



Exploring the Role of Digital Tools in Vocabulary Acquisition: A Qualitative Study in the Context of English Education in Papua

Ince Rezky Naing¹, Maximus Leonardus Nemo², Precilia Rafra³

*^{1,2,3} Pendidikan Bahasa Inggris, Fakultas Keguruan dan Ilmu Pendidikan,
Universitas Cenderawasih*

incerezkyn@gmail.com

ABSTRACT

The use of digital learning tools has become increasingly influential in language education, particularly in facilitating vocabulary acquisition. However, in contexts such as Papua, Indonesia is characterized by limited resources and significant cultural diversity, the integration of these tools presents distinct challenges and opportunities. This study investigated the role of digital tools in enhancing vocabulary acquisition among English Education students in Papua, examined the challenges encountered by educators and learners, and proposes strategies for adapting these tools to better reflect the region's unique cultural and linguistic landscape. Adopting a qualitative research approach, the study gathered data through semi-structured interviews, classroom observations, and document analysis involving participants from both teachers and students of Papua. Thematic analysis was employed to extract key themes and patterns from the data. The findings indicated that digital tools, such as Kahoot, Quizziz, Quizlet and Duolingo, support vocabulary development by offering gamified, interactive, and self-directed learning opportunities. Nonetheless, their impact is constrained by infrastructural deficiencies, disparities in access to technology, and limited digital literacy among educators and students. Furthermore, the absence of culturally relevant content diminished engagement and reduced the tools' effectiveness within the local context. The study concluded that while digital tools hold significant potential to enhance English Education, their successful implementation necessitates addressing infrastructural challenges, enhancing educator training, and developing culturally adapted resources. The research contributes to a deeper understanding of the complexities of digital learning in multilingual and under-resourced environments, offering actionable recommendations for improving language education in Papua.

Keywords: digital learning tools, cultural adaptation, vocabulary acquisition

ABSTRAK

Penggunaan alat pembelajaran digital semakin berpengaruh dalam pendidikan bahasa, terutama dalam memfasilitasi pemerolehan kosakata. Namun, dalam konteks seperti Papua, Indonesia, yang ditandai dengan keterbatasan sumber daya dan keberagaman budaya yang signifikan, integrasi alat-alat ini menghadirkan tantangan dan peluang tersendiri. Penelitian ini mengkaji peran alat digital dalam meningkatkan pemerolehan kosakata di kalangan mahasiswa Pendidikan Bahasa Inggris di Papua, mengeksplorasi tantangan yang dihadapi

oleh pendidik dan peserta didik, serta mengusulkan strategi adaptasi agar alat tersebut lebih sesuai dengan lanskap budaya dan linguistik yang unik di wilayah ini. Dengan menggunakan pendekatan penelitian kualitatif, data dikumpulkan melalui wawancara semi-terstruktur, observasi kelas, dan analisis dokumen yang melibatkan partisipan dari kalangan dosen dan mahasiswa di Papua. Analisis tematik diterapkan untuk mengidentifikasi tema dan pola utama dari data yang diperoleh. Hasil penelitian menunjukkan bahwa alat digital, seperti Kahoot, Quizziz, Quizlet, dan Duolingo, mendukung pengembangan kosakata dengan menyediakan pembelajaran yang gamifikasi, interaktif, dan mandiri. Namun, dampaknya masih terbatas akibat kendala infrastruktur, kesenjangan akses terhadap teknologi, serta rendahnya literasi digital di kalangan pendidik dan mahasiswa. Selain itu, ketiadaan konten yang relevan secara budaya mengurangi keterlibatan peserta didik dan menurunkan efektivitas alat tersebut dalam konteks lokal. Studi ini menyimpulkan bahwa meskipun alat digital memiliki potensi besar dalam meningkatkan pembelajaran Bahasa Inggris, keberhasilannya bergantung pada upaya mengatasi tantangan infrastruktur, meningkatkan pelatihan pendidik, serta mengembangkan sumber daya yang beradaptasi dengan budaya setempat. Penelitian ini berkontribusi pada pemahaman yang lebih mendalam mengenai kompleksitas pembelajaran digital di lingkungan multibahasa dan minim sumber daya, serta menawarkan rekomendasi praktis untuk meningkatkan pendidikan bahasa di Papua.

Kata kunci: adaptasi budaya, alat pembelajaran digital, pemerolehan kosakata

BACKGROUND

The integration of digital technology in education has transformed traditional teaching methodologies across the globe (Kalyani, 2024). In the field of English Education, digital tools have emerged as a prominent means to facilitate and enhance language learning (Hazaymeh, 2021). These tools range from vocabulary learning applications, interactive online platforms, and digital games, to more sophisticated systems such as artificial intelligence-driven tutoring platforms. With these technological advancements, English educators are provided with innovative ways to engage learners and address diverse learning styles.

Vocabulary acquisition, a cornerstone of language proficiency, has been a key area where digital learning tools demonstrate potential (Zou et al., 2021). Vocabulary learning applications, such as Quizlet, Kahoot and Memrise, offer students opportunities for self-paced learning, gamified exercises, and immediate feedback. Similarly, interactive platforms like Duolingo and Babbel provide immersive learning experiences that make language learning more accessible and enjoyable (Sivakani, 2024). Research indicates that such tools can motivate learners (Kayumov, 2024) and improve their retention rates by incorporating visual, auditory, and kinesthetic elements into their designs.

Furthermore, digital tools can facilitate collaborative learning by enabling peer interactions through forums, discussion boards, and real-time quizzes

(Oskarita & Arasy, 2024). This collaborative dimension fosters a sense of community among learners, which is particularly beneficial for language acquisition as it encourages communication and the practical use of vocabulary in context. However, the full potential of digital tools is often contingent upon the educators' ability to integrate these resources effectively into their teaching practices (Naing & Wiedarti, 2023).

Despite these advancements, several gaps remain in the existing literature. First, there is limited research on the actual effectiveness of digital learning tools in improving vocabulary acquisition in specific educational contexts, such as higher education institutions. While many studies have explored general language learning outcomes, few have focused on the intricacies of vocabulary development. Second, challenges related to digital tool integration, such as technical difficulties, lack of teacher training, and varied learner readiness, often impede the full realization of these tools' potential. These challenges highlight the need for more comprehensive studies to determine the optimal ways to integrate digital tools into English Education curricula.

Moreover, the COVID-19 pandemic has accelerated the adoption of digital tools in education (Smirnova et al., 2021), making their role more critical than ever. Digital tools have become indispensable for maintaining continuity in language instruction (Bhandari & Bhandari, 2024). However, this rapid transition also revealed disparities in access to technology and digital literacy, further emphasizing the need for targeted research to address these issues. As digital tools continue to evolve, understanding their implications for education contexts becomes essential (Antonietti et al., 2022).

In Papua, the context of English Education presents unique challenges and opportunities for the integration of digital tools. Papua's diverse linguistic landscape, with hundreds of indigenous languages, creates a multilingual environment where English often serves as a third or fourth language for many students. This linguistic diversity, while enriching, also requires tailored approaches to vocabulary acquisition and language instruction.

Access to technology in Papua is uneven (Suhaib & Kartiasih, 2024), particularly in remote and rural areas. Limited infrastructure, such as inconsistent internet connectivity and a lack of digital devices, poses significant barriers to the

adoption of digital learning tools (Olanrewaju et al., 2021). Additionally, educators in Papua often face challenges related to professional development and digital literacy, which can hinder the effective implementation of technology in classrooms (Betaubun & Rokhmah, 2024). Many teachers may lack the training required to integrate digital tools effectively, resulting in underutilization or inefficient application of these resources (Demissie et al., 2022).

However, these challenges are counterbalanced by opportunities to leverage digital tools to address educational disparities. Mobile technology, which is increasingly accessible even in remote areas, can serve as a gateway for delivering language learning resources (Husnita et al., 2023). Locally adapted digital tools that incorporate cultural and linguistic elements relevant to Papua's context can also enhance student engagement and learning outcomes. For instance, gamified vocabulary apps with content reflecting Papuan cultural themes could foster a deeper connection to the learning material.

Additionally, digital tools have the potential to bridge the gap between urban and rural schools in Papua by providing equal access to high-quality educational resources. Video tutorials, interactive lessons, and virtual classrooms can help mitigate the limitations of physical distance and a shortage of trained English teachers in remote areas. These tools, when used effectively, can empower students and educators alike, fostering a more inclusive and equitable educational environment.

Despite the promise of digital tools, several critical issues emerge. Limited research exists on the effectiveness of these tools in vocabulary acquisition within Papua's unique multilingual and infrastructural context. Addressing this issue is imperative for optimizing the use of digital tools in English Education in Papua. Therefore, the research questions of this study are formulated as follows:

1. How do digital learning tools impact vocabulary acquisition among English Education students in Papua?
2. What challenges are faced by educators and students in Papua regarding the use of digital learning tools for vocabulary instruction?
3. How can digital tools be adapted to reflect the cultural and linguistic diversity of Papua to enhance their effectiveness?

This study aimed to examine the potential of digital learning tools in the Papuan context, focusing on their impact on vocabulary acquisition among English Education students. By addressing the specific challenges and leveraging the unique opportunities present in Papua, the research sought to contribute to a more inclusive and effective approach to digital language education.

RESEARCH METHOD

This study employed a qualitative research design to explore the impact and challenges of using digital tools for vocabulary acquisition in the unique context of Papua. A qualitative approach was chosen to gain in-depth insights into the experiences, perceptions, and practices of educators and students. Through this method, the research aimed to capture the complexities and nuances of integrating digital tools into English Education in a multilingual and resource-constrained environment.

The study used multiple methods of data collection to ensure a comprehensive understanding of the research problem. Semi-structured interviews with English educators and students in Papua formed the primary data source. These interviews had explored participants' experiences, challenges, and perceptions regarding digital tools for vocabulary acquisition. Observations of classroom practices and the use of digital tools had provided additional context and validation for the interview data. Document analysis, including lesson plans, training materials, and student performance records, also conducted to complement the primary data.

The collected data were analyzed using thematic analysis. This process involved coding the data to identify recurring patterns, themes, and relationships. Thematic analysis allowed for an in-depth exploration of how digital tools were used in vocabulary instruction, the challenges faced by educators and students, and the strategies for adapting these tools to the Papuan context. Triangulation of data sources, interviews, observations, and document analysis enhanced the reliability and validity of the findings.

Contextual analysis refined the insights by considering external factors such as infrastructure, digital literacy levels, and socio-cultural dynamics unique to Papua. A comparative analysis was also conducted to benchmark findings against

other similar contexts, providing broader applicability to the study's recommendations. Moreover, feedback loops with educators and students involved in the research incorporated to ensure that the interpretations and recommendations aligned with their lived realities and experiences.

The findings from this qualitative study provided rich and contextualized insights into the use of digital learning tools in Papua. These insights have become evidence-based recommendations for optimizing digital tools to meet the specific needs of English Education students and educators in the region, contributing to more equitable and effective language education.

FINDINGS AND DISCUSSION

1. The Impact of Digital Learning Tools on Vocabulary Acquisition

Digital learning tools have become a powerful mechanism for facilitating vocabulary acquisition among English Education students in Papua. The study revealed that platforms such as Kahoot, Quizziz, Quizlet and Duolingo provide students with structured, interactive, and repetitive exposure to new vocabulary, significantly enhancing their retention rates. This finding is corroborated with the study from Fadhilawati et al., (2022) which found that vocabulary proficiency increased following the use of Duolingo and Quizlet applications for learning Quizlet's flashcard feature, for example, allowed students to visually and contextually learn vocabulary..

One of the most impactful elements was the gamification embedded within these tools. Features such as leaderboards, point systems, and badges motivated students to consistently engage with the content, transforming vocabulary learning into a more enjoyable experience. This is in line with the study from Saleem et al., (2022) which stated that implementing gamification in education significantly enhances motivation, user engagement, and social interaction.

This level of engagement was particularly effective in improving students' short-term recall and application of vocabulary in written and oral tasks. Furthermore, Duolingo's integration of vocabulary into sentence structures allowed students to see how words function in authentic contexts, reinforcing both their understanding and practical usage.

Despite these strengths, the study identified critical gaps and limitations.

The tools' effectiveness depended heavily on access to technology, an issue that disproportionately affects students in rural areas of Papua. Limited internet connectivity and a lack of digital devices meant that many students could not fully leverage these platforms. Additionally, digital tools were predominantly designed for global audiences and lacked culturally relevant content tailored to the Papuan context. Students often found the vocabulary disconnected from their daily lives, reducing their motivation and the perceived value of the learning experience.

Another finding was the uneven distribution of benefits among students with varying levels of English proficiency. While beginners found these tools useful for building a foundational vocabulary, intermediate and advanced learners struggled to find resources that catered to their specific linguistic needs. The absence of advanced vocabulary contextualized for academic or professional settings limited the tools' applicability for students pursuing higher education or professional aspirations.

The research also highlighted how digital tools interact with students' preferred learning styles. Visual learners benefitted most from tools with vibrant imagery and video content, while auditory learners appreciated features such as pronunciation guides and listening exercises. However, the lack of integration between digital tools and collaborative classroom activities reduced opportunities for peer interaction, a key component of language learning.

In summary, while digital learning tools provide significant advantages in vocabulary acquisition, their potential remains underutilized due to technological, cultural, and pedagogical barriers. To fully harness their benefits, it is crucial to address these limitations and adapt the tools to align with the unique needs of Papua's students and educators.

2. Challenges Faced by Educators and Students

The study uncovered several interconnected challenges faced by educators and students in Papua regarding the integration of digital learning tools for vocabulary instruction. These challenges encompass infrastructural, pedagogical, and socio-cultural dimensions, reflecting the unique context of Papua.

A. Limited Access to Infrastructure

A critical challenge lies in the lack of infrastructure necessary to support the adoption of digital tools. In many rural areas of Papua, schools operate with minimal technological resources. Stable internet connectivity is often unavailable, and even in urban areas, connectivity issues are frequent and can disrupt learning activities. The scarcity of digital devices, such as tablets or laptops, further limits the ability of students to access online learning platforms. Many students rely on shared or outdated devices, which hinders their capacity to engage fully with digital tools for vocabulary acquisition.

Electricity is another fundamental concern. In remote areas, power outages are common, and some schools lack reliable electricity altogether. This severely restricts the use of digital tools that depend on consistent power supplies, making it challenging for educators to plan and implement lessons that incorporate these resources.

B. Inadequate Digital Literacy

Both educators and students often face challenges related to digital literacy. For educators, limited exposure to training programs on the effective use of digital tools has led to uneven adoption and application in classrooms. Many teachers expressed uncertainty about how to integrate tools like Kahoot or Quizizz into their lesson plans. They also lacked the technical skills to troubleshoot issues or customize content to suit their students' needs.

Students, on the other hand, often struggled with navigating the interfaces of digital learning platforms. For learners who are new to technology, mastering the functions of these tools can be overwhelming. This digital literacy gap contributes to a sense of frustration and limits the full utilization of available resources.

C. Cultural and Linguistic Misalignment

One of the most significant challenges identified was the cultural and linguistic misalignment of digital tools. Most existing vocabulary learning platforms are designed for global audiences and fail to account for the specific linguistic and cultural needs of Papuan students. English, often a third or fourth language for these learners, requires careful contextualization to be effectively taught.

For instance, vocabulary exercises on platforms like Duolingo or Babbel rarely incorporate content that reflects the daily lives, traditions, or indigenous languages

of Papuan students. As a result, learners find it difficult to relate to the material, which diminishes their interest and motivation. Educators highlighted the need for digital tools to include culturally relevant examples, such as local flora, fauna, and social customs, to create a more engaging learning experience.

D. Socioeconomic Barriers

Economic disparities exacerbate challenges in accessing digital tools. Many families cannot afford devices or internet subscriptions, creating a digital divide between students from different socioeconomic backgrounds. This disparity not only limits individual students' access to educational resources but also perpetuates broader educational inequities.

Additionally, schools often lack the funding necessary to invest in technological upgrades, training programs, or the procurement of digital learning tools. Educators reported that without external support or subsidies, the integration of these tools remains a distant goal for many institutions.

E. Pedagogical Challenges

Educators also face pedagogical challenges in incorporating digital tools effectively into their teaching practices. Many teachers reported difficulty in aligning digital tools with curriculum requirements and assessment standards. For example, while tools like Kahoot may enhance vocabulary retention, they often fail to address higher-order language skills, such as critical thinking or complex sentence construction, that are emphasized in formal education settings.

Moreover, the lack of teacher collaboration and sharing of best practices compounds these challenges. Without a network or platform for professional exchange, educators often feel isolated in their efforts to integrate digital tools, resulting in inconsistent implementation and outcomes.

F. Psychological and Emotional Factors

The study also highlighted psychological barriers among both educators and students. Teachers often expressed anxiety about using technology, fearing that their lack of expertise might hinder rather than enhance the learning process. Students, particularly those in underprivileged areas, frequently reported feelings

of inadequacy or intimidation when exposed to digital tools, which they perceive as "advanced" or beyond their reach.

Addressing the Challenges

Addressing these challenges requires a multifaceted approach.

The findings suggest the need for:

Infrastructure Development:

Investments in reliable internet connectivity, electricity, and affordable digital devices are crucial to bridge the gap in access. Government and non-governmental organizations should prioritize initiatives to equip schools in rural Papua with the necessary resources.

Comprehensive Training

Regular professional development sessions for educators can enhance their digital literacy and confidence in using technology. Such training should include strategies for integrating digital tools into existing curricula and customizing content to suit the local context.

Culturally Relevant Content:

Digital tool developers should collaborate with local educators, linguists, and cultural experts to design resources that reflect Papuan traditions, daily life, and linguistic diversity. Gamified content with localized themes can make learning more engaging and relatable.

Community Engagement:

Involving local communities in the adoption process can create a sense of ownership and support for digital education initiatives. Parents, community leaders, and local governments can work together to overcome resource constraints and encourage wider participation.

Policy and Funding Support:

Policymakers must allocate adequate funding for educational technology initiatives in Papua. Subsidies for devices and internet services can help reduce the economic burden on students and families.

By addressing these challenges through collaborative and targeted strategies, digital tools can become a more accessible and effective resource for vocabulary acquisition, ultimately transforming English Education in Papua.

3. Adapting Digital Tools to Papua's Cultural and Linguistic Diversity

To enhance the effectiveness of digital tools, adaptation to the Papuan context is essential. The study identified several strategies to address this need:

A. Incorporating Local Content: Digital tools should include vocabulary and scenarios that are relevant to Papuan culture and daily life. For example, gamified exercises could feature indigenous themes, such as local wildlife, geography, and traditions, to make learning more relatable.

B. Offline Accessibility: Given the limited internet access in many areas, digital tools should offer offline functionalities that allow students to download and use materials without a constant connection.

C. Training for Educators: Comprehensive professional development programs are necessary to equip teachers with the skills to integrate digital tools effectively into their classrooms. This includes training on tool functionalities, instructional design, and troubleshooting technical issues.

D. Community Involvement: Engaging local communities in the development and implementation of digital tools can ensure that these resources reflect the unique needs and preferences of the Papuan context. Collaborations with local educators, linguists, and cultural experts are critical in this process.

E. Multilingual Support: To address the linguistic diversity of Papua, digital tools should include features that support multiple languages, providing students with a bridge between their native language and English.

CONCLUSION

This study investigated the use of digital learning tools in English Education in Papua, focusing on their impact on vocabulary acquisition, challenges encountered by educators and students, and the adaptation of tools to suit Papua's cultural and linguistic context. The findings revealed that while digital tools, such as Kahoot,

Quizizz, Quizlet, and Duolingo, hold significant potential for enhancing vocabulary acquisition through gamified and interactive learning experiences, their impact is often undermined by infrastructural challenges and a lack of cultural relevance. Additionally, educators and students face barriers such as inadequate access to technology, insufficient digital literacy, and socio-economic disparities. The research underscores the importance of tailoring digital tools to reflect the linguistic diversity and cultural richness of Papua to maximize their effectiveness.

To address these findings, the study recommends the following:

Infrastructure Improvement:

Governments and educational institutions must invest in expanding internet connectivity, providing digital devices, and ensuring stable electricity in both urban and rural areas of Papua.

Professional Development:

Continuous digital literacy training programs for educators are crucial to equip them with the skills needed to integrate digital tools into their teaching practices effectively.

Culturally Relevant Tools:

Developers should work closely with local educators to create content that incorporates Papuan cultural themes and indigenous languages, fostering greater engagement and relevance for students.

Community Participation:

Local communities and stakeholders should be actively involved in the implementation of digital learning strategies to ensure their sustainability and alignment with local needs.

Policy Advocacy:

Policymakers must prioritize funding for digital education initiatives and support the development of frameworks that promote equitable access to educational technologies.

While this study provides valuable insights, it also has certain limitations. First, the research is context-specific and focused primarily on select areas in Papua, which may limit its applicability to other regions. Second, the qualitative approach and limited sample size, while providing depth, may not fully capture the breadth of experiences across Papua. Third, the study focused on existing digital tools without exploring newer technologies, such as AI-driven learning platforms, which could offer more adaptive solutions. Finally, the research provides a snapshot of the current state of digital tool usage without a longitudinal perspective, which limits the understanding of long-term impacts.

Future research should address these limitations by expanding the geographic scope, incorporating larger and more diverse samples, and exploring emerging technologies. Longitudinal studies would also provide deeper insights into the sustained effects of digital tools on vocabulary acquisition over time. By building on the findings of this research, future studies can contribute to more effective and inclusive strategies for integrating digital tools into English Education in Papua.

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