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Digital Literacy of English Language Teachers in EFL Contexts: The Necessity of Teachers' Development in the Digital World

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Abstract

Digital technologies have significantly reshaped the landscape of language education, influencing both pedagogical practices and teacher professional development. This review article investigates the role of English language teachers' digital literacy in enhancing teaching efficiency by synthesizing findings from recent empirical and theoretical studies. Drawing on a comprehensive analysis of peer-reviewed journal articles, books, and academic reports published over the past decade, the review explores how digital competence contributes to instructional effectiveness, classroom engagement, and ongoing teacher growth. The literature was systematically selected based on relevance, publication quality, and thematic focus on digital literacy and language education. The synthesis reveals that teachers with higher digital literacy are better equipped to integrate educational technologies, adapt to dynamic learning environments, and foster more interactive and learner-centered classrooms. The review highlights the growing importance of digital skills in teacher development and calls for structured digital literacy training in language teacher education programs.

Keywords: digital literacy, teachers' development, teacher education, educational technology, technology-based learning environment

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1. Introduction

The use of digital technology in language learning has become a significant topic among EFL teachers, learners, and stakeholders (Carolus et al., 2023; Derakhshan & Park, 2026; Solhi et al., 2026). For EFL teachers, digital technology offers valuable benefits, enabling them to enhance their teaching quality and support young learners in acquiring the language more effectively. By integrating digital tools, teachers can create more engaging and interactive learning experiences, ultimately improving language acquisition outcomes for their students (Derakhshan et al., 2026; Eryansyah et al., 2019; Moldavan et al., 2022). Educational technology is a term that includes the concept of using technologies in the cycle of production, storage, processing, retrieval, and dissemination of knowledge (Galla, 2016; Gao et al., 2022; Huang & Derakhshan, 2025; Kim & Belcher, 2020). Educational technology is a set of methods and recipes that use scientific findings for solving educational problems including design, implementation, and evaluation used in educational programs (Kern, 2015; Nami & Asadnia, 2024). What is emphasized in the information society, especially in the education sector, are not the cost of investment, the use of hardware and tools of communication information technologies, and their application to store information. The basic issue is the use of technologies in education and empowering students to use communication information technologies (Aagaard, 2015; Novak et al., 2023).

Contemporary digital technologies have become powerful tools for teaching and learning languages (Kaeophanuek et al., 2018; Nishioka, 2016; Qin & Derakhshan, 2026; Wang, 2023). These technologies have the potential to break down barriers between parents, teachers, and homes, as well as between classrooms and education districts across the country (Tafazoli & Meihami, 2022; Zeng, 2017). Digital technologies have influenced various aspects of language learning, including modern learning management systems, autonomous and self-paced learning, collaborative learning, and socio-constructivist approaches to target-language acquisition (Omeh et al., 2024; Perdana et al., 2019). They facilitate interaction between students, parents, and teachers (Ware et al., 2016) and extend learning beyond the classroom (Barrette, 2015). Furthermore, these technologies help foster positive attitudes in teachers towards new tools and their application in the learning process (Nami & Asadnia,

2024). However, teachers, as key elements in the development of the education sector, play a crucial role in the education system, and their satisfaction can significantly impact the achievement of educational goals (Carhill-Poza, 2017). The use of new educational technologies as tools and methods to enhance the quality and efficiency of education, along with the necessary changes and innovations, depends heavily on the professional qualifications of the teacher (Balaman, 2018; Dashtestani & Hojatpanah, 2020; Rezai et al., 2024; Zong & Yang, 2025).

The primary goal of educational technology is to foster better and deeper learning. Teachers play a crucial role in achieving this goal by effectively integrating new technologies into their teaching practices. To maximize the potential of educational technologies, teachers must possess a high level of proficiency in using these tools (Harrison & McTavish, 2016). Educational technology can enhance the quality and efficiency of education, leading to meaningful changes in teaching methods. As such, teachers must fully understand the role of technology in improving teaching and learning efficiency to effectively adapt to evolving technological advancements (Blake, 2016; Mellati & Khademi, 2020; Sadan et al., 2024). Increasing the digital literacy of English language teachers is essential for their professional development (Edwards et al., 2017; Hutchinson & Novotny, 2018; Merchant, 2015; Nishioka, 2016; Pun & Curle, 2022; Rothoni, 2018; Wang & Hemchua, 2022). Achieving an adequate level of digital literacy is a crucial prerequisite for the successful implementation of computer-assisted language learning (CALL) courses in EFL contexts (Pratolo & Solikhati, 2020).

The rise of digital technologies has led to the emergence of various forms of literacy, including media literacy, computer literacy, information and internet literacy, and digital literacy. Among these, digital literacy serves as an overarching concept, encompassing the ability to create, interpret, and share meaning through diverse digital formats. Digital literacy extends beyond technical proficiency, encompassing the ability to critically evaluate digital content, effectively participate in digital communication, and navigate online platforms with confidence. Coined by Paul Gilster (1997), the term "digital literacy" emphasizes not only the technical skills required to use digital tools but also the cognitive and socio-cultural competencies necessary for meaningful engagement in digital environments. In the context of the

present review, digital literacy is operationally defined as English language teachers' ability to effectively integrate digital tools into instructional practices, critically assess and use digital content, and engage in continuous professional learning through digital platforms (Liu et al., 2024). This definition reflects both the functional and critical dimensions of digital literacy and aligns with its relevance to teacher efficiency in the modern educational landscape. Given the growing role of technology in education, fostering digital literacy has become a crucial component of 21st-century literacy, particularly in the context of language learning and teaching (Meng et al., 2024).

Research has demonstrated that teachers' perceptions and attitudes toward technology significantly influence their effective use of these tools in the teaching and learning process (Belcher, 2017; Son et al., 2017). Furthermore, in learning environments where new educational technologies are integrated, teachers are required to adopt a new role. This role involves not only utilizing technology but also creating content for teaching materials (Beck, 2015; Cui et al., 2022). The concept of teaching efficiency is crucial, as teaching is a complex and sensitive task. It requires specific knowledge and literacy in the subject area, and not everyone without this expertise can be an effective teacher (Erstad et al., 2015; Fu & Wang, 2022; Hafner & Ho, 2020).

Digital technologies have opened up new opportunities for both learners and teachers to enhance their skills in the digital space, providing access to reliable, valid, and collaborative resources (Shafiee Rad et al., 2024; Son et al., 2017; Yang & Zhao, 2024). These technologies also foster creativity in both teachers and language learners. They transform classrooms into more dynamic, cooperative, engaging, and useful environments, while simultaneously enhancing creativity and critical thinking in language learners, leading to greater learner independence (Bull & Wasson, 2016). By incorporating various types and forms of multimedia, teachers can move students beyond passive consumption, turning them into active and creative participants (Garcia-Martin & Garcia-Sanchez, 2017). Furthermore, digital technologies improve interaction between teachers and students, facilitating the teaching and learning process (Harrison & McTavish, 2016). Despite the transformative impact of technological innovations across various sectors, their integration into English

language teaching and learning still faces numerous challenges (Bates, 2015; Chun et al., 2016; Zhang & Zhang, 2024). For example, the use of technology in EFL classrooms has often been limited to a didactic approach, where teaching relies heavily on electronic materials delivered via personal computers. However, digital technology encompasses much more than just computers and e-materials, and its effectiveness in enhancing the learning experience requires alignment with a learner-centered approach (Beck, 2015; Fu & Wang, 2022; Hutchinson & Novotny, 2018; Rothoni, 2018).

Digital technologies are predominantly utilized for entertainment rather than educational purposes (Hovde & Renguet, 2017). Consequently, this widespread recreational use can expose individuals, including teachers and students, to the risk of encountering inappropriate content or unreliable information, potentially fostering digital addiction and detachment from real-world interactions (Rahimi & Zhang, 2018). Additionally, several challenges hinder the integration of technology into EFL classrooms, including high implementation costs, insufficient teacher training, and doubts about its practical benefits. As a result, the adoption of digital tools in language education remains limited, and their overall effectiveness has yet to be extensively documented (Bull & Wasson, 2016; Edwards et al., 2017; Flanigan et al., 2017).

Several factors influence the digital literacy of teachers, including their attitude and willingness (positive view of technology), skills (knowledge of how to use technology), and access to tools (availability of technology). Despite the wide range of digital technologies available today, the shift from traditional methods to digital approaches has brought about significant changes in teaching practices. Teachers must make the right and effective choices regarding digital technologies to ensure efficient and effective teaching (Dingli & Seychell, 2015; Fu & Wang, 2022). However, despite the growing emphasis on technology use in EFL contexts, several challenges hinder the speed and quality of this transition. One of the major obstacles to integrating modern technologies into EFL education is the digital divide, which stems from both students' limited access to digital resources and their varying levels of digital literacy. Additionally, a significant barrier is the inadequate digital proficiency among teachers, which can hinder the effective implementation of technology-enhanced learning in language classrooms. Previous research has

highlighted the relevance of various digital tools, such as interactive whiteboards, in improving EFL instruction (Chun et al., 2016; Warschauer, 2017). However, many of these studies have primarily focused on specific tools or general trends in digital adoption, often overlooking the deeper pedagogical implications of digital literacy for language teachers and the factors that shape their digital readiness. Furthermore, few reviews have comprehensively synthesized the current literature on how digital literacy specifically influences English language teachers' instructional effectiveness across diverse contexts. This review addresses these gaps by examining the multifaceted role of digital literacy in EFL teaching, with a particular focus on teachers' ability to integrate technology meaningfully and pedagogically. The value of this study lies in its effort to consolidate existing research, identify areas requiring further empirical exploration, and provide practical insights into how teacher digital literacy can enhance teaching outcomes. The following section explores digital literacy and its significance for EFL teachers, and review key studies on the topic.

2. Review of the Literature

2.1. Information and Communication Technology

Recently, there has been a growing interest in the use of technology within EFL contexts. One of the key objectives of educational systems worldwide has been to equip universities with computer-based facilities and ensure that both teachers and students can effectively engage in technology-enhanced learning environments (Engeness, 2021). The use of information technology has expanded globally, particularly in developing countries, where it has been integrated into various development projects (Aagaard, 2015; Garcia-Martin & Garcia-Sanchez, 2017). Information technology is often considered the main driver of transformation and development worldwide, becoming an integral part of global progress (Rahimi & Zhang, 2018). Preparing the education system to align with other social institutions in the era of information and communication technology is essential for the education of individuals who will contribute to this evolving world. On the other hand, it is widely recognized that information and communication technology has led to significant changes in education (Cui et al., 2022). As the cornerstone of knowledge

development and production, education holds a critical place in society. Information and communication technology should be viewed as a complement to the educational system, rather than a replacement for it (Hovde & Renguette, 2017). The goal of technological development in education is to enhance the efficiency of educational resources, particularly human resources (Bates, 2015; Dingli & Seychell, 2015; Pun & Curle, 2022). Numerous studies have shown that the integration of information and communication technology in educational planning has significantly improved the teaching and learning process, addressing many of the limitations of traditional methods and driving a fundamental revolution within the educational system (Belcher, 2017; Carhill-Poza, 2017; Edwards et al., 2017; Erstad et al., 2015; Ware et al., 2016).

Nevertheless, the effective use of information and communication technology in the educational system is a complex process that requires curriculum planning, training, organizational readiness and long-term financing (Feerrar, 2019). In general, ICT-based education is learner-oriented, interactive, collaborative, and flexible (Chun et al., 2016; Erstad et al., 2015). It is accompanied by active learning strategies that increase motivation and cooperation in learners and teachers. Therefore, using them in teaching and learning in the modern era is inevitable (Hafner & Ho, 2020).

2.2. Educational Technology

Educational technology has undergone changes over the years that experts have used it, and in addition to the external aspects, changes have also occurred in its content and meaning (Engen et al., 2015). Many definitions of educational technology have been presented. Some consider educational technology as the organized design and the establishment of a learning system that takes advantage of new methods of mass communication, visual tools and devices, class organization, and new teaching methods (Flanigan et al., 2017). Others consider educational technology to be the systematic design, implementation, and evaluation of the entire learning and teaching process based on specific goals and research results in the fields of learning and communication (Hafner et al., 2015). In general, they consider educational technology to be the systematic application of scientific information in a learning

situation (Harris, 2015).

The necessity of goals and application of educational technology: The existence of many issues and problems in the field of education has revealed the necessity of using educational technology to deal with these problems (Hutchinson & Novotny, 2018). During the last few decades, education has been able to surpass other economic goods as an economic, capital, and consumption industrial product. Today, all people consider education as their legitimate right and strive for it (Judd, 2018). The unprecedented attention and investment of governments in the issue of public education have caused the costs of education to grow and increase at a staggering rate (Liu et al., 2018). In relation to the costs spent on education, the question arises whether these costs have been able to play a useful role in the progress of education or not? The task of education is no longer only the transfer of the cultural heritage of the past to the present generation, because although this goal is very important, the more important goal of education is to prepare people to live in a changing society (Mellati et al., 2018; Pangrazio, 2016). The progress of science and technology has caused new goals to be set in the field of education (Fu & Wang, 2022). In the past, the determination of educational goals was based on personal perceptions and views, but now, with the use of new methods, the goals of education have become more complex (Hafner et al., 2015).

The first and most important factor in the use of technology was teachers' acceptance of new technology (Harrison & McTavish, 2016). Zimmer et al. (2021) believe that teachers are like the gatekeepers of the classroom, and as soon as the classroom is closed, everything is in their hands and they determine what kind of technology can be used in the classroom (Kim & Belcher, 2020). Examining the results of the research studies shows that teachers do not have a positive attitude toward new technologies and are afraid of facing them. Incorrect and negative attitudes toward new educational technologies cause their nature, philosophy, and content to remain hidden for many (Kukulska-Hulme & Viberg, 2018).

2.3. Digital Literacy

This section explores digital literacy from multiple perspectives. It begins by

discussing various definitions of digital literacy, followed by an examination of its significance. Finally, it reviews studies conducted in different contexts related to digital literacy.

2.3.1. Digital Literacy: An Achievable Reality or an Impossible Goal?

The role of technology in language teaching is undeniable (Zimmer et al., 2021). According to Kern (2015), digital technology has significantly impacted both language use and its role in people's daily lives (Kukulska-Hulme & Viberg, 2018). Digital media have become so integral to our lives that communication now primarily occurs through these platforms rather than face-to-face interactions (Liu et al., 2018). Kern highlights two key effects of this transformation. The first is the increase in new vocabulary, enabling people to discuss emerging social phenomena that were previously difficult to articulate. The second is the way language learners engage with language in online and virtual spaces—reading, writing, interacting, and sharing knowledge. These interactions also shape their understanding of themselves in relation to the world around them (Neumann et al., 2017).

According to Kern, literacy, traditionally seen as a bridge between language and technology, has evolved into a dynamic phenomenon due to the influence of new technologies, now referred to as digital literacy (Tamborg et al., 2018). Several definitions of digital literacy have been proposed by researchers (Dingli & Seychell, 2015; Kim & Belcher, 2020; Liu et al., 2018; Oskoz & Elola, 2016). Gilster (1997) was the first to introduce the concept of digital literacy, defining it as a set of skills focused on using the Internet for accessing official information within an educational context. Other scholars have expanded on Gilster's definition, emphasizing digital literacy as the ability to search online for information (Kukulska-Hulme & Viberg, 2018; Pang et al., 2015; Prior et al., 2016).

Over the past two decades, the concept of digital literacy has broadened to include various dimensions such as image literacy, reproduction literacy, information literacy, and social-emotional literacy (Oskoz & Elola, 2016; Pang et al., 2015). Digital literacy goes beyond merely acquiring technical skills for handling online information; it involves the ability to locate, access, evaluate, manage, share, and

synthesize digital resources to generate knowledge (Hafner & Ho, 2020; Flanigan et al., 2017; Son et al., 2017). Hague and Payton (2010) define digital literacy as the capacity to modify, create, and use digital content across different formats and contexts to foster communication, collaboration, and critical understanding. Similarly, Moldavan et al. (2022) argue that digital literacy extends beyond technical proficiency to include cognitive and social skills, effective information management, and active participation in digital environments. This broader perspective emphasizes that digital literacy is not just about technological skills but also about developing critical thinking and effective engagement in digital spaces.

Possessing digital literacy does not necessarily equate to having the knowledge required to solve problems (Wilson & Soblo, 2020). A key issue related to digital literacy is the focus on technology itself, often neglecting the environmental and structural factors that influence its effectiveness (Kukulska-Hulme & Viberg, 2018). Despite these challenges, digital literacy, when integrated with digital technology, can be developed on a global scale and play a crucial role in the fields of education, employment, and evaluation. The next section will explore the importance and necessity of digital literacy for language teachers.

2.3.2. The Importance of Digital Literacy of Teachers

A key objective of any educational system is to introduce meaningful and relevant changes that enhance teaching and learning. To achieve this, teachers must be open to adapting to modern technological advancements and integrating them effectively into their teaching practices (Tamborg et al., 2018). This shift from traditional to technology-driven pedagogy requires not only technical competence but also a transformative mindset that embraces innovation as a means of improving educational outcomes.

Recent literature has underscored the strong relationship between teachers' digital literacy and their evolving professional identity, highlighting the pedagogical implications of technology integration (Balaman, 2018; Fu & Wang, 2022; Kim & Belcher, 2020; Wang, 2023). For example, Balaman (2018) found that teachers who could effectively incorporate digital tools were more likely to exhibit professional

confidence and instructional creativity. Similarly, Moldavan et al. (2022) emphasized the importance of digital competence in building adaptive teaching identities, particularly in the face of rapid technological change. However, despite these positive associations, gaps remain regarding how digital literacy translates into pedagogical practice across diverse EFL contexts. While access to and familiarity with digital resources are foundational (Lee & Drajiati, 2020), these elements alone do not guarantee meaningful integration. Novak et al. (2023) caution against an overreliance on digital tools without corresponding shifts in pedagogical approaches, suggesting that digital literacy must be embedded within reflective teaching practice. Echoing this, Lee and Drajiati (2020) advocate for ongoing pedagogical self-evaluation in technology-enhanced language instruction to avoid the uncritical adoption of new tools.

Moreover, digital environments have the potential to foster interactive and inclusive learning spaces (Ware et al., 2016), yet the literature still lacks clarity on how teachers conceptualize and sustain these environments in EFL settings. Nami and Asadnia (2024) argue that while technology increases engagement opportunities, teachers often struggle to use these affordances to their full pedagogical potential due to limited training or institutional support. Sadan et al. (2024) and Rezai et al. (2024) both highlight the critical need for professional development programs that not only build digital competence but also cultivate pedagogical adaptability. Their findings suggest that merely equipping teachers with digital tools is insufficient—what matters is how these tools are contextualized within culturally responsive and student-centered teaching practices. In terms of student impact, technology-enabled instruction can foster autonomy, motivation, and self-efficacy (Shafiee Rad et al., 2024). However, Omeh et al. (2024) note that the success of such outcomes hinges on teachers' ability to scaffold technology use in ways that align with learners' needs and linguistic goals. Without this alignment, digital technologies risk becoming distractions rather than enablers of language acquisition.

Although much research has explored digital tool adoption in general educational contexts (Galla, 2016), there is comparatively limited scholarship focusing specifically on technology-enhanced language teaching within EFL contexts. Shafiee Rad et al. (2024) identify a pressing need for studies that examine how digital literacy

manifests in practical classroom strategies among EFL instructors. Likewise, Zhang and Zhang (2024) advocate for more localized research that accounts for socio-cultural and institutional constraints in different teaching environments. In sum, while the literature recognizes the transformative potential of digital literacy, there is a clear need for more nuanced, context-sensitive research that critically examines how EFL teachers apply digital skills pedagogically. This review seeks to address these gaps by synthesizing recent evidence and offering a framework for understanding how digital literacy can be meaningfully integrated into EFL teaching practices.

2.4. Empirical Studies

Research has extensively examined the digital literacy levels of both EFL students and teachers, as well as effective methods for improving these competencies in language learning and teaching contexts (Green et al., 2020). Essential aspects of teachers' digital literacy include their attitudes, proficiency, and ability to integrate digital resources into their teaching practices. Recent studies indicate that digital literacy significantly influences teachers' willingness and ability to incorporate technology into their classrooms (Bates, 2015). According to Novak et al. (2023), fostering digital literacy among educators not only enhances their capacity to utilize digital tools but also promotes greater autonomy in their teaching practices. Similarly, Zang (2017) found that higher levels of digital literacy lead to increased technology use, fostering more independent and innovative pedagogical approaches. Additional research highlights the broader societal benefits of digital literacy, despite challenges such as limited access to resources, inadequate training, and varying skill levels. For instance, Omeh et al. (2024) discovered that strong digital literacy skills enable educators to navigate unfamiliar digital environments effectively, fostering creativity and problem-solving abilities among both teachers and students. Likewise, a study by Sadan et al. (2024) involving Australian in-service teachers demonstrated that structured instruction in digital literacy—particularly through e-books—enhances learners' cognitive, technical, and socio-emotional competencies, ultimately empowering educators to create dynamic virtual learning spaces.

Researchers have extensively examined students' digital literacy practices and

their development in this area. A study by Zhang and Zhang (2024) found that students engage in digital literacy across four main dimensions: fundamental computer skills, information retrieval, critical use of digital tools, and content creation through multimedia. Their study also identified key elements such as technical proficiency, cognitive engagement, social collaboration, and creative problem-solving as essential aspects of digital literacy. Similarly, Feerrar (2019) investigated how students apply personal digital skills to academic tasks, emphasizing how digital environments reshape classroom activities and assignments. His findings suggest that digital literacy not only enhances academic performance but also deepens educators' understanding of technology's role in students' personal and educational experiences. Additionally, the link between digital literacy and identity has been widely explored. For example, Schreiber (2015) conducted a qualitative case study on a Serbian student's digital writing practices on Facebook, illustrating how digital literacy can help students express their multilingual identity, boost creativity, and foster meaningful communication. In another study, Kotsogiannis (2007) examined the digital literacy experiences of seven in-service teachers in England, highlighting how their use of technology inside and outside the classroom influenced both students' self-expression and perceptions of trust. Likewise, Pangrazio (2016) argued that engagement in digital activities, whether online or offline, plays a crucial role in shaping students' social identities by influencing their values, attitudes, and self-perception.

3. Methodology and Data Description

This review study adopted a qualitative, integrative approach to examine how digital literacy influences EFL teachers' instructional effectiveness. The purpose was to synthesize current research findings and identify key patterns, gaps, and implications in the literature related to digital competence in language teaching. To ensure a comprehensive overview, a systematic search of academic databases—including Scopus, ERIC, Web of Science, Google Scholar, and ScienceDirect—was conducted. The search focused on literature published between 2015 and 2024, using keyword combinations such as "digital literacy," "EFL teachers," "technology integration,"

"AI in education," "language teaching," and "teacher professional development." Boolean operators and truncation symbols were used to broaden the scope and sensitivity of the search. Studies were included if they focused on digital literacy in relation to language teaching or teacher education, examined English language teachers in EFL or ESL contexts, were peer-reviewed, and published in English during the specified time frame. Studies were excluded if they lacked relevance to language education, were non-peer-reviewed sources (e.g., blog posts, editorials), or focused exclusively on student outcomes without addressing teacher perspectives.

The initial search yielded 81 articles. After screening titles and abstracts for relevance, 47 articles were retained for full-text review. A second round of evaluation based on methodological rigor and thematic alignment narrowed the selection to 31 high-quality studies, which were then analyzed in depth. The analysis was guided by thematic coding focused on four key areas: definitions and conceptualizations of digital literacy in education; the impact of digital literacy on EFL teachers' classroom practices and professional identity; barriers to technology integration; and emerging developments such as artificial intelligence and adaptive teaching strategies. The final selection included a balance of empirical (quantitative and qualitative) and theoretical studies to provide a well-rounded and critical synthesis of the current state of research.

4. Findings

The review of the selected literature revealed several recurring themes regarding the role of digital literacy in EFL teaching. First, digital literacy is consistently linked to enhanced instructional effectiveness, with studies indicating that teachers who possess higher digital competence are better able to integrate technological tools into their pedagogical practices (Balaman, 2018; Fu & Wang, 2022; Moldavan et al., 2022). These teachers demonstrate increased flexibility, creativity, and confidence in designing interactive and student-centered learning environments.

Second, the findings highlight that digital literacy is not limited to technical skills alone. It encompasses critical thinking, digital communication, and pedagogical adaptability—skills that are essential for fostering autonomous and engaged learning in EFL classrooms (Kim & Belcher, 2020; Novak et al., 2023). Several studies (e.g.,

Rezai et al., 2024; Zhang & Zhang, 2024) further emphasize the importance of contextual factors such as institutional support, professional development opportunities, and access to reliable digital infrastructure in shaping teachers' digital practices.

Third, a growing body of recent research explores the integration of emerging technologies such as artificial intelligence in language teaching. These studies (e.g., Nami & Asadnia, 2024; Sadan et al., 2024) suggest that AI-driven tools can personalize learning, automate feedback, and provide real-time data for instructional improvement. However, the literature also reveals that many teachers feel unprepared to use such technologies effectively, pointing to a need for targeted training and support systems (Omeh et al., 2024; Shafiee Rad et al., 2024).

Finally, the review identifies persistent challenges that hinder the effective integration of digital tools in EFL instruction. These include the digital divide, teacher resistance to change, limited pedagogical use of technology, and lack of institutional commitment to long-term digital capacity building (Engen et al., 2015). Despite increased attention to digital literacy, the review underscores the unevenness in teachers' preparedness and the need for context-specific interventions to bridge these gaps. The findings of this review demonstrate that digital literacy is a multifaceted and evolving construct that significantly influences teaching quality in EFL contexts. While it offers transformative potential, its implementation depends on teacher readiness, institutional frameworks, and sustained professional development.

5. Discussion

The findings of this review reinforce the growing consensus that digital literacy plays a transformative role in enhancing English language instruction, particularly for young learners. Teachers' ability to engage with digital tools has been shown to facilitate more dynamic, interactive, and learner-centered environments. However, the benefits of digital literacy in education are contingent upon a set of key preconditions, including the presence of a positive attitude toward technology and the possession of relevant digital competencies by both teachers and learners.

Critically, while English language teachers generally demonstrated strength in attitudinal, technical, and emotional-social aspects of digital literacy, the review identified a significant weakness in the cognitive domain. This dimension—encompassing skills such as critical evaluation of digital content, pedagogical judgment in selecting tools, and reflective integration into teaching—appears to be underdeveloped. This finding aligns with concerns raised in the literature that teacher education often emphasizes technical know-how while neglecting critical digital pedagogy (Bull & Wasson, 2016; Flanigan et al., 2017).

Several systemic factors contribute to this disparity. One notable barrier is the inadequate integration of digital pedagogy into teacher training programs, which often fail to move beyond basic technical instruction. Furthermore, many EFL teachers operate in environments where textbooks and curricular materials are outdated and heavily text-based, limiting opportunities to practice or model innovative digital strategies. This mismatch between traditional instructional design and contemporary teaching demands constrains teachers' capacity to develop their cognitive digital literacy. Institutional limitations, such as insufficient access to infrastructure or lack of sustained professional development, exacerbate this problem—especially in EFL contexts where resource availability and policy support often lag behind those of ESL environments.

The discussion also highlights a critical distinction between ESL and EFL teaching conditions. EFL teachers frequently face more constrained professional contexts, including limited access to digital tools, fewer development opportunities, and weaker systemic support both before and during their careers. These disparities underscore the importance of tailoring digital literacy initiatives to context-specific needs and realities. Institutional accountability, policy frameworks, and educators' own professional responsibilities are also central to advancing digital integration in language teaching. As Bull and Wasson (2016) and Edwards et al. (2017) emphasize, effective digital transformation requires alignment between infrastructure, professional learning, and policy incentives. In many cases, teachers are expected to embrace digital tools without the structural support necessary to do so meaningfully. Professional development must therefore extend beyond one-time workshops to include continuous, collaborative learning that targets all dimensions of digital

literacy, including the cognitive.

The implications of these findings are multi-layered and impact various stakeholders. For new and pre-service teachers, the results highlight the urgency of embedding digital literacy into teacher education programs—not merely as a technical skillset but as a foundational element of professional identity. For students, increased teacher digital competence translates into more engaging and personalized learning experiences. For curriculum designers, the findings call for the development of modern, flexible instructional materials that reflect the realities of a digitally-mediated world. Finally, for policymakers, this review provides evidence to support the prioritization of long-term digital infrastructure investment and targeted policy interventions to close the digital literacy gap in EFL education.

Moreover, the review points to the need for further investigation into how demographic and contextual variables—such as gender—may influence the acquisition and application of digital literacy. Current research lacks depth in this area, and future studies should explore how gendered experiences shape digital engagement, confidence, and access. Such research could help illuminate patterns of inclusion or marginalization and contribute to more equitable technology integration strategies. Digital literacy is a critical, yet unevenly developed, competency among English language teachers. Addressing its gaps—particularly in the cognitive domain—requires systemic alignment between teacher training, curriculum design, policy, and institutional support. Strengthening digital literacy holistically can enhance language teaching quality, learner engagement, and the broader process of digital transformation in education.

6. Conclusion

This review has examined the critical role of digital literacy in enhancing English as a Foreign Language (EFL) education through the integration of Computer-Assisted Language Learning (CALL) tools. The analysis highlighted that while many EFL teachers exhibit strength in technical, attitudinal, and emotional-social dimensions of digital literacy, a noticeable gap persists in their cognitive proficiency. This imbalance can limit their ability to design and deliver pedagogically sound digital

learning experiences. Moreover, insufficient institutional support, outdated instructional materials, and limited access to training further exacerbate this challenge. These findings underscore the need for comprehensive, evidence-informed approaches to professional development that address all dimensions of digital literacy.

Digital literacy is not solely a technical skill but a dynamic competence involving reflective, critical, and pedagogical understanding of digital tools. To ensure effective integration of technology in language classrooms, both teachers and learners must develop positive attitudes toward digital tools and possess the requisite skills to use them meaningfully. Furthermore, contextual barriers such as the digital divide, access inequalities, and resource constraints must be acknowledged in any framework that seeks to improve digital literacy.

6.1. Implications of the Study

To effectively integrate CALL into educational practices, it is imperative to enhance EFL teachers' digital literacy from the early stages of teacher education. Strengthening their digital skills before they enter university could help address the current deficiencies among educators who are increasingly expected to engage learners through multimodal, technology-enhanced instruction. Teacher training programs should adopt a dual approach, combining implicit exposure with explicit instruction in digital literacy, to build educators' confidence and competence in technology use.

Educational institutions and policymakers must play a proactive role by collecting data on teachers' digital skills, tailoring professional development programs to their needs, and embedding digital literacy as a core competency in teacher education curricula. Additionally, students and their families must also be involved in this digital transformation. Parents should remain informed about evolving educational technologies and actively encourage their children to integrate these tools into their learning, fostering a culture of digital awareness and responsibility at home.

6.2. Directions for Future Research

While this review provides insights into digital literacy among EFL teachers and learners, several gaps remain. Future studies should investigate the underlying factors contributing to low levels of digital literacy among EFL learners and explore systemic barriers—such as curriculum constraints, teacher beliefs, or institutional support—that hinder effective technology adoption. Comparative studies across different national and educational contexts could reveal the most relevant digital skills and competences for EFL teachers in diverse settings. Moreover, research should delve into the potential discrepancies between teachers' and learners' perceptions of digital literacy, as understanding these differences can lead to better alignment of teaching strategies and learner needs. Finally, more empirical work is needed on how gender, socioeconomic background, and policy environments influence the development and application of digital literacy in EFL contexts.

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