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Digital literacy among EFL teachers: A systematic review

Saad Ibrahim Taha Al-Zeebaree¹

English Language Department, College of Basic Education,
University of Duhok, Kurdistan Region, Iraq

 <https://orcid.org/0009-0007-1222-1336>

*Corresponding author's email: saad.taha@uod.ac.iq

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ABSTRACT

Digital literacy as a competence of English as Foreign Language (EFL) teachers ABSTRACT This systematic literature review combines existing empirical evidence about digital literacy in the field, specifically EFL teachers, including current levels of competence, factors affecting them and their development and implementation challenges. This systematic review was guided by PRISMA, and involved searching for peer-reviewed articles published in Q1 or Q2 journals from 2021 to 2026 via Google Scholar. After a two-phase screening process, 34 studies were deemed eligible for inclusion. This study reveals that while EFL teachers have sufficient foundational digital literacy, transformative pedagogical integration remains considerably shallow and on average moderate-high but with considerable variation between pedagogy development forms. At least three of the top 10 most influential factors relate to institutional support, professional development, self-efficacy and infrastructure. While training programmes take effect in teaching practices, they are grounded on the same materialistic reality fixed by resource scarcity, attributing a major influence of pedagogy conservatism and contextual barriers. The review then makes a case for situated, contextualised professional development frameworks.

KEYWORDS: digital literacy, EFL teachers, professional
development



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Introduction

The rapid digitalization of education has fundamentally transformed language teaching, positioning digital literacy as an essential competency for English as a Foreign Language (EFL) teachers. Digital literacy encompasses the technical proficiency and pedagogical knowledge required to integrate technology effectively into language instruction (Nualprasert et al., 2025). The COVID-19 pandemic accelerated the adoption of digital technology, exposing both opportunities and challenges in teachers' preparedness for technology-enhanced instruction (Boonmoh & Suksawas, 2024). Theoretical frameworks such as Technological Pedagogical Content Knowledge (TPACK) have provided valuable insights into the complex interplay between technology, pedagogy, and content knowledge (Su, 2023). This systematic review synthesizes empirical evidence on digital literacy among EFL teachers and addresses the following research questions: (a) What is the current state of digital literacy competencies? (b) What factors influence their development and implementation? (c) What is the impact of professional development on teachers? (d) What challenges and barriers exist?

Methodology

This systematic literature review followed the PRISMA guidelines to ensure transparency and reproducibility. A comprehensive search was conducted in Google Scholar using keywords including "digital literacy," "digital competence," "EFL teachers," "English as a Foreign Language," "technology integration," "TPACK," and "professional development." The search was limited to peer-reviewed articles published in Q1 or Q2 journals between January 2021 and April 2026, capturing recent developments during and after the COVID-19 pandemic.

Studies were included if they (a) focused on digital literacy, digital competence, or technology integration among EFL or ESL teachers; (b) were published in peer-reviewed Q1 or Q2 journals; (c) were published between 2021 and 2026; (d) employed empirical research methods; and (e) were written in English. Studies were excluded if they focused solely on students' digital literacy, were non-empirical, or did not specifically address EFL/ESL contexts or teachers.

The screening process consisted of two stages: two independent reviewers screened the titles and abstracts of 105 unique records using a predefined scoring rubric with a threshold of ≥ 4.0 . Studies meeting this threshold proceeded to full-text assessment using a more stringent threshold of ≥ 4.5 . Disagreements were resolved through discussion and consensus-building. Data were systematically extracted using a standardized form, including study characteristics, sample characteristics, theoretical frameworks, key findings, influencing factors, professional development impacts, and challenges. Given the heterogeneity of the study designs, a narrative synthesis approach was employed to thematically integrate the findings.

Results

Study Selection and Characteristics

The initial search yielded 105 unique records. After title and abstract screening, 68 studies met the criteria for full-text review. Following the full-text assessment, 34 studies satisfied all the inclusion criteria. The included studies represented diverse geographic contexts, including Asia (Thailand, Indonesia, Vietnam, South Korea, Turkey, Hong Kong, and Iraq), Europe (Spain and Ukraine), and the Middle East. The 34 studies employed diverse methodological approaches: 15 quantitative, 12 qualitative, and 7 mixed-methods. Sample sizes ranged from six participants (Boonmoh & Suksawas, 2024) to large-scale surveys involving hundreds of teachers. The most frequently employed theoretical framework was TPACK, which was utilized in 18 studies, followed by DigComp and the SAMR model.

Current State of Digital Literacy Competencies

The synthesis revealed a complex picture of EFL teachers' digital-literacy competencies. Multiple studies have reported moderate to high levels of foundational digital literacy, with teachers demonstrating

proficiency in basic technology operations and common digital tools (Soifah et al., 2021). However, significant gaps emerged in the transformative and pedagogical integration of technology. Nualprasert et al. (2025) found strong alignment in foundational skills (93% according to DigComp standards) and technological-pedagogical integration (84% TPACK alignment), but substantially lower performance in transformative practices (64% SAMR alignment) and networked learning approaches (50% Connectivism alignment).

Several studies have documented a persistent gap between teachers' technical skills and their pedagogical application of digital technologies. Ahmed et al. (n.d.) found that Iraqi Kurdish EFL teachers possessed basic digital skills but struggled to integrate these skills meaningfully into language instruction. Deiniatur et al. (2024) identified a discrepancy between teachers' beliefs about digital literacy importance and their actual classroom implementation, suggesting that positive attitudes alone are insufficient without adequate pedagogical knowledge and institutional support.

The relationship between digital literacy and professional identity emerged as a significant theme in the study. Su (2023) demonstrated that teachers' digital literacy levels were closely intertwined with their professional identity construction during the pandemic, with higher digital competence associated with stronger professional confidence and adaptability. Marisa et al. (2024) corroborated these findings, showing that digital proficiency significantly influenced EFL educators' professional identity and self-perception as competent 21st-century teachers.

Factors Influencing Digital Literacy Development

Self-efficacy has emerged as a critical determinant in multiple studies. Kahveci (n.d.) found a significant positive correlation between foreign language teachers' digital literacy and their self-efficacy beliefs. Choi (2024) reported that hands-on experiences in technology-enhanced teacher preparation courses significantly enhanced pre-service teachers' self-efficacy beliefs, enabling them to use technology in more innovative and creative ways.

Professional development and training opportunities are crucial factors. Teachers who participated in ICT-based professional development activities demonstrated significantly higher digital literacy levels (Kahveci, n.d.). Jati (2023) examined MOOCs as technology-focused professional development for Indonesian EFL teachers and found that well-designed online training programs could effectively enhance teachers' technological and pedagogical knowledge. Nggawu et al. (2025) highlighted the value of online communities of practice for digital language teacher professional development, demonstrating how collaborative learning environments facilitated knowledge sharing across Indonesia and Vietnam.

Institutional support and infrastructure are fundamental enabling factors. Lisia et al. (2024) found that teachers' perceptions, attitudes, and competency in technology integration were significantly influenced by institutional resources and support systems. Nualprasert et al. (2025) identified regional disparities reflecting infrastructural inequities, with teachers in well-resourced urban contexts demonstrating higher digital literacy than those in rural or under-resourced settings.

Contextual and cultural factors shape digital literacy development. Nualprasert et al. (2025) identified socio-cultural barriers, teacher-centered traditions, and rigid assessment systems as significant obstacles to transformative technology integration, particularly in Asian contexts. Montes et al. (2022) employed activity theory to analyze contradictions in learning to teach digital literacy practices in Colombian public schools, revealing tensions between institutional expectations and teachers' actual capacity to implement digital pedagogies.

Impact of Professional Development

Studies examining professional development interventions have reported generally positive impacts on teachers' digital literacy and pedagogical practices. Ihnatova et al. (2022) evaluated the effectiveness of blended learning in English teacher training in Ukraine, finding that hybrid professional development

models combining online and face-to-face components significantly improved teachers' digital competencies and confidence. Palacios-Hidalgo and Haba-Osca (2022) examined digital literacy development in initial EFL teacher education at a Spanish distance university, demonstrating that structured and scaffolded approaches to technology integration in pre-service programs enhanced future teachers' readiness for digital teaching.

However, the impact of professional development varies considerably based on program design, duration, and contextual factors. Rofi'i et al. (2023) found that while teachers recognized the importance of professional competence in integrating technology, many lacked sustained support following initial training, limiting long-term implementation. Priyantini et al. (2023) revealed that one-time training workshops were insufficient; teachers required ongoing mentoring and collaborative learning opportunities to translate training into practice.

Challenges and Barriers

Resource constraints have emerged as a fundamental barrier in diverse contexts. Boonmoh and Suksawas (2024) documented six major challenges faced by ICT teachers in Thailand's English teacher education programmes following post-COVID-19 curriculum revisions, including insufficient digital literacy knowledge, inadequate training and support, infrastructure limitations, and time constraints.

Pedagogical conservatism and resistance to change are significant barriers. Nualprasert et al. (2025) identified teacher-centered traditions and rigid assessment systems as obstacles to transformative technology integration, with many teachers defaulting to substitution-level technology use. Haga (2023) found that teachers often occupy peripheral roles in digital transformation initiatives, limiting their agency to drive meaningful change.

Psychological barriers, including technophobia and anxiety, also impede digital literacy development. Fathali et al. (2024) investigated the relationship between digital literacy and EFL teachers' anxiety with teaching online, finding that teachers with lower digital literacy experienced significantly higher anxiety levels. Qadir and Omar (2025) explored the roles of digital literacy, technophobia, and technophilia in artificial intelligence integration, revealing that teachers' emotional responses to technology significantly influenced their willingness to adopt new digital tools.

The gap between policy expectations and implementation has emerged as a systemic challenge. Contuk (2024) investigated high school teachers' digital practices and their alignment with the EFL curriculum in Turkey, finding significant discrepancies between curriculum requirements for digital literacy integration and teachers' actual classroom practices.

Discussion

This systematic review synthesizes the evidence from 34 empirical studies examining digital literacy among EFL teachers across diverse global contexts. The findings reveal a paradox: while EFL teachers demonstrate moderate to high foundational digital literacy, significant gaps persist in transformative pedagogical integration and innovative technology use. This pattern suggests that technical proficiency alone is insufficient; effective technology integration requires sophisticated pedagogical knowledge, institutional support, and ongoing professional development.

The prominence of TPACK as a theoretical framework in the included studies underscores its utility in understanding the complex interplay between technology, pedagogy, and content knowledge. However, the review also highlights the limitations of applying Western-developed frameworks in non-Western contexts without cultural adaptation. Nualprasert et al. (2025) proposed an expanded AI-TPACK model and hybrid frameworks specifically designed for resource-constrained Global South contexts, suggesting that decolonized, culturally responsive approaches to digital literacy are essential for equitable technology integration.

The strong relationship between self-efficacy and digital literacy documented in multiple studies has important implications for professional development design. Interventions that enhance teachers' confidence and self-perception as competent technology users appear to be more effective than those focusing solely on technical skill development. The persistent challenges identified—resource constraints, pedagogical conservatism, insufficient training, and contextual barriers—reflect systemic issues that require multi-level interventions.

For teacher educators and professional development providers, the findings emphasize the importance of designing sustained, scaffolded professional development programs that combine technical skill development with pedagogical innovation, incorporate hands-on experiences that enhance self-efficacy, foster collaborative learning communities, and adapt frameworks to local cultural and contextual realities. For educational institutions and policymakers, the review highlights the necessity of investing in technological infrastructure and technical support systems, providing adequate time and resources for teachers to develop digital literacy skills, aligning curriculum expectations with available resources, and addressing regional disparities in access to technology and professional development opportunities.

This review has some limitations. The restriction to Google Scholar may have excluded relevant studies that were indexed in other databases. The focus on Q1 and Q2 journals may have excluded valuable insights from emerging scholars and regional publications. The heterogeneity of the study designs limited the possibility of conducting a meta-analysis. The predominance of studies in Asian contexts may limit their generalizability to other regions.

Conclusion

This systematic literature review provides a comprehensive synthesis of empirical evidence on digital literacy among EFL teachers, revealing both progress and persistent challenges in this regard. While teachers demonstrate growing foundational digital competencies, significant gaps remain in transformative pedagogical integration, particularly in resource-constrained contexts such as rural schools. These findings underscore that digital literacy development is not merely a technical challenge but a complex, multifaceted process influenced by self-efficacy, professional development, institutional support, infrastructure, and cultural factors.

Effective enhancement of digital literacy among EFL teachers requires comprehensive, multi-level interventions that simultaneously address individual teacher capacity, institutional support systems, infrastructural resources, and policy frameworks. Professional development programs must move beyond one-time technical training to provide sustained, scaffolded learning opportunities that integrate technical skills with pedagogical innovation and foster collaborative learning. Frameworks and approaches must be culturally adapted to local contexts, rather than uncritically transplanting Western models.

As digital technologies continue to evolve and artificial intelligence increasingly shapes educational landscapes, the digital literacy requirements for EFL teachers will expand. Preparing teachers for these emerging challenges requires proactive approaches that cultivate adaptability, critical digital literacy, ethical technology use, and technical proficiency. By addressing the gaps and challenges identified through evidence-based, context-sensitive interventions, the field can work toward ensuring that all EFL teachers possess the digital literacy competencies necessary to provide high-quality technology-enhanced language instruction in the 21st century.

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