich the subject matter.

3.4 Preference for Augmented Reality (AR)-Based Teaching Materials

A significant finding of the study is that 20 out of 24 teachers explicitly preferred Augmented Reality (AR) as their desired format for digital teaching materials. The remaining four teachers were unfamiliar with AR or unsure of its classroom application. Teachers who supported AR emphasized its ability to present learning content in an immersive and engaging way, especially for elementary school students who tend to be visual and kinesthetic learners.

According to participants, AR could be used to:

- Animate stories or characters from narrative texts
- Illustrate paragraph structure and text organization
- Provide real-time exercises in sentence construction, grammar, and vocabulary use

Teachers believed that AR enhances student engagement through a learning-by-doing approach, allowing students to interact with content and explore it independently. The use of AR is also perceived to reduce cognitive load, particularly when teaching complex or abstract content.

This aligns with findings by Liza & Andriyanti (2020), who noted that AR-based instructional media can increase motivation and improve comprehension by making invisible or abstract elements visible and interactive. The enthusiasm expressed by teachers also reflects their openness to adopting innovative technologies, provided that proper support and training are available.

3.5 Integration of Findings with Current Educational Contexts

Overall, the results of this study point to a strong readiness among teachers to embrace digital transformation in Indonesian language instruction. Their experiences highlight the limitations of conventional resources and underscore the urgent need for interactive, curriculum-aligned digital materials that accommodate the learning styles of modern students.

However, the study also identified implementation challenges, including:

- Limited digital literacy among some teachers
- Infrastructure constraints (e.g., lack of devices or internet access)
- Scarcity of context-specific, ready-to-use digital resources

These challenges suggest that efforts to develop digital materials must be accompanied by systemic support—such as professional development, investment in school infrastructure, and collaboration between educators, policymakers, and technology developers.

Furthermore, the specific topics identified by teachers as requiring digital support should be prioritized in future instructional design efforts. These include reading and writing skills, grammar,

and text structure—areas that are fundamental to language proficiency and are often seen as difficult to teach through traditional methods.

By integrating Augmented Reality into Indonesian language learning, educators could offer more engaging and authentic learning experiences. However, to achieve this, materials must be designed with pedagogical intent, be user-friendly, and adaptable to local contexts.

In conclusion, this needs assessment provides a valuable foundation for future design-based research (DBR) or research and development (R&D) studies aimed at creating, testing, and refining AR-based teaching materials. The findings emphasize the importance of aligning digital media with teacher needs and curriculum goals while also addressing the practical challenges of implementation in diverse educational settings.

Discussion

The results of this study highlight a notable disconnect between current classroom practices in Indonesian language instruction and the pedagogical expectations of 21st-century education, which emphasizes the integration of digital technology. Most participating teachers reported a continued reliance on traditional materials such as printed textbooks, worksheets, and visual aids. While these resources offer familiarity and ease of use, they often fail to engage students meaningfully or accommodate diverse learning styles. These findings are consistent with prior research (Yates et al., 2021; Imamah & Susanti, 2021), which suggests that conventional teaching methods struggle to stimulate student motivation or adequately support the comprehension of abstract or complex language concepts.

A prominent theme emerging from the interviews is the strong preference among teachers for digital teaching materials—especially those utilizing Augmented Reality (AR). Teachers expressed the view that AR offers significant advantages in making learning more interactive and immersive. It was perceived as a transformative tool that goes beyond enhancing content delivery; AR facilitates real-time student interaction with learning content, fosters active participation, and supports contextualized and experiential learning environments. These insights are aligned with the findings of Liza & Andriyanti (2020), who emphasize the potential of AR to create student-centered learning experiences that shift instruction from passive consumption to active exploration.

Teachers specifically identified areas such as essay writing, speed reading, and grammar instruction as being particularly well-suited to digital support. These topics involve cognitive processes that are often abstract or procedural in nature and, therefore, are difficult to convey through static or printed resources. The integration of visual and interactive elements—core features of AR—can help bridge these gaps by presenting complex information in a more accessible and engaging manner. This aligns with research by Sato & Burden (2020), which supports the use of multimodal representations in enhancing comprehension, memory retention, and learning efficiency. When properly designed, AR-based teaching tools can lower cognitive load by scaffolding abstract concepts and allowing learners to visualize language structures, writing techniques, and linguistic patterns dynamically.

While the majority of teachers expressed enthusiasm for digital tools, a small portion indicated unfamiliarity or discomfort with the use of such technologies. This points to an underlying challenge related to digital literacy among educators, which remains a significant barrier to the successful integration of technology in classrooms (Hamzah et al., 2021). Teachers who lack confidence in using digital tools are less likely to experiment with or implement innovative instructional strategies, even if they recognize the potential benefits. Addressing this gap requires targeted professional development programs that extend beyond technical training. Teachers must also be equipped with pedagogical strategies that guide them in selecting, adapting, and integrating digital content in ways that align with learning objectives and student needs.

Another important consideration raised by teachers is the necessity for curriculum-aligned digital teaching materials. Many educators emphasized that the development of digital resources—particularly those based on AR—should correspond closely with the Indonesian national curriculum

and support current educational frameworks, such as the *Kurikulum Merdeka* and the Pancasila Student Profile (P5) initiative. These frameworks promote student agency, collaboration, critical thinking, and character development, all of which can be enhanced through thoughtfully designed digital learning experiences. This reflects broader recommendations in educational technology literature (Mourtzis et al., 2020), which stress the importance of ensuring that innovations in learning media are not only technically advanced but also pedagogically relevant and culturally responsive.

Furthermore, teachers expressed the need for customizable and adaptable digital content. Rather than one-size-fits-all solutions, there is a growing demand for flexible digital teaching materials that teachers can tailor to different student abilities, classroom contexts, and instructional goals. Such adaptability is especially important in diverse learning environments, where students' needs may vary widely based on factors such as geographic location, socioeconomic background, and access to digital infrastructure.

The study also reveals broader systemic challenges. While there is clear interest and willingness among teachers to adopt digital teaching tools, infrastructure limitations—such as limited access to devices, unreliable internet connectivity, and the lack of school-wide digital integration—may hinder implementation. These challenges underscore the importance of policy-level interventions, including government support for technological infrastructure, funding for digital resource development, and strategic partnerships between educational institutions and technology developers.

In light of these findings, this research underscores the urgency of designing and implementing digital teaching resources that are both accessible and pedagogically effective. Augmented Reality, in particular, presents promising opportunities for enhancing Indonesian language learning, especially in areas that require visualization, interactivity, and contextual engagement. However, successful adoption of AR-based teaching tools will depend on addressing practical issues such as teacher readiness, content alignment, and classroom integration.

Looking forward, further research is warranted to explore the design, development, and classroom application of AR-based teaching modules for Indonesian language education. Specifically, future studies could employ design-based research (DBR) or experimental methodologies to develop AR teaching tools, implement them in authentic classroom settings, and assess their impact on student engagement, learning outcomes, and motivation. Investigating student perspectives and learning experiences will also provide valuable insights to complement teacher-driven needs assessments and help ensure that future innovations are learner-centered and evidence-based.

4. CONCLUSION

This study concludes that primary school teachers in Lebak Regency have a significant need for digital teaching materials, particularly those enhanced with Augmented Reality (AR), to support Indonesian language instruction—especially in topics involving abstract and complex content such as essay writing, reading comprehension, and grammar. The main finding highlights that while conventional teaching materials remain dominant, teachers express a strong interest in digital resources that promote interactivity and engagement. However, a key limitation of this research lies in its narrow geographic scope and relatively small sample size, which may affect the generalizability of the findings to broader educational contexts. Additionally, the study focuses solely on teacher perceptions without evaluating student outcomes or actual classroom implementation. Future research should address these limitations by expanding the sample to include more diverse regions, incorporating student perspectives, and conducting experimental or design-based studies to develop, implement, and evaluate specific AR-based digital materials in real teaching environments.

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