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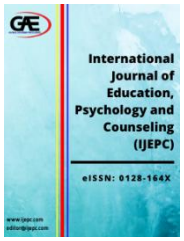


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# DIGITAL READING IN ESL YOUNG LEARNERS: A CHRONOLOGICAL REVIEW

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**Abstract:**

Digital reading has become a strategic component in enhancing literacy development among young learners in English as a Second Language (ESL) contexts, particularly within increasingly technology-mediated classrooms. Despite the growing adoption of digital tools, existing scholarship remains dispersed, with limited chronological synthesis to explain how research trends, pedagogical approaches, and learning outcomes have evolved over time. This study addresses this gap by conducting a structured chronological literature review to map the development of digital reading in ESL young learners. The methodology employs a systematic advanced search of the Scopus database using the primary keywords "digital reading," "ESL," and "young learners." A total of 101 primary studies were identified and analyzed, and subsequently categorized into four temporal phases: Phase 1: Emergent Foundations (2009–2013), Phase 2: Early Expansion and Conceptual Consolidation (2014–2017), Phase 3: Acceleration and Empirical Growth (2018–2021), and Phase 4: Intensification and Innovation (2022–2026). The findings indicate a clear progression in both research volume and instructional sophistication. Early-phase studies primarily explored basic digital texts and reported modest improvements in reading comprehension, typically within the range of 5%–15% over traditional methods. In later phases, the integration of interactive e-books, multimedia features, and adaptive learning systems demonstrated more substantial gains, with reported improvements in comprehension and engagement ranging from 20% to above 40%. Furthermore, recent studies highlight the emergence of personalized learning environments, analytics-driven feedback, and self-regulated reading strategies, reflecting a shift toward learner-centered and data-informed pedagogies. In conclusion, the chronological trajectory illustrates a transition from exploratory implementation to evidence-

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based innovation, positioning digital reading as a high-impact intervention for improving ESL reading outcomes among young learners.

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**Keyword:**

Digital Reading, ESL, Young Learners



## Introduction

Young learners today are growing up surrounded by smartphones, tablets, and other digital tools, making onscreen reading an inevitable part of their early literacy experiences(Kaban & Karadeniz, 2021; López-Escribano et al., 2021; Tatar & Gerde, 2022). For children learning English as a second or foreign language (ESL/EFL), digital environments offer easy access to multimodal texts that combine print, audio, images, animation, and interactive features, potentially supporting vocabulary growth, phonological awareness, and engagement with stories (López-Escribano et al., 2021; Liu et al., 2024; O'Brien et al., 2022). At the same time, concerns remain about whether digital reading supports deep comprehension as effectively as traditional print, and how issues such as distraction, cognitive load, and unequal adult support shape learning outcomes (Kaban & Karadeniz, 2021; Moutsinas et al., 2023; Al-Jarf, 2023).

Research on digital reading with ESL and other bilingual children shows a complex picture of both promise and challenge. Systematic reviews indicate that technology-enhanced reading comprehension instruction can produce significant gains for school-aged learners of English as an additional language, though effects vary by design quality and instructional approach (Murphy & Arciuli, 2024; Liu et al., 2024). Studies of interactive e-books and digital storybooks report benefits for vocabulary, emergent literacy skills, and narrative abilities, especially when texts are well-designed and used dialogically with adult mediation (López-Escribano et al., 2021; Cordes et al., 2023; Boyle et al., 2017). Digital formats often increase motivation and reading interest through game-like features and multimedia, even when comprehension advantages over print are not always found (Kaban & Karadeniz, 2021; Rochanaphapayon, 2023;Moutsinas et al., 2023;Pardede, 2019). At the same time, many children still use devices mainly for entertainment, and parents and teachers do not always guide digital reading in ways that support language and literacy development (Brown et al., 2022;Al-Jarf, 2023;Tatar & Gerde, 2022)These mixed findings highlight the need to understand

not only whether digital reading "works," but under what conditions it can most effectively foster ESL young learners' motivation, comprehension, and overall literacy growth.

In addition, this part discusses the requirement for a comprehensive evaluation of the cervical cancer situation. The outline of this review paper consists of three sections: Section 1 discusses an introduction and related research, and Section 2 describes the review data. The conclusions of this research are discussed in section 3.

**Literature Review**

Digital reading has emerged as a transformative tool in the education of young ESL learners, offering both opportunities and challenges. Research highlights the potential of digital platforms to enhance reading comprehension, vocabulary acquisition, and overall language proficiency. For instance, studies have shown that tools like Microsoft's Digital Reading Progress and interactive e-books significantly improve reading fluency, accuracy, and vocabulary retention among young learners (Alahmadi, 2024;Karaarslan & Polat, 2025;López-Escribano et al., 2021) . These tools often incorporate features such as annotations, highlights, and interactive elements, which act as cognitive scaffolds, facilitating information processing and reducing cognitive load (P. Zhang, 2024). Additionally, digital storytelling applications and platforms like Quizizz have been found to foster engagement, creativity, and motivation, while also improving reading and writing skills (Amelia & Abidin, 2018; Nguyen et al., 2025).

The integration of digital tools into ESL education also supports the development of second language digital literacy (L2DL), which is increasingly recognized as a critical component of language learning. Digital literacy enables learners to navigate online resources, engage in computer-mediated communication, and utilize digital annotation tools to enhance comprehension and critical thinking (Meurant, 2009a; Azmuddin et al., 2025; Mudra, 2020). For example, the use of Learning Management Systems (LMS) and other digital platforms has been shown to promote autonomous learning and collaborative engagement, which are essential for young ESL learners (Meurant, 2010;Azmuddin et al., 2022a). However, the effectiveness of these tools often depends on their design and the extent to which they align with learners' needs and cognitive abilities (P. Zhang, 2024;Al-Shehri & Gitsaki, 2010).

Despite these benefits, challenges persist. Young learners and their teachers often face barriers such as limited digital literacy, high costs of digital tools, and difficulties in interpreting complex online materials (Mudra, 2020). Additionally, excessive reliance on digital tools can hinder spontaneous communication and long-term retention, emphasizing the need for a balanced approach (Mai et al., 2025). Studies also highlight the importance of teacher training and institutional support in effectively integrating digital tools into ESL curricula (Mudra, 2020; Meurant, 2009b).

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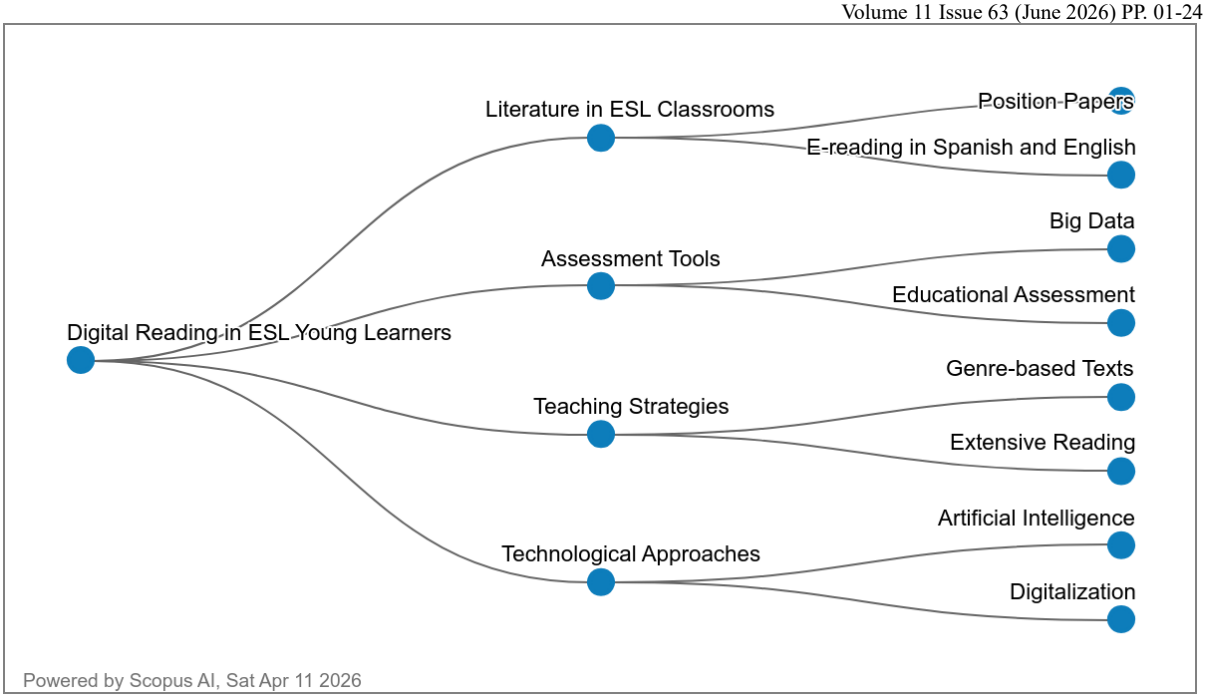


**Figure 1: Concept Map for Literature Study**

In conclusion, digital reading offers significant advantages for young ESL learners, including improved language skills, motivation, and engagement. However, its successful implementation requires careful consideration of learners' needs, teacher training, and the design of digital tools. Future research should focus on addressing existing barriers and exploring innovative ways to integrate digital reading into ESL education, ensuring that it remains an inclusive and effective pedagogical approach. The outline of this review paper consists of three sections: Section 1 discusses an introduction and related research, and Section 2 describes the review data. The conclusions of this research are discussed in section 3.

## Methodology

### *Data Collection*

Digital reading has emerged as a transformative paradigm in the field of English as a Second Language (ESL), particularly for young learners navigating increasingly multimodal and technology-mediated literacy environments. Over the past three decades, the evolution from static digital texts to interactive, adaptive, and multimodal e-reading platforms has redefined how reading comprehension, engagement, and self-regulated learning are conceptualised and operationalised in primary education. This chronological review systematically traces these developments, foregrounding how pedagogical affordances such as embedded scaffolding, audio-visual integration, and interactive feedback have progressively aligned with cognitive and socio-constructivist theories of language acquisition. To ensure a high level of scholarly rigour, the study adopted a single-step data collection strategy using the Scopus database, widely recognised for its comprehensive indexing of peer-reviewed literature across disciplines. A structured search protocol was employed, incorporating carefully selected keywords related to digital reading, ESL, and young learners, alongside inclusion and exclusion criteria to filter studies based on relevance, publication quality, and temporal scope. This

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process enabled the identification of a robust corpus of high-impact studies that collectively map the trajectory of digital reading research from its nascent stages to its current sophistication. The adoption of a systematic and transparent data collection approach is critical in review studies of this nature, as it underpins the reliability and replicability of findings while minimising selection bias. Furthermore, methodological consistency enhances the validity of trend analysis, allowing for meaningful comparisons across time and facilitating the identification of emerging patterns, research gaps, and paradigm shifts. Without such rigour, interpretations of longitudinal developments risk being fragmented or skewed, thereby limiting their utility for informing future research, policy, and instructional design. Consequently, this review not only synthesises existing knowledge but also establishes a methodologically sound foundation for advancing evidence-based innovation in digital reading for young ESL learners.

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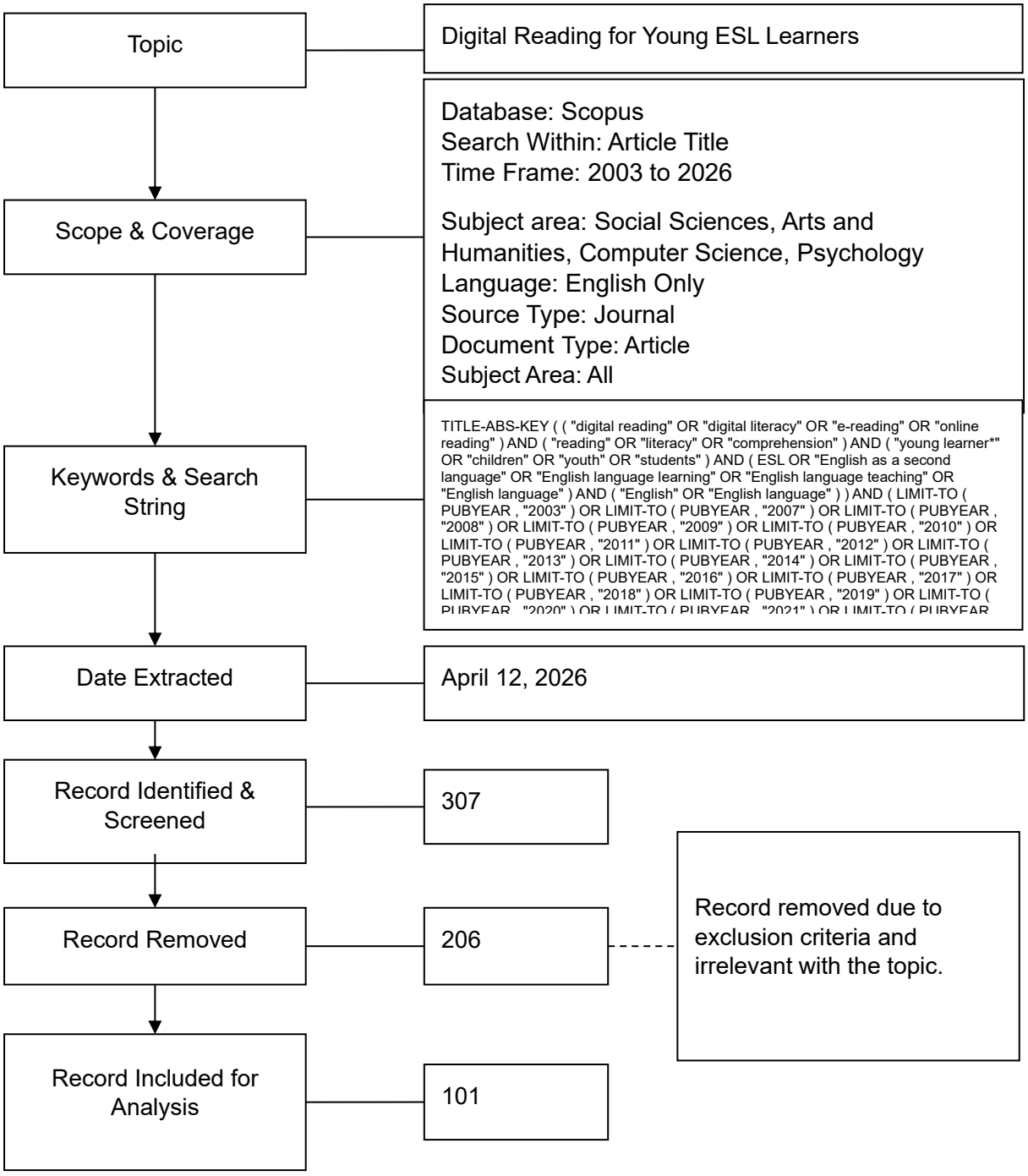


**Figure 2. Flow Diagram of The Search Strategy.**

Source: (Moher et al., 2009)

The data collection process for this chronological review was operationalised through a rigorous, single-step retrieval strategy using the Scopus database, selected for its extensive coverage of high-impact, peer-reviewed journal publications across interdisciplinary domains relevant to digital reading research. A highly structured and Boolean-driven search string was deployed within the article title, abstract, and keyword fields to maximise retrieval precision while ensuring conceptual breadth, integrating core constructs such as digital reading

modalities, literacy outcomes, learner demographics, and ESL-specific contexts. To enhance the analytical robustness and longitudinal interpretability of the dataset, explicit delimitation criteria were applied, including a defined publication window (2003–2026) to capture the evolution of digital reading from early technological integration to contemporary multimodal and AI-enhanced environments; restriction to journal articles (DOCTYPE: ar) in their final publication stage to ensure scholarly quality and completeness; and inclusion of English-language sources to maintain linguistic consistency in analysis. Furthermore, subject area filters (Social Sciences, Arts and Humanities, Computer Science, and Psychology) were strategically imposed to align with the multidisciplinary nature of ESL digital reading research, while exact keyword constraints were incorporated to refine topical relevance and reduce noise from peripheral studies. This systematic protocol yielded an initial corpus of 307 records, which were subsequently subjected to a rigorous screening process based on predefined inclusion and exclusion criteria, resulting in the removal of 206 records due to issues such as conceptual misalignment, population irrelevance, or insufficient focus on ESL or young learners. The final dataset of 101 high-quality studies provides a sufficiently robust evidentiary base for chronological synthesis, balancing comprehensiveness with analytical manageability. Such methodological stringency is critical in safeguarding the reliability and validity of the review, as it minimises selection bias, enhances transparency and replicability, and enables coherent trend mapping across temporal phases. Importantly, a well-curated dataset strengthens the interpretive power of the review, allowing for the identification of developmental trajectories, emergent pedagogical paradigms, and research gaps with greater confidence, thereby positioning the study as a credible and strategic knowledge resource for advancing evidence-based innovation in digital reading for young ESL learners.

### *Data Clustering*

In a chronological review of *Digital Reading for Young ESL Learners*, the strategic clustering of publication data constitutes a critical analytical mechanism for transforming longitudinal datasets into interpretable knowledge structures. Drawing on systematically retrieved records from Scopus, which ensures comprehensive coverage and high-quality indexing through advanced keyword-driven search protocols, the grouping of studies by publication year and volume enables the identification of coherent developmental phases within the research landscape. Rather than treating publication output as a linear accumulation of studies, clustering facilitates the detection of inflection points, growth trajectories, and periods of stagnation or acceleration, thereby offering a more nuanced understanding of how scholarly attention has evolved over time. This approach enhances analytical precision by aggregating discrete data points into meaningful temporal segments, allowing for clearer pattern recognition and more robust trend interpretation. Furthermore, clustering strengthens the interpretive validity of the review by aligning fluctuations in research productivity with broader contextual drivers, such as technological advancements, pedagogical shifts, and global educational disruptions. From a methodological standpoint, this structured categorisation supports transparency, reduces analytical fragmentation, and enables more coherent synthesis across time periods. Consequently, clustering not only functions as a descriptive tool but also as a strategic lens through which the progression, maturity, and emerging directions of digital reading research in young ESL contexts can be critically examined and communicated with greater clarity and impact.

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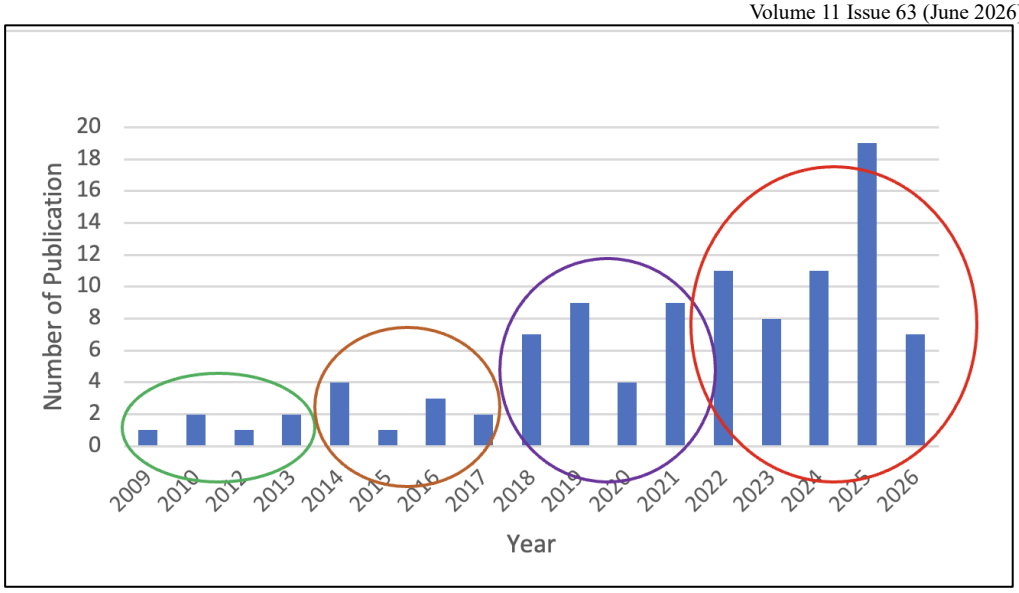


**Figure 3: Number Of Publications Per Year**

A stratified temporal analysis of publication output reveals a clear evolution in research productivity, enabling the classification of studies into four distinct developmental phases that reflect shifts in scholarly attention and technological maturation within digital reading for young ESL learners.

**Phase 1: Emergent Foundations (2009 – 2013)**

This initial phase is characterised by minimal and sporadic research output (1–2 publications annually), indicating a nascent stage of inquiry. Scholarly attention during this period was exploratory, primarily conceptualising digital reading within broader discussions of digital literacy and early technology integration. The low publication frequency suggests that digital reading had yet to be distributed as a distinct research domain in ESL contexts, with limited empirical validation and fragmented theoretical grounding. Nevertheless, this phase is strategically significant as it establishes the foundational discourse upon which subsequent empirical and pedagogical advancements are built.

**Phase 2: Early Expansion and Conceptual Consolidation (2014-2017)**

A modest increase in publication output (ranging from 2 to 4 studies annually) marks a transition towards greater conceptual clarity and research engagement. This phase reflects growing recognition of digital tools in literacy development, particularly with the integration of multimedia elements and early e-reading platforms. Researchers began to move beyond exploratory discussions to more structured investigations, including small-scale empirical studies. The upward trend, although gradual, signals an important consolidation stage where digital reading becomes more visible within ESL research agendas.

**Phase 3: Acceleration and Empirical Growth (2018-2021)**

This phase demonstrates a notable escalation in research productivity, with publications rising to between 7 and 9 annually, despite a slight dip in 2020. The consistency of higher output

reflects a maturing field driven by increased access to digital technologies, mobile learning environments, and the global shift towards online education. Importantly, this period aligns with heightened interest in interactive and multimodal reading, as well as the impact of digital learning during the COVID-19 pandemic. Methodologically, studies in this phase exhibit stronger empirical designs, signalling a shift towards evidence-based validation of digital reading interventions.

**Phase 4: Intensification and Innovation (2022 – 2026)**

The final phase is characterised by peak research productivity and heightened scholarly momentum, with a significant surge culminating in 19 publications in 2025. This trend indicates that digital reading has become a mainstream and high-priority research domain within ESL education. The sustained high output reflects the integration of advanced technologies such as adaptive learning systems, artificial intelligence, and data-driven instructional design. This phase is marked by innovation, scalability, and a stronger alignment with 21st-century learning competencies, positioning digital reading as a critical lever for enhancing reading comprehension among young ESL learners.

Collectively, these phases demonstrate a clear trajectory from exploratory inquiry to high-impact, innovation-driven research, providing a robust chronological framework for interpreting trends, identifying research gaps, and informing future directions in digital reading scholarship.

## Result and Discussion

### *Phase 1: Emergent Foundations (2009-2013)*

The chronological analysis of findings and discussion sections within Phase 1: Emergent Foundations (2009–2013) reveals an initial stage of conceptual exploration and early empirical validation in digital reading for ESL learners. The results can be meaningfully clustered into two sub-periods, namely the exploratory conceptualisation phase (2009–2010) and the pedagogical experimentation and reflective consolidation phase (2012–2013). These periods demonstrate a gradual shift from theoretical framing toward applied instructional practices, although empirical depth remains limited.

During the exploratory conceptualisation phase (2009–2010), findings primarily emphasise the role of reading strategies and online environments in shaping digital literacy development. Nor et al. (2009) reported that diverse reading strategies and learner preferences significantly informed the design of online reading systems, suggesting that effective digital environments must align with cognitive and strategic reading behaviours. The findings indicate that integrating appropriate technological tools with established reading strategies enhances comprehension processes and supports non-native learners in academic reading contexts. In 2010, Gomez et al. (2010) demonstrated that online environments facilitate distributed cognition, where meaning-making is mediated through interaction with digital tools, peers, and textual resources. The discussion highlights that virtual platforms promote deeper engagement and collaborative dialogue, expanding literacy beyond individual cognitive processes. Similarly, (Zidat & Djoudi, 2010) provided empirical evidence that online reading environments significantly improved reading comprehension, particularly among lower proficiency learners. The reported outcomes suggest increased learner independence,

confidence, and engagement when digital platforms are integrated into instructional design. Collectively, this phase reflects an early recognition of digital reading as both a cognitive and social process, supported by emerging technological affordances.

The pedagogical experimentation and reflective consolidation phase (2012–2013) demonstrate a transition toward more applied and reflective approaches in digital reading research. Tour (2012) highlighted that technology-mediated literacy learning requires a shift from traditional cognitive perspectives toward sociocultural and experiential frameworks. The findings suggest that learners' interactions with digital tools are deeply contextual and influenced by individual and cultural experiences, indicating the need for flexible and adaptive research methodologies. In 2013, Mohd Nor et al. (2013) reported that the use of online annotation tools significantly improved learners' ability to process and comprehend digital texts. Students demonstrated more structured reading practices, enhanced interaction with content, and increased collaboration through shared annotations. This indicates that embedded digital scaffolding can support comprehension and promote active engagement with texts. In parallel, (Gerber & Price, 2013) revealed that game-based learning environments have potential to enhance literacy development by supporting schema building and learner motivation. However, the findings also indicate barriers such as limited institutional support and concerns about professional perception, which may restrict implementation despite positive pedagogical value.

Overall, the findings across this phase indicate that early research in digital reading for ESL learners was characterised by foundational exploration of technological affordances, followed by initial pedagogical experimentation. The progression reflects a movement from understanding digital reading as a supportive tool toward recognising its role in shaping interactive, learner-centred literacy environments. Although the studies demonstrate positive impacts on comprehension, engagement, and collaboration, the findings also highlight constraints related to implementation, methodological limitations, and contextual variability.

***Phase 2: Early Expansion and Conceptual Consolidation (2014-2017)***

The chronological analysis of findings and discussion sections within Phase 2: Early Expansion and Conceptual Consolidation (2014–2017) demonstrates a transition from foundational exploration toward more structured pedagogical applications and contextual considerations in digital reading for ESL learners. The results can be grouped into two meaningful sub-periods, namely the expansion and validation phase (2014–2015) and the pedagogical integration and contextual adaptation phase (2016–2017). These clusters reflect increasing empirical attention, broader literacy perspectives, and deeper engagement with real-world educational challenges. During the expansion and validation phase (2014–2015), the findings indicate a growing emphasis on validating key literacy constructs within digital environments. Pey et al. (2014) reported strong correlations between oral reading fluency components and reading comprehension, suggesting that foundational reading skills remain critical even within digitally mediated contexts. This reinforces the need to integrate fluency development within digital reading platforms. In parallel, Shin (2014) demonstrated that Web 2.0 tools, particularly blogging, supported both academic and social literacy development, enabling learners to construct meaning, engage with audiences, and reflect on language use. Similarly, Gilhooly & Lee 2014) found that digital literacy practices facilitated social integration, communication, and identity development among learners, indicating that digital reading extends beyond comprehension toward broader socio-cultural functions. However, Liyanagunawardena et al., (2014) highlighted systemic barriers such as limited infrastructure, low language proficiency,

and insufficient digital literacy, which constrain the effectiveness of technology-enhanced learning environments. Subramaniam et al. (2015) further identified that learners' ability to evaluate online information credibility is influenced by linguistic limitations and reliance on multimodal content, suggesting that digital reading requires critical literacy skills alongside comprehension. Collectively, this phase reflects a consolidation of theoretical and empirical understanding, with recognition of both the affordances and constraints of digital reading environments.

The pedagogical integration and contextual adaptation phase (2016–2017) demonstrate a shift toward classroom implementation, learner interaction, and inclusivity in digital reading practices. Brown (2016) reported that interactive digital texts enhanced learner engagement, extended reading time, and supported meaning-making through multimodal resources, while also emphasizing the importance of social interaction in digital reading processes. Similarly, Shin and Seger (2016) found that Web 2.0 technologies facilitated parental involvement in literacy development, although participation varied depending on socio-cultural and linguistic factors. Joy Mesh (2016) demonstrated that blended learning approaches improved learner performance and supported the development of digital and intercultural competencies, indicating that hybrid instructional models can effectively integrate digital reading into formal curricula.

In 2017, findings further highlight inclusivity and practical implementation challenges. Retorta and Cristovão (2017) reported that mobile-assisted learning significantly improved digital literacy skills and enabled learners, including those with visual impairments, to engage in authentic communication and access reading materials. This indicates the potential of mobile technologies to support equitable learning opportunities. However, Derbel (2017) identified persistent challenges in technology integration, including limited infrastructure, lack of institutional support, and contextual constraints within schools. Despite these limitations, teachers demonstrated adaptability and commitment in incorporating digital tools into instruction, suggesting a strong pedagogical drive toward innovation.

Overall, the findings across this phase indicate a clear progression from validation of digital literacy concepts toward practical integration and contextual responsiveness. Research focus expands from individual cognitive outcomes to include social interaction, critical literacy, accessibility, and institutional readiness. Methodologically, there is a noticeable increase in qualitative and mixed method approaches that capture authentic classroom experiences. This phase reflects a growing maturity in the field, where digital reading is increasingly positioned as a multifaceted, context-dependent, and learner-centred practice.

***Phase 3: Acceleration and Empirical Growth (2018-2021)***

The chronological analysis of findings and discussion sections within Phase 3: Acceleration and Empirical Growth (2018–2021) indicates a substantial expansion in empirical evidence, methodological diversity, and technological integration in digital reading for ESL learners. The results can be systematically grouped into three sub-periods, namely the early acceleration phase (2018), the empirical diversification phase (2019–2020), and the consolidation and critical refinement phase (2021). These clusters reflect a transition from exploratory technology use toward more complex, data-driven, and critical pedagogical approaches.

During the early acceleration phase (2018), findings reveal an increased focus on integrating digital tools with literacy practices, although implementation remained uneven. Villamizar (2018) identified that visual literacy practices were underdeveloped despite the availability of digital technologies, suggesting a gap between technological access and pedagogical application. Similarly, Webster (2018) highlighted that limited institutional support and teacher readiness constrained effective technology integration. In contrast, Pitura and Terlecka-Pacut (2018) reported positive learner outcomes through technology-assisted urban gaming, where students demonstrated improvements in language skills, digital literacy, and collaborative competencies. Azmuddin et al. (2018) further showed that structured digital tools such as iREAD enhanced learners' ability to navigate and comprehend hypertext materials. Rice (2018) identified limitations in text cohesion within online learning environments, indicating that poorly designed digital texts may hinder comprehension, particularly for learners with reading difficulties. Smith (2018) and Kurucova et al. (2018) highlighted the importance of multimodal composition and blended learning, where students showed improved engagement, vocabulary development, and overall language performance. These findings suggest that while digital tools offer strong potential, their effectiveness depends on pedagogical design and learner support.

The empirical diversification phase (2019–2020) demonstrates a broader exploration of digital reading practices across contexts, with increased attention to critical literacy, learner perception, and instructional design. Rivera Pérez et al. (2019) reported that technology-mediated audio prompting significantly enhanced bilingual vocabulary development, indicating the value of multimodal support in language acquisition. Fola-Adebayo (2019) found that blended learning environments positively influenced students' critical literacy skills and engagement, while Mantiri et al. (2019) emphasized that digital literacy extends beyond technical skills and requires structured training for both learners and educators. Terrazas-Arellanes et al. (2019) demonstrated significant improvement in students' online research skills following targeted teacher training, indicating the importance of professional development. Sari and Wahyudin (2019) reported increased motivation and engagement through social media integration, although technical and instructional challenges persisted. Yuan et al. (2019) further highlighted that digital literacies empower learners to become active participants in knowledge construction, while Lodhi and Akash (2019) identified persistent proficiency gaps that necessitate more effective instructional strategies.

In 2020, Argawati and Suryani (2020) reported that digital-based instruction enhanced creativity and digital literacy despite infrastructural challenges. Ndlangamandla (2020) demonstrated that multilingual practices in online environments support flexible language use and social interaction, challenging monolingual norms. Ağçam et al. (2020) highlighted both opportunities and limitations of emergency remote teaching, where flexibility and learner autonomy were balanced against issues of effectiveness and access. Mujico and Lasagabaster (2020) further showed that digital tools such as e-portfolios contributed to improved motivation and self-regulated learning, particularly in addressing gender-related differences. These findings indicate that research during this phase increasingly addressed contextual variability, learner diversity, and pedagogical complexity.

The consolidation and critical refinement phase (2021) reflect a more mature and critical perspective on digital reading practices. Vorobel et al. (2021) reported that learners engaged actively with digital texts but faced challenges in evaluating information credibility, indicating the need for explicit instruction in digital information literacy. Nabhan (2021) found that learners possessed functional digital skills but lacked deeper critical and cultural

understanding, suggesting an imbalance in digital literacy development. Lim et al. (2021) demonstrated that interactive e-books did not significantly outperform traditional reading in comprehension outcomes, indicating that the effectiveness of digital reading depends on meaningful engagement rather than the medium itself. Rianto (2021) identified differences in strategy use across learner groups, highlighting the role of metacognitive strategies in online reading. Mertens et al. (2021) emphasized the value of integrated information literacy instruction across subjects, while Smith et al. (2021) highlighted the role of multimodal composition in supporting identity expression and linguistic development. Casañ-Pitarch and Candel-Mora (2021) further demonstrated that telecollaborative learning improved language, digital, and content knowledge simultaneously. However, Hasnan and Mohin (2021) identified persistent challenges related to infrastructure, training, and digital literacy, indicating that systemic barriers remain significant.

Overall, the findings across this phase indicate a clear shift toward empirical validation, contextual awareness, and critical evaluation of digital reading practices. Research focus expands from tool effectiveness to include learner engagement, critical literacy, identity construction, and instructional design. Methodologically, studies demonstrate increased use of mixed methods, experimental designs, and large-scale analyses. This phase reflects a significant maturation of the field, where digital reading is understood as a complex, multifaceted process requiring alignment between technology, pedagogy, and learner needs.

***Phase 4: Intensification and Innovation (2022-2026)***

The chronological analysis of findings and discussion sections within Phase 4: Intensification and Innovation (2022–2026) demonstrates a significant transformation in digital reading research for ESL young learners, characterised by the integration of artificial intelligence, multimodal learning environments, and advanced analytics. The results can be clustered into three key temporal segments, namely the innovation emergence phase (2022), the pedagogical expansion phase (2023–2024), and the intelligent ecosystem consolidation phase (2025–2026). These clusters reflect a shift from technology-supported practices toward intelligent, adaptive, and data-driven learning ecosystems.

In the innovation emergence phase (2022), findings highlight the increasing incorporation of artificial intelligence and multimodal digital tools in reading practices. Dong et al. (2022) demonstrated that AI-supported multimodal systems enhanced instructional efficiency and enabled the development of intelligent learning environments. Bicen a Beheshti (2022) reported that infographic-based flipped learning improved learners' motivation, comprehension, and confidence, indicating the effectiveness of visual-supported reading. Similarly, Azmuddin et al. (2022b) found that online discussion forums facilitated deeper comprehension and collaborative knowledge construction, supporting higher-order thinking processes. Anggraini et al. (2022) revealed that reading strategies varied according to learner characteristics, suggesting the need for differentiated digital reading instruction. Hébert et al. (2022) emphasized intergenerational digital literacy development, while Heng and Yeh (2022) identified improvements in cultural awareness, collaboration, and language proficiency through video-based tasks. However, Murray et al. (2022) highlighted persistent challenges in text utilisation, indicating that despite technological availability, effective reading integration remained limited. These findings indicate a growing emphasis on interactive, learner-centred, and multimodal approaches.

During the pedagogical expansion phase (2023–2024), research shows diversification in instructional strategies and deeper engagement with critical digital literacy and learner psychology. Yurong (2023) reported that mobile technologies enhanced learner motivation and engagement, while LaMear and von Gillern (2023) demonstrated that digital game-based texts fostered critical literacy skills. Zhang (2023) identified that attitudes and access significantly influenced teachers' digital literacy development, reinforcing the importance of contextual factors. Heiss et al (2023) highlighted that podcasting supported identity construction and collaborative learning, while Avsheniuk et al. (2023) confirmed that project-based learning enhanced autonomy, communication skills, and digital competence. Vaishnavi and Ajit (2023) further demonstrated that social media-based narratives improved digital communication skills and learner engagement. In 2024, Abdelhalim (2024) emphasized the importance of critical digital literacy in shaping effective learning practices, while Tafazoli (2024) and Asad et al. (2024) revealed that generative AI tools such as ChatGPT enabled personalised learning but raised concerns regarding ethics, creativity, and digital readiness. Abdullaeva et al. (2024) showed that digital literacy reduced anxiety and improved academic enjoyment, while Bi et al. (2024) confirmed that technology-based education enhanced motivation and perseverance. Xia et al. (2024) introduced eye-tracking and machine learning techniques, achieving high accuracy in detecting reading proficiency, indicating a shift toward data-driven assessment. These findings reflect a transition toward personalised, psychologically informed, and analytically supported digital reading practices.

The intelligent ecosystem consolidation phase (2025–2026) represents a mature stage where AI integration, immersive technologies, and systemic considerations dominate research trends. Umbar et al. (2025) identified global disparities in AI adoption while highlighting its role in enhancing motivation and reducing anxiety, although concerns regarding over-reliance and cultural limitations persist. Ali et al. (2025) and Seboka et al. (2025) reported that e-portfolios and professional development programmes improved digital literacy, learner engagement, and instructional practices, despite infrastructural challenges. Günerhan et al. (2025) and Xiaoman (2025) demonstrated that collaborative and resource-integrated approaches significantly enhanced language proficiency and digital competence. Prabakaran et al. (2025) revealed that metaverse-based learning improved language skills and digital literacy, although accessibility barriers remained evident. Han (2025) highlighted improvements in self-directed learning through mobile-assisted problem-based learning, while Zheng et al. (2025) confirmed that digital literacy positively influenced online learning effectiveness, mediated by teacher support. Boonmoh (2025) and Al-Smadi et al. (2025) showed that AI-supported learning fostered confidence, adaptive learning behaviours, and ethical awareness. However, persistent issues such as infrastructure limitations, digital inequality, and pedagogical alignment were consistently reported. By 2026, Lv and Zhang (2026) identified systemic imbalances in blended learning environments, emphasising the need for holistic, sustainable, and adaptive educational ecosystems. These findings indicate that the field has transitioned toward integrated, intelligent, and context-sensitive digital reading environments.

Overall, the results across this phase demonstrate a clear evolution from technology integration to intelligent, adaptive, and ecosystem-based learning models. Research focus expands toward AI-driven personalisation, immersive environments, and critical digital literacy, while methodological approaches increasingly incorporate mixed methods, experimental designs, and advanced analytics. This phase reflects a high level of maturity in the field, where digital reading is conceptualised as a complex interaction between technology, pedagogy, learner characteristics, and socio-cultural context.

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## Conclusion

The present chronological review was conducted with the primary aim of systematically examining the evolution of research on digital reading in ESL young learners across a defined temporal span, drawing upon a rigorously curated dataset from the Scopus database. Covering publications from 2009 to 2026, the review analysed 101 selected studies to identify developmental trajectories, methodological shifts, and emerging innovations within this domain. The structured time-based analysis enabled a comprehensive understanding of how digital reading has progressed from an exploratory concept into a mature and strategically significant area in ESL education.

The synthesis of findings demonstrates a clear progression across four distinct phases, reflecting increasing research intensity and pedagogical sophistication. The early phase was characterised by limited empirical evidence and a focus on conceptual exploration of digital literacy. This was followed by a period of gradual expansion, where studies began to establish clearer theoretical foundations and initial classroom applications. A notable acceleration phase then emerged, marked by stronger empirical designs, increased integration of multimedia tools, and heightened attention to learner engagement. The most recent phase indicates a substantial intensification of research output, driven by innovations such as interactive e-books, adaptive learning systems, and data-informed instructional practices.

Several key patterns can be identified across the timeline. There is a clear transition from descriptive and exploratory studies toward evidence-based and technology-enhanced interventions. Methodologically, research has evolved from small-scale qualitative inquiries to more robust mixed-method and experimental designs. In addition, the integration of advanced technologies, including artificial intelligence and learning analytics, reflects the increasing complexity and maturity of the field, aligning digital reading with contemporary educational demands.

The chronological organisation of the literature offers significant contributions to knowledge by enabling a structured interpretation of research development over time. This approach reveals underlying trends and inflection points that may not be visible in conventional thematic reviews, thereby enhancing analytical clarity and supporting more strategic insights into the field’s evolution.

From a practical and research perspective, the observed trends highlight the growing importance of designing pedagogically sound digital reading environments that support comprehension, engagement, and self-regulated learning among young ESL learners. The findings also suggest the need for continued innovation in instructional design, teacher readiness, and technology integration to maximise learning outcomes.

Despite its contributions, this review is subject to certain limitations, including reliance on a single database, restricted keyword selection, and predefined inclusion criteria, which may have excluded relevant studies. Future research is encouraged to adopt broader interdisciplinary approaches, incorporate diverse data sources, and explore real-world classroom implementations to strengthen the applicability of findings.

In conclusion, chronological reviews provide a valuable framework for capturing the dynamic progression of research domains. A time-based analytical lens enables a deeper understanding of how knowledge evolves, thereby supporting more informed decision-making, guiding future innovations, and reinforcing evidence-based practices in digital reading for ESL young learners.

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## References

Abdelhalim, S. M. (2024). Critical Digital Literacy and the Dynamics of English Language Learning Practices: Saudi Perspectives. *3L: Language, Linguistics, Literature*, *30*(4), 306–324. https://doi.org/10.17576/3L-2024-3004-21

Abdullaeva, B. S., Abdullaev, D., & Djuraeva, L. (2024). Decoding the Significance of Digital Literacies among EFL Learners: A Probe into the Consequences on Technostress, Foreign Language Anxiety, Academic Enjoyment, and Language Achievement. *Applied Research on English Language*, *13*(4), 101–128. https://doi.org/10.22108/are.2024.141205.2274

Ağçam, R., Akbana, Y. E., & Rathert, S. (2020). Dealing with Emergency Remote Teaching: The Case of Pre-service English Language Teachers in Turkey. *Journal of Language and Education*, *7*(4), 16–29. https://doi.org/10.17323/JLE.2021.11995

Alahmadi, N. S. (2024). Examining the Impact of a Digital Reading Progress Tool on Saudi L2 Learners' Reading Aloud Performance and Proficiency. *International Journal of Arabic-English Studies*, *24*(2), 205–230. https://doi.org/10.33806/ijaes.v24i2.661

Ali, R. M., Hadi, S., Purbani, W., Utomo, S. N. M., Biddinika, M. K., & Hastuti, D. (2025). Evaluating the implementation of E-portfolio-based learning in ELT Through the CIPP model: A qualitative descriptive study in Indonesia. *English Language Teaching Educational Journal*, *8*(3), 177–191. https://doi.org/10.12928/eltej.v8i3.14853

Al-Jarf, R. (2023). Digital Reading among Children in Saudi Arabia. *Journal of Computer Science and Technology Studies*. https://doi.org/10.32996/jcsts.2023.5.3.4

Al-Shehri, S., & Gitsaki, C. (2010). Online reading: A preliminary study of the impact of integrated and split-attention formats on L2 students cognitive load. *ReCALL*, *22*(3), 356–375. https://doi.org/10.1017/S0958344010000212

Al-Smadi, O. A., Ab Rashid, R., Awad Al-Ramahi, R., Harb Alqaryouti, M., Ugli, H. S. Z., & Vokhidovich, A. N. (2025). Jordanian English language learners' engagement with AI-supported self-regulated learning. *Research in Learning Technology*, *33*. https://doi.org/10.25304/rlt.v33.3377

Amelia, L. C. H., & Abidin, M. J. Z. (2018). Young ESL learners' perception on the effects of using digital storytelling application in English language learning. *Pertanika Journal of Social Sciences and Humanities*, *26*(T), 179–198. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85061127585&partnerID=40&md5=a672b43a56e87569df423a8c8ef8eb2d

Anggraini, M. P., Cahyono, B. Y., Anugerahwati, M., & Ivone, F. M. (2022). The interaction effects of reading proficiency and personality types on EFL university students' online reading strategy use. *Education and Information Technologies*, *27*(6), 8821–8839. https://doi.org/10.1007/s10639-022-10979-9

Argawati, N. O., & Suryani, L. (2020). Digital-based instruction: Chances and challenges in english language teaching context. *International Journal of Evaluation and Research in Education*, *9*(4), 1138–1144. https://doi.org/10.11591/ijere.v9i4.20579

Asad, M. M., Shahzad, S., Shah, S. H. A., Sherwani, F., & Almusharraf, N. M. (2024). ChatGPT as artificial intelligence-based generative multimedia for English writing pedagogy: challenges and opportunities from an educator's perspective. *International Journal of Information and Learning Technology*, *41*(5), 490–506. https://doi.org/10.1108/IJILT-02-2024-0021

Avsheniuk, N., Lutsenko, O., Seminikhyna, N., & Svyrydiuk, T. (2023). Fostering Intercultural Communicative Competence and Student Autonomy through Project-Based Learning.

*Arab World English Journal*, *2023-January*(Special Issue), 130–143. https://doi.org/10.24093/awej/comm1.10

Azmuddin, R. A., Jamalai, M., Rahim, A. A. A., Ali, M. M. A., & Khamis, N. Y. (2022a). EXPLORATION OF ONLINE DISCUSSION FORUM ON READING EST TEXTS FOR ESL LEARNERS. *Malaysian Journal of Learning and Instruction*, *19*(2), 97–122. https://doi.org/10.32890/mjli2022.19.2.4

Azmuddin, R. A., Jamalai, M., Rahim, A. A. A., Ali, M. M. A., & Khamis, N. Y. (2022b). EXPLORATION OF ONLINE DISCUSSION FORUM ON READING EST TEXTS FOR ESL LEARNERS. *Malaysian Journal of Learning and Instruction*, *19*(2), 97–122. https://doi.org/10.32890/mjli2022.19.2.4

Azmuddin, R. A., Nor Fariza, M. N., & Hamat, A. (2018). Using iREAD in understanding online reading strategies applied by science and technology students. *International Journal of Web-Based Learning and Teaching Technologies*, *13*(3), 18–32. https://doi.org/10.4018/IJWLTT.2018070102

Azmuddin, R. A., Sulaiman, N. A., Jamali, M. J., Rahman, A. N. C. A., & Roslan, F. H. (2025). The Use of Digital Annotation Tools in Assisting Reading English for Science and Technology Academic Texts among L2 Learners in Higher Institutions. *3L: Language, Linguistics, Literature*, *31*(1), 235–254. https://doi.org/10.17576/3L-2025-3101-16

Bi, J., Izadpanah, S., Mohammadi, Z., & Rezaei, Y. M. (2024). Investigating the impact of technology-based education on academic motivation, academic perseverance, and academic self-efficacy in english language learning skills. *Education and Information Technologies*, *29*(15), 20523–20545. https://doi.org/10.1007/s10639-024-12712-0

Bicen, H., & Beheshti, M. (2022). Assessing perceptions and evaluating achievements of ESL students with the usage of infographics in a flipped classroom learning environment. *Interactive Learning Environments*, *30*(3), 498–526. https://doi.org/10.1080/10494820.2019.1666285

Boonmoh, A. (2025). STUDENTS' PERCEPTIONS OF AI-SUPPORTED LANGUAGE LEARNING AND DIGITAL LITERACY: A THAI UNIVERSITY CASE STUDY. *Studies in Linguistics, Culture and FLT*, *13*(2), 8–28. https://doi.org/10.1515/text.1.1998.18.2.143

Boyle, S., McCoy, A., Mcnaughton, D., & Light, J. (2017). Using Digital Texts in Interactive Reading Activities for Children with Language Delays and Disorders: A Review of the Research Literature and Pilot Study. *Seminars in Speech and Language*, *38*, 263–275. https://doi.org/10.1055/s-0037-1604274

Brown, S. (2016). Young Learners' Transactions With Interactive Digital Texts Using E-Readers. *Journal of Research in Childhood Education*, *30*(1), 42–56. https://doi.org/10.1080/02568543.2015.1105887

Brown, S., Hao, L., & Zhang, R. (2022). "The dinosaurs are so loud; they can't sleep. Zzzz": Supporting emergent bilingual children's reading comprehension through digital literacies. *Journal of Early Childhood Literacy*, *25*, 81–108. https://doi.org/10.1177/14687984221118982

Casañ-Pitarch, R., & Candel-Mora, M. Á. (2021). DEVELOPING LANGUAGE, CONTENT, AND DIGITAL COMPETENCE THROUGH INTERNATIONAL TELECOLLABORATIVE PROJECT WORK. *Teaching English with Technology*, *2021*(1), 29–47. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85101561710&partnerID=40&md5=c09683a295134d8bb5927a75d54ebf4f

Cordes, A., Egert, F., & Hartig, F. (2023). Fostering Child Language with Short-Term Digital Storybook Interventions. *Zeitschrift Für Entwicklungspsychologie Und Pädagogische Psychologie*. https://doi.org/10.1026/0049-8637/a000264

Derbel, F. (2017). Technology-capable teachers transitioning to technology-challenged schools. *Electronic Journal of E-Learning*, *15*(3), 269–280. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85021387648&partnerID=40&md5=0f824055b14cfdfa336ad28319c88d5f

Dong, Y., Yu, X., Alharbi, A., & Ahmad, S. (2022). AI-based production and application of English multimode online reading using multi-criteria decision support system. *Soft Computing*, *26*(20), 10927–10937. https://doi.org/10.1007/s00500-022-07209-2

Fola-Adebayo, T. J. (2019). Perceptions of undergraduates on the relationship between exposure to blended learning and online critical literacy skills. *Reading and Writing (South Africa)*, *10*(1). https://doi.org/10.4102/rw.v10i1.200

Gerber, H. R., & Price, D. P. (2013). Fighting baddies and collecting bananas: Teachers' perceptions of games-based literacy learning. *Educational Media International*, *50*(1), 51–62. https://doi.org/10.1080/09523987.2013.777182

Gilhooly, D., & Lee, E. (2014). The role of digital literacy practices on refugee resettlement: The case of three Karen brothers. *Journal of Adolescent and Adult Literacy*, *57*(5), 387–396. https://doi.org/10.1002/jaal.254

Gomez, M. L., Schieble, M., Curwood, J. S., & Hassett, D. (2010). Technology, learning and instruction: Distributed cognition in the secondary English classroom. *Literacy*, *44*(1), 20–27. https://doi.org/10.1111/j.1741-4369.2010.00541.x

Günerhan, E. N., Karsavuranoğlu-Atasoy, Ş., & Gürlen, E. (2025). Beyond Classrooms: High School Students' Experiences with Digital Competence and English Language Development in Etwinning Projects. *International Journal of Contemporary Educational Research*, *12*(3), 244–260. https://doi.org/10.52380/ijcer.2025.12.3.835

Han, I. (2025). Development of self-directed learning readiness of English language learners through mobile-assisted problem-based learning. *International Journal of Educational Research*, *133*. https://doi.org/10.1016/j.ijer.2025.102729

Hasnan, M. B., & Mohin, M. B. (2021). Implementation Of LMS-CIDOS In Polytechnic English Language Classroom: Issues And Challenges. *Asian Journal of University Education*, *17*(4), 527–537. https://doi.org/10.24191/ajue.v17i4.16253

Hébert, C., Thumlert, K., & Jenson, J. (2022). #Digital parents: Intergenerational learning through a digital literacy workshop. *Journal of Research on Technology in Education*, *54*(1), 34–91. https://doi.org/10.1080/15391523.2020.1809034

Heiss, N., King, M., Adang, C., & Alvermann, D. E. (2023). Podcasting practices: Mediators of archival work, ELA teacher education curricula, and digital identities. *Journal of Media Literacy Education*, *15*(3), 41–52. https://doi.org/10.23860/JMLE-2023-15-3-4

Heng, L., & Yeh, H.-C. (2022). Interweaving local cultural knowledge with global competencies in one higher education course: an internationalisation perspective. *Language, Culture and Curriculum*, *35*(2), 151–166. https://doi.org/10.1080/07908318.2021.1958832

Joy Mesh, L. (2016). A curriculum-based approach to blended learning. *Journal of E-Learning and Knowledge Society*, *12*(3), 87–97. https://www.scopus.com/inward/record.uri?eid=2-s2.0-84981308200&partnerID=40&md5=9bbae4c00d0375b9ea0f92141de4116b

Kaban, A. L., & Karadeniz, Ş. (2021). Children's Reading Comprehension and Motivation on Screen Versus on Paper. *SAGE Open*, *11*. https://doi.org/10.1177/2158244020988849

Karaarslan, A., & Polat, E. (2025). The effects of digital reading on third grade EFL students' motivation, attitude, reading comprehension, and vocabulary acquisition. *Computer Assisted Language Learning*. https://doi.org/10.1080/09588221.2025.2599147

Kurucova, Z., Medová, J., & Tirpakova, A. (2018). The effect of different online education modes on the English language learning of media studies students. *Cogent Education*, *5*(1), 1–13. https://doi.org/10.1080/2331186X.2018.1523514

LaMear, R., & von Gillern, S. (2023). Super Smash Sisters: Critical Literacy, Gender, and Video Games in the Elementary Classroom. *Changing English: Studies in Culture and Education*, *30*(4), 359–372. https://doi.org/10.1080/1358684X.2023.2237948

Lim, J., Whitehead, G. E. K., & Choi, Y. (2021). Interactive e-book reading vs. paper-based reading: Comparing the effects of different mediums on middle school students' reading comprehension. *System*, *97*. https://doi.org/10.1016/j.system.2020.102434

Liu, S., Reynolds, B., Thomas, N., & Soyoof, A. (2024). The Use of Digital Technologies to Develop Young Children's Language and Literacy Skills: A Systematic Review. *SAGE Open*, *14*. https://doi.org/10.1177/21582440241230850

Liyanagunawardena, T. R., Adams, A. A., Rassool, N., & Williams, S. A. (2014). Developing government policies for distance education: Lessons learnt from two Sri Lankan case studies. *International Review of Education*, *60*(6), 821–839. https://doi.org/10.1007/s11159-014-9442-0

Lodhi, M. A., & Akash, A. (2019). Identifying language learning gaps of ESL students at intermediate level in Pakistani colleges. *Bellaterra Journal of Teaching and Learning Language and Literature*, *12*(1), 44–64. https://doi.org/10.5565/rev/jtl3.783

López-Escribano, C., Valverde-Montesino, S., & García-Ortega, V. (2021). The impact of e-book reading on young children's emergent literacy skills: An analytical review. *International Journal of Environmental Research and Public Health*, *18*(12). https://doi.org/10.3390/ijerph18126510

Lv, T., & Zhang, J. (2026). An educational ecology study identifies imbalances and rebalancing strategies for blended College English teaching in Chinese higher vocational education. *Discover Education*, *5*(1). https://doi.org/10.1007/s44217-025-01096-z

Mai, N. T. T., Luyen, N. T. K., & Hien, P. (2025). Digital Detox in the Classroom: Exploring Its Impact on Student Engagement and Communication in ESL Settings in a Military University in Vietnam. *Journal of Language Teaching and Research*, *16*(4), 1403–1414. https://doi.org/10.17507/jltr.1604.33

Mantiri, O., Hibbert, G. K., & Jacobs, J. (2019). Digital literacy in ESL classroom. *Universal Journal of Educational Research*, *7*(5), 1301–1305. https://doi.org/10.13189/ujer.2019.070515

Mertens, G. E., Mundorf, J., Bainter, T., Bourn, J., & Kohnen, A. M. (2021). Wisdom begins in wonder: Implementing identity-based information literacy instruction across the content areas. *Middle School Journal*, *52*(2), 38–47. https://doi.org/10.1080/00940771.2020.1868059

Meurant, R. C. (2009a). Developing critical l2 digital literacy through the use of computer-based internet-hosted learning management systems such as moodle. In D. Slezak, I. Inc. University of Warsaw Warsaw, W. I. Grosky, D. M. I. University of Michigan 48128, N. Pissinou, M. F. L. Florida International University 33174, T. K. Shih, T. Tamkang University, T. H. Kim, D. Hannam University 306-791, B. H. Kang, & H. University of Tasmania 7001 (Eds.), *Communications in Computer and Information Science* (Vol. 60, pp. 76–83). https://doi.org/10.1007/978-3-642-10512-8_9

Meurant, R. C. (2009b). The significance of second language digital literacy - Why english-language digital literacy skills should be fostered in Korea. *ICCIT 2009 - 4th International Conference on Computer Sciences and Convergence Information Technology*, 369–374. https://doi.org/10.1109/ICCIT.2009.192

Meurant, R. C. (2010). How computer-based internet-hosted learning management systems such as moodle can help develop L2 digital literacy. *International Journal of Multimedia and Ubiquitous Engineering*, *5*(2), 19–26. https://www.scopus.com/inward/record.uri?eid=2-s2.0-78650832755&partnerID=40&md5=1164e336ea9691cc958bfbd1523efe24

Mohd Nor, N. F., Azman, H., & Hamat, A. (2013). Investigating students' use of online annotation tool in an online reading environment. *3L: Language, Linguistics, Literature*, *19*(3), 87–101. https://www.scopus.com/inward/record.uri?eid=2-s2.0-84885079620&partnerID=40&md5=a8b190f041e7bcabc6133d4c38ae58bf

Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. (2009). Preferred Reporting Items for Systematic Reviews and MetaAnalyses: The PRISMA Statement. *PLoS Med*, *6 (7)*(4), 264. http://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1000097

Moutsinas, G., Gavilán, J. C. O., Valerio, J. V. M. Q., Panduro, B. C., Aníbal, O. G., Dieu, D. L. N., & Naz, S. (2023). Reading Comprehension and Behavior in Children Using E-books vs. Printed Books. *World Journal of English Language*. https://doi.org/10.5430/wjel.v13n3p172

Mudra, H. (2020). DIGITAL LITERACY AMONG YOUNG LEARNERS: HOW DO EFL TEACHERS AND LEARNERS VIEW ITS BENEFITS AND BARRIERS? *Teaching English with Technology*, *20*(3), 3–24. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85115220883&partnerID=40&md5=bd390b6746aa463332c1acac25df8147

Mujico, F. G., & Lasagabaster, D. (2020). MITIGATING THE EFFECTS OF GENDER IN L2 MO TIVATION AND LEARNING THROUGH THE USE OF ELECTR ONIC PORTFOLIOS. *Rivista Di Psicolinguistica Applicata*, *20*(1), 9–26. https://doi.org/10.19272/202007701001

Murphy, A., & Arciuli, J. (2024). Digital reading comprehension instruction in English for children with English as an additional language: A systematic review. *Journal of Research in Reading*. https://doi.org/10.1111/1467-9817.12448

Murray, C. S., Stevens, E. A., & Vaughn, S. (2022). Teachers' text use in middle school content-area classrooms. *Reading and Writing*, *35*(1), 177–197. https://doi.org/10.1007/s11145-021-10177-y

Nabhan, S. (2021). Pre-service teachers' conceptions and competences on digital literacy in an EFL academic writing setting. *Indonesian Journal of Applied Linguistics*, *11*(1), 187–199. https://doi.org/10.17509/ijal.v11i1.34628

Ndlangamandla, S. C. (2020). Language Alternation in Online Forums: English Monolingual Normativity and Multilingual Practices. *Scrutiny2*, *25*(1), 43–63. https://doi.org/10.1080/18125441.2020.1802504

Nguyen, T. Y. T., Thach, L. S., & Nguyen, P. N. T. (2025). Effects of Using Quizizz on Vocabulary Acquisition of Vietnamese EFL Young Learners. *Theory and Practice in Language Studies*, *15*(7), 2150–2162. https://doi.org/10.17507/tpls.1507.07

Nor, N. F. M., Hamat, A., Azman, H., Bakar, N. A., & Noor, N. M. (2009). i-ELLS: Researching reading strategies for designing online reading environment. *European Journal of Social Sciences*, *9*(2), 237–242. https://www.scopus.com/inward/record.uri?eid=2-s2.0-69549092351&partnerID=40&md5=e41f9d28715ebdac7303bdf52253cf32

O'Brien, B., Seward, R., & Zhang, D. (2022). Multisensory Interactive Digital Text for English Phonics Instruction with Bilingual Beginning Readers. *Education Sciences*. https://doi.org/10.3390/educsci12110750

Pardede, P. (2019). Print vs Digital Reading Comprehension in EFL: A Literature Review. *JET (Journal of English Teaching)*. https://doi.org/10.33541/jet.v5i2.1059

Pey, K. C., Min, L. H., & Wah, L. L. (2014). Relationship between oral reading fluency and reading comprehension among ESL students. *GEMA Online Journal of Language Studies*, *14*(3), 19–32. https://doi.org/10.17576/gema-2014-1403-02

Pitura, J., & Terlecka-Pacut, E. (2018). Action research on the application of technology assisted urban gaming in language education in a Polish upper-secondary school. *Computer Assisted Language Learning*, *31*(7), 734–763. https://doi.org/10.1080/09588221.2018.1447490Prabakaran, N., Patrick, H. A., & Kareem, J. (2025). ENHANCING ENGLISH LANGUAGE PROFICIENCY AND DIGITAL LITERACY THROUGH METAVERSE-BASED LEARNING: A MIXED-METHODS STUDY IN HIGHER EDUCATION. *Journal of Information Technology Education: Research*, *24*. https://doi.org/10.28945/5484

Retorta, M. S., & Cristovão, V. L. L. (2017). Visually-impaired Brazilian students learning english with smartphones: Overcoming limitations. *Languages*, *2*(3). https://doi.org/10.3390/languages2030012

Rianto, A. (2021). Examining gender differences in reading strategies, reading skills, and English proficiency of EFL University students. *Cogent Education*, *8*(1). https://doi.org/10.1080/2331186X.2021.1993531

Rice, M. F. (2018). Analyzing text cohesion in online learning environments: Implications for students with reading difficulties. *Bordon, Revista de Pedagogia*, *69*(3), 107–123. https://doi.org/10.13042/Bordon.2017.58301

Rivera Pérez, J. F., Creaghead, N. A., Washington, K., Guo, Y., Raisor-Becker, L., & Combs, S. (2019). Using Audio Prompting to Assist Monolingual Speech-Language Pathologists to Teach English–Spanish Vocabulary to English Learners. *Communication Disorders Quarterly*, *41*(1), 3–11. https://doi.org/10.1177/1525740118819659

Rochanaphapayon, T. (2023). Digital Literacy: Enhancing English Reading Comprehension Among Foreign Language Students. *English Language Teaching*. https://doi.org/10.5539/elt.v17n1p26

Sari, F. M., & Wahyudin, A. Y. (2019). Undergraduate students' perceptions toward blended learning through instagram in english for business class. *International Journal of Language Education*, *3*(1), 64–73. https://doi.org/10.26858/ijole.v1i1.7064

Seboka, S., Nehru, J., & Sime, T. (2025). Impacts of design-based professional development on teacher educators' integration of Google apps into course instruction. *Discover Education*, *4*(1). https://doi.org/10.1007/s44217-025-00533-3

Shin, D.-S. (2014). Web 2.0 tools and academic literacy development in a US urban school: a case study of a second-grade English language learner. *Language and Education*, *28*(1), 68–85. https://doi.org/10.1080/09500782.2013.771653

Shin, D.-S., & Seger, W. (2016). Web 2.0 Technologies and Parent Involvement of ELL Students: An Ecological Perspective. *Urban Review*, *48*(2), 311–332. https://doi.org/10.1007/s11256-016-0356-y

Smith, B. E. (2018). Composing for Affect, Audience, and Identity: Toward a Multidimensional Understanding of Adolescents' Multimodal Composing Goals and Designs. *Written Communication*, *35*(2), 182–214. https://doi.org/10.1177/0741088317752335

Smith, B. E., Pacheco, M. B., & Khorosheva, M. (2021). Emergent Bilingual Students and Digital Multimodal Composition: A Systematic Review of Research in Secondary Classrooms. *Reading Research Quarterly*, *56*(1), 33–52. https://doi.org/10.1002/rrq.298

Subramaniam, M., Taylor, N. G., St Jean, B., Follman, R., Kodama, C., & Casciotti, D. (2015). As simple as that?: Tween credibility assessment in a complex online world. *Journal of Documentation*, *71*(3), 550–571. https://doi.org/10.1108/JD-03-2014-0049

Tafazoli, D. (2024). Exploring the potential of generative AI in democratizing English language education. *Computers and Education: Artificial Intelligence*, *7*. https://doi.org/10.1016/j.caeai.2024.100275

Tatar, B., & Gerde, H. (2022). Partnering with Families to Use Screen Time for Supporting Early Language and Literacy. *The Reading Teacher*. https://doi.org/10.1002/trtr.2150

Terrazas-Arellanes, F. E., Strycker, L. A., & Walden, E. D. (2019). Web-Based Professional Development Model to Enhance Teaching of Strategies for Online Academic Research in Middle School. *Journal of Research on Technology in Education*, *51*(2), 118–134. https://doi.org/10.1080/15391523.2018.1564637

Tour, E. (2012). A cross-cultural journey into literacy research. *English Teaching*, *11*(2), 70–80. https://www.scopus.com/inward/record.uri?eid=2-s2.0-84864044172&partnerID=40&md5=912d90ced623a35bf6e8ca0b1c09fa45

Umbar, K., Azkiyah, S. N., Maswani, Wahab, M. A., & Zukifli. (2025). A Systematic Review of AI-Powered Language Teaching Trends, Innovations, and Challenges. *Ascarya: Journal of Islamic Science, Culture and Social Studies*, *5*(2), 248–261. https://doi.org/10.53754/rth2mc61

Vaishnavi, S., & Ajit, I. (2023). Exploring the Efficacy of Social Media Narrative-Based Activities in Improving Digital Communication Skills and Digital Literacy Among Tertiary-Level ESL Learners. *World Journal of English Language*, *13*(7), 222–231. https://doi.org/10.5430/wjel.v13n7p222

Villamizar, A. G. (2018). Examining intersections between visual literacy and digital technologies in English language programs for higher education. *Journal of Visual Literacy*, *37*(4), 276–293. https://doi.org/10.1080/1051144X.2018.1522089

Vorobel, O., Voorhees, T. T., & Gokcora, D. (2021). Language learners' digital literacies: Focus on students' information literacy and reading practices online. *Journal of Computer Assisted Learning*, *37*(4), 1127–1140. https://doi.org/10.1111/jcal.12550

Webster, T. E. (2018). On being earnest: The importance of engaging with technology in education. *International Journal of Computer-Assisted Language Learning and Teaching*, *8*(4), 1–12. https://doi.org/10.4018/IJCALLT.2018100101

Xia, Z., Lyu, S., Chen, C.-H., & Liu, B. (2024). An interpretable English reading proficiency detection model in an online learning environment: A study based on eye movement. *Learning and Individual Differences*, *109*. https://doi.org/10.1016/j.lindif.2023.102407

Xiaoman, S. (2025). Integrating Library Resources into ESL Curriculum: A Research on Primary Education. *African Journal of Library Archives and Information Science*, *35*(1). https://doi.org/10.4314/ajlais.e35101

Yuan, C., Wang, L., & Eagle, J. (2019). Empowering english language learners through digital literacies: Research, complexities, and implications. *Media and Communication*, *7*(2 Critical Perspectives), 128–136. https://doi.org/10.17645/mac.v7i2.1912

Yurong, H. (2023). Perceptions of ESL Undergraduates Regarding the Impact of Smartphones on Learning the English Language. *Arab World English Journal*, *2023-July*(Special Issue on CALL No.9), 262–273. https://doi.org/10.24093/awej/call9.18

Zhang, J. (2023). EFL teachers' digital literacy: the role of contextual factors in their literacy development. *Frontiers in Psychology*, *14*. https://doi.org/10.3389/fpsyg.2023.1153339

Zhang, P. (2024). Effects of highlights and annotations on EFL learners' Reading comprehension: an application of computer-assisted interactive reading model.

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*Computer Assisted Language Learning*. https://doi.org/10.1080/09588221.2024.2410166

Zheng, Q., Yuan, Z., & Pan, X. (2025). Examining the influencing effect of EFL students' digital literacy on their online learning power: the mediating role of perceived teacher support. *Asia Pacific Journal of Education*, *45*(1), 20–34. https://doi.org/10.1080/02188791.2024.2404669

Zidat, S., & Djoudi, M. (2010). Effects of an online learning on EFL university students' english reading comprehension. *International Review on Computers and Software*, *5*(2), 186–192. https://www.scopus.com/inward/record.uri?eid=2-s2.0-78951476307&partnerID=40&md5=f78d15db000a8c0d8e1425bcfba5eeff