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Integrating Technology in English Language Teaching: A Study on Teachers' Digital Competencies

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Abstract

The integration of technology in English Language Teaching (ELT) has emerged as a critical component of modern education, offering innovative tools to enhance learning experiences. This study aimed to explore the role of technology in ELT by examining teachers' digital competencies through a systematic review of 45 peer-reviewed articles published in the last decade. The research identifies key technologies utilized in ELT, such as online learning platforms, language learning applications, and interactive media, highlighting their advantages and challenges. The findings reveal significant variations in teachers' digital competencies, categorized as high, moderate, or low, with the majority requiring additional training to utilize digital tools effectively. Factors influencing technology adoption, including institutional support and teachers' attitudes, were also analyzed. However, the study underscores gaps in the literature, such as the absence of standardized frameworks for assessing digital competencies, limited research on the long-term impact of technology on learning outcomes, and insufficient attention to challenges faced by educators in developing countries. These findings emphasize the need for targeted professional development programs and robust infrastructure to bridge the digital competency gap. While advancing scientific knowledge on technology integration in ELT, the study acknowledges limitations related to geographic focus and reliance on secondary data. Future research should expand to diverse contexts and explore emerging technologies to enhance ELT practices globally.

Keywords: Digital Competencies, Educational Technology, English Language Teaching, Professional Development, Technology Integration

Introduction

The integration of technology in education, particularly in the realm of English language teaching (ELT), has become increasingly vital in the contemporary educational landscape. The significance of technology in education cannot be overstated, as it facilitates enhanced communication skills and fosters greater student engagement. Digital tools empower students to access a plethora of information and resources, enabling a more flexible and dynamic learning environment (Inderawati, 2024). The use of technology in ELT not only broadens the scope of learning but also aligns with the global shift towards digital literacy, which is essential for students to thrive in an interconnected world (Mdhlalose, 2023). Furthermore, technology integration has been shown to improve learning outcomes when implemented effectively, as it allows for interactive and personalized learning experiences that cater to diverse student needs (Anjarani, 2020).

The transformation from traditional teaching methods to technology-based learning has been profound. Traditional pedagogical approaches often relied heavily on rote memorization and passive learning, which limited student engagement and critical thinking (Thapaliya et al., 2023). In contrast, technology-based learning promotes active participation and collaboration among

students, fostering an environment where learners can engage with content in meaningful ways (Adhikari, 2021). The COVID-19 pandemic has further accelerated this shift, as educators were compelled to adopt digital platforms for instruction, leading to a more widespread acceptance of technology in the classroom (Moorhouse, 2023). This transition has highlighted the necessity for educators to adapt their teaching strategies to incorporate digital tools effectively, thereby enhancing the overall learning experience (Thapaliya et al., 2023). The move towards technology-enhanced learning is not merely a trend; it represents a fundamental change in how education is delivered and experienced (Alenezi et al., 2023).

Central to the successful integration of technology in ELT is the digital competency of teachers. Teachers' digital competencies encompass a range of skills, including the ability to select appropriate technological tools, create engaging digital content, and facilitate online learning environments (Saud, 2021). The effectiveness of technology integration is significantly influenced by teachers' confidence and proficiency in using digital tools (Thapaliya et al., 2023). Research indicates that many educators face challenges in utilizing technology due to a lack of training and support, which can hinder their ability to implement technology effectively in their teaching practices (Bhattarai, 2021). Therefore, it is imperative that teacher training programs prioritize the development of digital competencies, equipping educators with the necessary skills to navigate the complexities of technology-enhanced learning (Saud, 2023). By fostering teachers' digital literacy, educational institutions can ensure that technology serves as a powerful ally in the pursuit of effective English language instruction (Alian & Alhaj, 2023).

Moreover, the role of teachers in a technology-integrated classroom has evolved, requiring them to adopt new pedagogical approaches that leverage digital tools to enhance learning outcomes (Popenici & Kerr, 2017). The integration of artificial intelligence and other advanced technologies in ELT presents both opportunities and challenges, necessitating that teachers remain adaptable and open to continuous learning (Idham, 2024). As technology continues to evolve, so too must the competencies of educators, ensuring they are well-prepared to harness the potential of digital tools to enrich the learning experience for their students (Sheng, 2023). In this context, the importance of ongoing professional development cannot be overstated, as it empowers teachers to stay abreast of technological advancements and pedagogical innovations (Hidayatulloh, 2024; Effendi, 2024).

The integration of technology in education has become a critical aspect of modern teaching and learning, particularly in English Language Teaching (ELT). However, teachers often face significant challenges in adopting and utilizing technology effectively in their classrooms. These challenges include limited access to resources, insufficient training on digital tools, and resistance to change due to unfamiliarity with technological advancements. The rapid evolution of educational technology has created a gap between the tools available and teachers' ability to integrate them into their teaching practices. This disconnect hampers the potential benefits that technology can bring to language learning, such as increased engagement and personalized learning opportunities.

A major factor contributing to these challenges is the lack of comprehensive understanding and assessment of teachers' digital competencies, especially in the context of ELT. While many studies highlight the importance of digital skills for effective technology integration, there is limited research on the specific competencies that English language teachers need to possess. Without a clear framework for evaluating these competencies, it becomes difficult for educators, policymakers, and institutions to design targeted training programs that address the actual needs of teachers.

Furthermore, the demands of 21st-century education require teachers not only to be proficient in their subject matter but also to be capable of leveraging technology to enhance

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learning outcomes. In the case of ELT, digital tools such as language learning apps, virtual classrooms, and online collaboration platforms have shown great potential. However, teachers who lack digital literacy may struggle to implement these tools effectively, leading to suboptimal teaching experiences and reduced student engagement. This highlights the urgency of addressing the competency gap among English language teachers to ensure that they can keep pace with technological advancements in education.

Addressing these challenges requires a systematic exploration of the current state of teachers' digital competencies and the barriers they face in integrating technology into ELT. By understanding these issues, stakeholders can develop evidence-based strategies to equip teachers with the skills and confidence needed to navigate the digital landscape. This study seeks to fill the gap in the literature by analyzing the existing research on technology integration in ELT and providing insights into the digital competencies required for effective teaching in a technology-enhanced learning environment.

The purpose of this study is to explore the integration of technology in English Language Teaching (ELT) and analyze teachers' digital competencies based on a systematic review of existing literature. This research aims to identify the key technologies utilized in ELT, assess the level of digital readiness among teachers, and uncover factors that influence their ability to adopt and effectively implement technology in their teaching practices. By synthesizing insights from previous studies, the study seeks to provide a comprehensive understanding of how technology can enhance ELT and highlight the competencies needed to support this integration. Unlike prior reviews that discuss digital competencies broadly, this study narrows the focus specifically to ELT contexts. It addresses the absence of standardized competency frameworks tailored to ELT, as well as the lack of research from developing regions. By synthesizing empirical evidence with a contextual lens, this review offers original insights into bridging digital readiness gaps among English language teachers.

Method

The methodology employed in this study is a Systematic Literature Review (SLR), which is particularly suitable for addressing the research questions regarding the integration of technology in English language teaching and the digital competencies of teachers. The SLR method allows for a comprehensive examination of existing literature, enabling the identification of trends, gaps, and insights that can inform future research and practice in the field of educational technology. This approach is systematic and replicable, ensuring that the research can be reproduced by other scholars interested in the same topic.

The study design involves a structured process for selecting, analyzing, and synthesizing relevant literature. The sample population for this research consists of peer-reviewed articles, conference papers, and reports published in reputable educational journals and databases. The inclusion criteria for selecting literature were based on relevance to the themes of technology integration in English language teaching and teachers' digital competencies. Articles were selected from a range of sources to ensure a diverse representation of perspectives and findings in the field. This sampling approach is appropriate as it encompasses a wide array of studies that contribute to a holistic understanding of the challenges and opportunities associated with technology in education.

Data collection techniques involved a rigorous search strategy across multiple academic databases, including JSTOR, ERIC, and Google Scholar. Keywords such as "technology integration," "digital competencies," "English language teaching," and "educational technology" were utilized to identify relevant literature. The search was limited to publications from the last

decade to ensure that the findings reflect the most current trends and practices in the field. The selected articles were then screened for quality and relevance, with a focus on empirical studies that provided insights into the experiences of teachers and students in technology-enhanced learning environments.

Instrument development for this SLR involved creating a coding framework to categorize the literature based on key themes, such as the benefits and challenges of technology integration, the role of teachers' digital competencies, and the impact of technology on student learning outcomes. This framework facilitated a systematic analysis of the literature, allowing for the identification of common patterns and discrepancies across studies. The coding process was conducted collaboratively by the research team to enhance reliability and ensure that multiple perspectives were considered in the analysis.

Data analysis techniques included thematic synthesis and narrative analysis. Thematic synthesis involved identifying and grouping key themes that emerged from the literature, while narrative analysis provided a contextual understanding of the findings within the broader educational landscape. This dual approach allowed for a comprehensive interpretation of the data, highlighting not only the quantitative aspects of technology integration but also the qualitative experiences of educators and learners.

The procedures followed in this study were clearly outlined and ordered in a meaningful way, ensuring transparency and replicability. The research adhered to established guidelines for conducting systematic literature reviews, including the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework, which emphasizes the importance of a structured approach to literature review. This adherence to methodological rigor enhances the credibility of the findings and their implications for practice. To assist the screening and organization process, the authors utilized Zotero for reference management and Microsoft Excel to develop and apply the coding framework. The PRISMA diagram was created using Lucidchart to visualize the flow of article selection.

In terms of the type of data recorded, the study focused on both qualitative and quantitative findings from the selected literature. Qualitative data included educators' perceptions, experiences, and challenges related to technology integration, while quantitative data encompassed statistical analyses of learning outcomes associated with technology use in English language teaching. This comprehensive approach to data collection and analysis ensures that the study captures the multifaceted nature of technology integration in education.

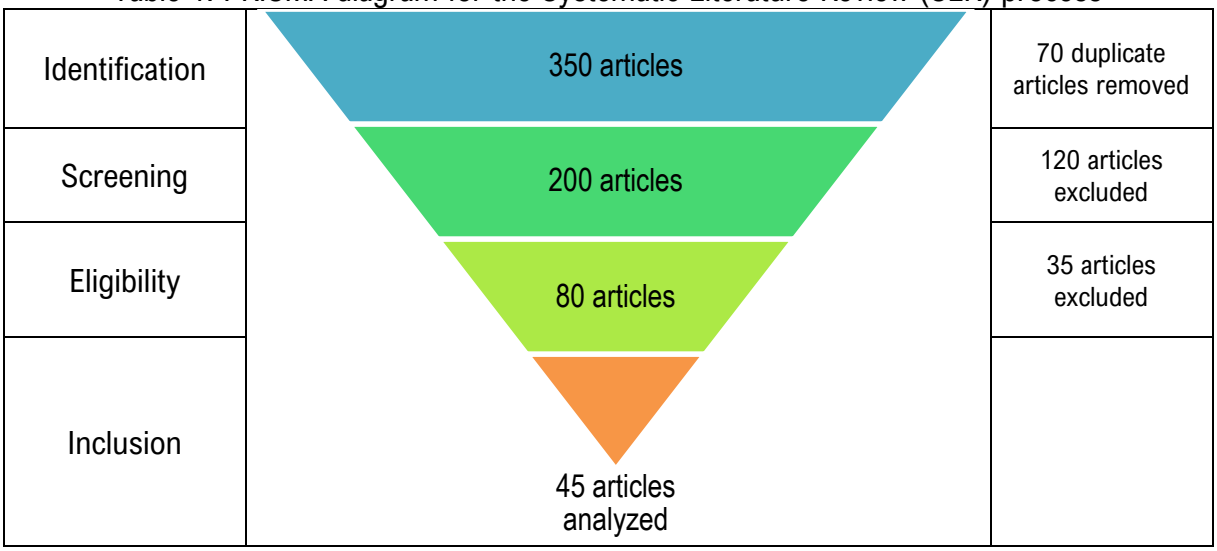
Results

Literature Description

The initial database search across JSTOR, ERIC, and Google Scholar yielded 350 articles using keywords such as "technology integration," "digital competencies," and "English language teaching." After removing duplicates (70 articles) and screening abstracts for relevance, 200 articles were deemed potentially relevant. Following a thorough review of full texts, 45 articles met the inclusion criteria for analysis. The selection process adhered to the PRISMA framework, as visualized in the diagram below.

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Table 1. PRISMA diagram for the Systematic Literature Review (SLR) process



Technologies Frequently Used in English Language Teaching (ELT)

The analysis identified several technologies frequently adopted in ELT: (a) Online Learning Platforms: Tools such as Google Classroom, Microsoft Teams, and Zoom support virtual classroom management and collaboration; (b) Language Learning Applications: Apps like Duolingo, Quizlet, and Kahoot help develop vocabulary and grammar skills through gamification; and (c) Interactive Media: Video-based learning and virtual simulations assist in explaining abstract concepts and enhancing engagement. The table below summarizes the most commonly used technologies and their key advantages and challenges:

Table 2. The most commonly used technologies along with their advantages and challenges

Technology	Advantages	Challenges
Google Classroom	Organized classroom management	Requires consistent internet access
Duolingo	Gamified vocabulary reinforcement	Limited scope for advanced learners
Zoom	Real-time interaction in virtual settings	High data consumption
Kahoot	Engages students through interactive quizzes	Preparation time for teachers

Levels of Teachers' Digital Competencies

The literature reveals significant variation in teachers' digital competencies, categorized into three levels: high, moderate, and low. Teachers with high digital competency demonstrate proficiency in integrating technology effectively into their teaching practices, contributing to enhanced learning outcomes. Those with moderate competency, however, require additional training to adapt digital tools efficiently. Meanwhile, teachers with low digital competency struggle with basic digital literacy and need foundational support to meet the demands of technology-driven education. Approximately 30% of the reviewed studies reported teachers with high digital competency, while the majority fell into moderate or low levels. Key competencies identified include selecting appropriate digital tools for English Language Teaching (ELT),

creating engaging, technology-based learning content, and managing virtual classrooms effectively.

Factors Influencing Technology Adoption

Several factors influence the successful adoption of technology in education. Institutional support, such as training programs and the provision of adequate infrastructure, plays a crucial role in enhancing teachers' readiness for technology integration. Additionally, teachers' attitudes toward technology significantly impact their willingness to embrace innovation; those with a positive mindset are more likely to adopt and effectively utilize digital tools. However, technical and logistical barriers, such as limited access to reliable internet and hardware, pose significant challenges, particularly in rural or underdeveloped areas. Addressing these barriers is essential for equitable and efficient technology use in teaching practices.

Research Gaps

The systematic review identifies notable gaps in the existing literature on teachers' digital competencies in the context of ELT. First, there is a lack of standardized frameworks for assessing teachers' digital skills, making it challenging to measure and compare competencies across different studies. Second, limited research exists on the long-term impact of technology integration on students' learning outcomes in ELT, leaving questions about its sustained effectiveness unanswered. Lastly, insufficient attention has been given to the unique challenges faced by teachers in developing countries, particularly regarding infrastructure and accessibility. Addressing these gaps is crucial for developing more inclusive and effective strategies for integrating technology into ELT.

Discussion

The findings of this systematic review highlight the integral role of technology in enhancing English Language Teaching (ELT). The results suggest that the adoption of digital tools has the potential to create more interactive, engaging, and flexible learning environments, thus supporting the hypothesis that integrating technology improves educational outcomes. Teachers' digital competencies consistently emerged as pivotal for effective technology integration. However, most studies report insufficient training and lack of confidence among teachers, emphasizing the urgency of targeted professional development.. While a small proportion of educators exhibited high competency levels, the majority faced challenges in adopting and effectively utilizing technology due to insufficient training and lack of confidence. These findings underscore the significance of equipping teachers with the necessary skills to navigate technology-driven educational landscapes, aligning with the broader goals of fostering digital literacy in the 21st century.

This aligns with the conclusions drawn by Nurmala et al. (2023), who conducted a meta-analysis on technology-enhanced language learning and highlighted the benefits of using mobile phones in English language teaching. They noted that while mobile technology can create accessible and efficient learning environments, challenges such as charging concerns, small screen sizes, and distractions remain prevalent. These limitations emphasize the need for educators to develop strategies that mitigate potential distractions while maximizing the benefits of technology.

Moreover, the review revealed that teachers' digital competencies are a critical factor in the successful implementation of technology in ELT. While a small proportion of educators exhibited high competency levels, the majority faced significant challenges in adopting and effectively utilizing technology due to insufficient training and a lack of confidence. This finding is echoed in the study by Zehra (2023), which explored students' perceptions regarding the role

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of Information and Communication Technology (ICT) in learning English. The quantitative results indicated that technology-based teaching and learning are perceived as more effective than traditional classroom methods, yet the successful integration of these technologies heavily relies on teachers' abilities to navigate and utilize them effectively.

The significance of equipping teachers with the necessary skills to navigate technology-driven educational landscapes is further supported by the perspectives of university faculty members in the study by Alian and Alhaj (2023). Their findings indicated that most staff members had positive views on the significance and benefits of incorporating innovative educational technology in teaching English. However, they also identified challenges encountered during the integration process, highlighting the necessity for targeted professional development programs that can enhance teachers' digital competencies and confidence in using technology.

Additionally, the review highlighted the importance of institutional support in fostering an environment conducive to technology integration. The study by Barzani et al. (2021) emphasized that while technology can make teaching methods more interesting and engaging, teachers often require adequate resources and support to implement these tools effectively. This aligns with the findings of Ullah and Farzana (2018), who noted that teachers and students alike benefit from a well-structured approach to technology use in the classroom. Their mixed-methods research revealed that both groups recognized the positive impact of technology on language learning, yet they also acknowledged the need for ongoing training and support to maximize its potential.

Furthermore, the challenges faced by teachers in adopting technology are multifaceted, as indicated by the findings of the systematic review. Many educators reported feelings of anxiety and inadequacy regarding their technological skills, which can hinder their willingness to embrace new teaching methods. This sentiment is reflected in the study by Ningsih and Sari (2021), which examined the effectiveness of learning media in online English learning. Their research highlighted that both students and teachers perceived the integration of technology as beneficial, yet the lack of confidence among educators remains a significant barrier to effective implementation.

The findings of this study resonate with previous research emphasizing the transformative impact of technology in ELT. Studies by Adhikari (2021) and Thapaliya et al. (2023) similarly reported that digital tools enhance student engagement and provide opportunities for personalized learning. However, this study also identified barriers, such as limited infrastructure and insufficient teacher training, which corroborate Bhattarai's (2021) findings on the challenges of integrating technology in resource-constrained settings. Unlike prior studies, this review specifically highlights the gaps in digital competency frameworks tailored for ELT, which distinguishes it from more general investigations into educational technology. This study contributes to the growing body of literature by emphasizing the need for targeted strategies to address the unique demands of English language instruction.

Unlike prior studies, this review specifically highlights the gaps in digital competency frameworks tailored for ELT, distinguishing it from more general investigations into educational technology. For example, while Klímová et al. (2023) conducted a systematic review on the use of emerging technologies in teaching English at the university level, their focus was broader and did not delve into the specific competencies required for effective technology integration in ELT. This study contributes to the growing body of literature by emphasizing the need for targeted strategies to address the unique demands of English language instruction, particularly in developing digital competency frameworks that cater to the specific context of ELT.

Furthermore, the findings align with Saud's (2024) exploration of teacher educators' experiences of integrating digital technologies in ELT. Saud's research utilized thematic analysis to uncover the challenges faced by educators, echoing the current study's findings regarding the necessity of professional development and support for teachers. Both studies advocate for a more structured approach to training educators in digital competencies, highlighting the importance of aligning teacher training programs with the evolving demands of technology in education.

Additionally, Gyawali (2022) discussed the role of artificial intelligence in ELT, emphasizing how AI technologies can enhance personalized learning experiences. This perspective complements the current study's findings by suggesting that emerging technologies, such as AI, can play a pivotal role in transforming ELT practices. However, the successful implementation of such technologies is contingent upon teachers' digital competencies, which remains a critical area of concern highlighted in both studies.

Moreover, Baskara (2023) examined the impact of AI-driven tools like ChatGPT on teacher-student interactions in ELT. This research underscores the potential benefits of integrating AI into language instruction, including enhanced student engagement and improved monitoring of progress. The current study aligns with this perspective by emphasizing the transformative potential of technology in revolutionizing ELT, while also acknowledging the challenges that educators face in adopting these tools effectively.

The practical implications of this study are manifold. First, the findings stress the importance of professional development programs that focus on building teachers' digital skills, particularly in the context of ELT. Institutions and policymakers should prioritize creating training modules that address specific needs, such as selecting appropriate tools for language learning and managing virtual classrooms effectively. Theoretical implications include the potential refinement of digital competency models to incorporate ELT-specific requirements. Furthermore, this study highlights the necessity for collaborative efforts between educators, technology developers, and policymakers to ensure that digital tools are accessible, user-friendly, and pedagogically sound.

While this study provides valuable insights, several limitations should be acknowledged. The review relied on literature published in the last decade, which may exclude older yet relevant studies that could provide additional context. Furthermore, the focus on peer-reviewed articles may have overlooked practical insights from unpublished reports or case studies. The findings are also limited by the geographic scope of the reviewed studies, as most research originated from technologically advanced regions, potentially underrepresenting the experiences of educators in developing countries. Lastly, the reliance on secondary data means that findings are contingent on the quality and scope of the reviewed studies.

While this study provides valuable insights into the integration of technology in English Language Teaching (ELT), several limitations should be acknowledged. First, the review relied on literature published in the last decade, which may exclude older yet relevant studies that could provide additional context and depth to the findings. Previous research, even if dated, may contain foundational theories or insights that remain applicable today. By focusing solely on recent publications, the study may overlook important historical perspectives that could enrich the understanding of technology's evolution in ELT (Spencer & Eldredge, 2018).

Furthermore, the focus on peer-reviewed articles may have inadvertently overlooked practical insights from unpublished reports or case studies. While peer-reviewed literature is essential for ensuring quality and rigor, it often does not capture the full spectrum of experiences and innovations occurring in real-world educational settings. Unpublished reports and case

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studies can provide valuable practical insights that are not always reflected in academic literature, potentially limiting the comprehensiveness of the findings (Leaman et al., 2017).

The findings are also constrained by the geographic scope of the reviewed studies, as most research originated from technologically advanced regions. This focus may underrepresent the experiences of educators in developing countries, where challenges and opportunities related to technology integration can differ significantly. The unique contexts of these regions, including infrastructural limitations and varying levels of access to technology, are crucial for understanding the global landscape of ELT and may not be adequately addressed in this review (Jääskeläinen et al., 2022).

Lastly, the reliance on secondary data means that the findings are contingent on the quality and scope of the reviewed studies. Variations in research methodologies, sample sizes, and contexts among the studies included in the review may introduce biases or inconsistencies in the findings. As noted by Jääskeläinen et al. (2022), the effectiveness of systematic reviews is heavily dependent on the quality of the included studies, and any limitations in those studies can affect the overall conclusions drawn from the review (Ali et al., 2019).

Future research should address the limitations highlighted above by expanding the geographic and cultural diversity of studies on technology integration in ELT. Empirical research is needed to evaluate the effectiveness of specific digital tools in improving student outcomes in diverse contexts. Additionally, the development and validation of a standardized framework for assessing teachers' digital competencies in ELT should be a priority. Longitudinal studies tracking the impact of professional development programs on teachers' digital skills and their application in classrooms would also be valuable. Finally, exploring the role of emerging technologies, such as artificial intelligence and augmented reality, in ELT could provide fresh insights into the future of language instruction.

Conclusion

This study critically explored the integration of technology in English Language Teaching (ELT) and the digital competencies required for effective implementation. The findings emphasize that technology has the potential to transform ELT by creating more interactive and personalized learning experiences. However, the majority of teachers face challenges such as insufficient training, limited infrastructure, and low digital literacy, which hinder the effective integration of technology. This highlights the urgent need for professional development programs tailored to address these competency gaps.

While the research offers valuable insights, several limitations should be acknowledged. The study focused primarily on literature published in the last decade, which may exclude earlier foundational studies. Additionally, the geographic scope of the research leaned towards technologically advanced regions, potentially underrepresenting the unique challenges in developing countries. Finally, the reliance on secondary data introduces variability due to differences in research methodologies and contexts across the reviewed studies.

Despite these limitations, this research advances scientific knowledge by synthesizing existing literature to identify critical gaps, such as the absence of standardized frameworks for assessing digital competencies in ELT. Future research should expand the scope to include diverse geographic and cultural contexts, evaluate the long-term impacts of technology integration, and explore emerging technologies like artificial intelligence and augmented reality. These efforts can contribute to more equitable and effective strategies for integrating technology in language teaching, ultimately enhancing both teacher preparedness and student learning outcomes.

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