



DIGITAL-BASED LEARNING IN ENGLISH LANGUAGE CLASSROOMS: A SYSTEMATIC LITERATURE REVIEW OF TECHNOLOGIES AND RESEARCH TRENDS (2020-2026)

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Abstract

The development of digital technology has brought significant changes to English language learning and encouraged the emergence of various technology-based learning innovations. This study aims to analyze the development of digital-based learning in English classrooms during the period 2020–2026, covering research trends, types of technology used, benefits, and implementation challenges. The study used the Systematic Literature Review (SLR) method by adapting the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, which include identification, screening, eligibility, and inclusion stages. Data were obtained from various scientific databases, namely Google Scholar, Scopus, ScienceDirect, ERIC, and SpringerLink. A total of 25 articles that met the inclusion criteria were analyzed using thematic analysis techniques. The results show that digital-based learning has experienced rapid development, especially after the COVID-19 pandemic. The most dominant technologies used are Learning Management Systems (LMS), Artificial Intelligence (AI), social media, mobile learning applications, and gamification. Digital technology contributes to increasing learning motivation, student engagement, access to authentic learning resources, English language skills, and learning independence. Its implementation still faces various challenges, such as limited internet access, low digital literacy, inadequate teacher training, and dependence on technology. This study concludes that digital-based learning has great potential to support more adaptive, personalized, and student-centered English learning in the digital age.





Keywords: Digital-Based Learning, English, Artificial Intelligence, Educational Technology, Systematic Literature Review.

INTRODUCTION

The development of digital technology has brought significant changes to the world of education, including English language learning. The Industrial Revolution 4.0 and the transformation towards a digital society require educational institutions to integrate technology into the learning process to improve the effectiveness, efficiency, and quality of student learning outcomes. Digital-based learning no longer functions as a complement to conventional learning but has evolved into a primary approach capable of creating a flexible, interactive, collaborative, and learner-centered learning environment. Through the use of digital technology, students can access a variety of authentic learning resources, communicate with English speakers from various countries, and develop language skills through various digital platforms and applications (Hidayat et al., 2022).

The digital transformation in education has intensified since the COVID-19 pandemic forced schools and universities worldwide to implement online learning. This situation accelerated the adoption of digital technology and encouraged various innovations in English language learning. Digital technology has positively contributed to the learning experience of Indonesian students, particularly in improving access to learning materials, communication, and learning engagement (Hidayat et al., 2022). Positive perceptions of the usefulness of technology and the ability to use digital devices have been shown to be closely related to the success of online English language learning. Digital technology has become a crucial factor in supporting the English language learning process in the modern era (Wulandari, 2025).

Several studies published between 2020 and 2026 demonstrate increasing academic attention to the use of digital technology in English language learning. Research in the initial period, 2020–2022, focused largely on the use of Learning Management Systems (LMS), mobile-based learning applications, video conferencing platforms, and online learning systems that developed during the pandemic (Moybeka et al., 2023). Research in the 2023–2026 period shows a shift in focus toward the use of artificial intelligence (AI), gamification, social media, digital storytelling, and adaptive learning systems. This shift indicates that technology serves not only as a medium for delivering material but is also beginning to play a role in shaping learning experiences that are more personalized, interactive, and based on learners' needs (Moybeka et al., 2023).

The increasing use of artificial intelligence-based technology in English language learning.





Various applications such as ChatGPT, Grammarly, QuillBot, and Duolingo AI have been utilized to support the development of writing, reading, speaking, and listening skills. AI technology can increase student learning motivation by providing rapid feedback, personalized learning, and a more adaptive learning experience. Social media platforms such as TikTok, Instagram, and YouTube are also increasingly used as learning tools because they provide authentic material that aligns with the characteristics of today's digital generation (Wulandari, 2025).

Various studies have examined the implementation of digital technology in English language learning, but most studies focus on specific technologies, specifically in education, or specific language skills. Some studies emphasize the effectiveness of specific digital applications, while others focus more on learning motivation, digital literacy, student engagement, or self-directed learning. Research findings are scattered and do not provide a complete picture of the development of digital technology used in English language learning over the past few years (Wulandari, 2025).

The rapid development of educational technology has resulted in various new innovations, particularly artificial intelligence-based technologies, which have not been comprehensively synthesized in previous research. Most previous literature reviews have focused on only one type of technology or have been conducted over a limited time period, thus failing to fully reflect changing research trends. Thus, there is a research gap in the form of the lack of systematic studies that integrate various research findings related to digital technology, research trends, benefits, and challenges of its implementation in English language learning in the 2020–2026 period. This gap is crucial to address given the ongoing development of educational technology and the need for a strong empirical basis for technology-based educational decision-making (Wulandari, 2025).

Various studies have also reported a number of challenges in implementing digital-based learning, such as limited internet access, low digital competency among teachers and students, lack of training in technology use, and potential distractions arising from the use of digital media (Maulida et al., 2022). These challenges demonstrate that the success of technology integration is determined not only by the availability of devices but also by the readiness of human resources and institutional support. A research synthesis is needed that can comprehensively identify the supporting and inhibiting factors for the implementation of digital technology in English language learning.

This study uses a Systematic Literature Review (SLR) approach to analyze the development of digital-based English language learning during the period 2020–2026. This study aims to identify the most widely used digital technologies, analyze emerging research trends,





evaluate the benefits obtained, and examine the various challenges faced in their implementation (Maulida et al., 2022). The results of this study are expected to provide theoretical contributions in the form of a comprehensive mapping of the development of digital-based English language learning, as well as providing practical contributions for teachers, researchers, educational technology developers, and policy makers in designing English language learning strategies that are more innovative, effective, and relevant to the needs of students in the digital era.

METHOD

This study used the Systematic Literature Review (SLR) method to identify, analyze, and synthesize various studies addressing digital-based learning in English classrooms during the 2020–2026 period. The SLR method was chosen because it allows researchers to gain a comprehensive understanding of research developments, technology trends, benefits, and challenges arising in the implementation of digital learning (Creswell, 2021). A systematic literature review is a research procedure conducted in a planned, transparent, and replicable manner to identify and evaluate relevant research on a specific topic. The research results are more objective because they are based on a systematic selection and analysis process (Creswell, 2021).

Research that uses secondary data from various scientific sources requires clear data collection and analysis procedures so that the synthesis can make a valid contribution to the development of knowledge. This study adapted the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) steps, which include identification, screening, eligibility assessment, and inclusion (Creswell, 2021). These steps are used to ensure that the articles analyzed meet predetermined criteria.

The article search process was conducted in several reputable scientific databases, such as Google Scholar, Scopus, ScienceDirect, ERIC, and SpringerLink. Keywords used in the search included digital learning, technology-enhanced learning, English language teaching (ELT), English as a Foreign Language (EFL), artificial intelligence, mobile learning, digital literacy, and online learning (Creswell, 2021). The selected articles were research articles published between 2020 and 2026 and written in both English and Indonesian. The research focused on the use of digital technology in English language learning at various levels of education.

The inclusion criteria used in this study included: (1) articles were the result of empirical research or scientific studies relevant to digital-based learning in English classes; (2) articles were published between 2020 and 2026; (3) articles were available in full text; and (4) articles





discussed the use of digital technology, digital learning media, artificial intelligence, social media, or English language learning applications. Articles unrelated to English language learning, duplicate articles, and articles that did not provide sufficient information were excluded from the analysis process (Creswell, 2021).

This study used an instrument in the form of an article selection protocol sheet developed based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. This instrument was used to systematically screen articles through four main stages: identification, screening, eligibility, and inclusion. During the identification stage, articles were collected from various academic databases using predetermined keywords. During the screening stage, articles that were duplicated, irrelevant to the topic of digital-based English language learning, or not included in the 2020–2026 publication year range were eliminated using a checklist of inclusion and exclusion criteria (Creswell, 2021).

During the eligibility stage, researchers used an article evaluation form that included aspects of the suitability of the research objectives, methodology, participants, learning outcomes, and the relevance of the research results to the study focus. Articles that met the requirements were then included in the inclusion stage for further analysis. Researchers used a data extraction sheet to record key information from each article, including author name, publication year, country of study, type of digital technology used, research design, language skills developed, benefits identified, and implementation challenges (Creswell, 2021).

After the selection process was completed, 25 articles met all criteria and were deemed suitable for analysis. The collected data were then analyzed using thematic analysis techniques. The analysis was conducted by grouping articles based on key themes, such as research trends, types of technology used, English language skills developed, the benefits of digital learning, and the challenges of implementing technology in learning. Thematic analysis allows researchers to identify consistent patterns across studies, resulting in a more in-depth interpretation of the development of digital-based English language learning (Creswell, 2021).

To ensure the validity of the research, the data were systematically coded and classified based on predetermined categories. The results of the analysis are presented in tables, graphs, and descriptive narratives to provide a clear picture of the development of digital-based learning in English classes during the 2020–2026 period (Creswell, 2021). Through this approach, the research is expected to provide comprehensive information on research trends, technological innovations, and the direction of English language learning development in the digital era.





RESULTS AND DISCUSSION

This study used the Systematic Literature Review (SLR) method to identify developments in digital-based learning in English classrooms during the 2020–2026 period. The review process was conducted by collecting scientific articles from various reputable academic databases that discuss the use of digital technology in English language learning, both at the elementary, secondary, and higher education levels (Maulida et al., 2022). Keywords used in the search process included digital learning, technology-enhanced learning, English language teaching (ELT), English as a Foreign Language (EFL), artificial intelligence, mobile learning, and digital literacy. The selection process was based on the PRISMA guidelines, which include identification, screening, eligibility assessment, and inclusion. After going through this process, 25 articles met the criteria and were used as data sources in this study.

The analysis results indicate that research on digital-based learning in English classrooms has experienced quite rapid development over the past six years. Based on the distribution of publications by year, two articles were published in 2020, two in 2021, seven in 2022, six in 2023, five in 2024, and three in 2025–2026. These data indicate a significant increase in the number of publications following the COVID-19 pandemic. This phenomenon indicates that the educational transformation that occurred during the pandemic was a major factor driving increased attention from researchers to the use of digital technology in English language learning. The acceleration of digital transformation in education has encouraged teachers and students to adapt to various technologies that can support the learning process more effectively (Hidayat et al., 2022).

The increasing number of studies also indicates that digital technology is no longer viewed as an additional tool but has become an integral part of the English language learning process. Many educational institutions have begun integrating digital technology into the curriculum to improve the quality of learning and expand students' access to learning resources. The use of digital technology in English classes can support independent learning and increase student engagement (Pratiwi et al., 2023).

Based on the results of a synthesis of 25 analyzed articles, several types of technology were identified as being most frequently used in English language learning. These technologies include Learning Management Systems (LMS), mobile learning applications, Artificial Intelligence (AI), social media, gamification such as Kahoot and Quizizz, digital storytelling, Web 2.0 tools, and video conferencing platforms. Of these technologies, Artificial Intelligence (AI) and Learning Management Systems (LMS) were the most dominant, with five studies each reporting their use (Maulida et al., 2022).





The dominance of LMSs indicates that learning management systems remain the primary foundation for implementing digital learning. LMSs enable teachers to manage learning materials, assignments, assessments, and communicate with students in an integrated manner. Furthermore, LMSs provide students with flexibility in accessing learning. Found that digital platforms can increase the effectiveness of English language learning by providing a more structured and flexible learning environment (Dash et al., 2022).

The increasing use of Artificial Intelligence indicates a shift in research trends for the 2023–2026 period. AI technology is utilized for various purposes, such as providing automated feedback, grammar checking, vocabulary development, creating learning materials, and simulating English conversations. Moybeka et al. (2023) found that AI has great potential in increasing student learning motivation because it can provide a more personalized and adaptive learning experience. Artificial Intelligence offers personalized learning experiences that can improve student engagement and motivation in EFL classrooms (Moybeka et al., 2023).

In addition to identifying the types of technology used, this study also analyzed the English language skills focused on in various studies. The results showed that writing was the most researched skill, accounting for 28% of the research, followed by speaking at 24%, reading at 22%, listening at 16%, and integrated skills at 10%.

The predominance of research on writing skills indicates that digital technology is considered highly effective in helping students improve their English writing skills. Various AI-based applications and digital platforms allow students to receive direct feedback on grammar, sentence structure, vocabulary usage, and writing organization. The use of digital technology in project-based learning significantly improved students' writing skills by providing opportunities for revision and reflection on their writing (Suryani et al., 2024).

Regarding speaking skills, various studies have shown that social media, mobile applications, and AI technology can help students increase their confidence in communicating in English. Students have the opportunity to practice speaking through conversation simulations, video recordings, and interactions with other users online. For reading and listening skills, digital technology provides access to a variety of authentic learning resources that can help students understand the use of English in real contexts (Maulida et al., 2022).

The research also identified various benefits derived from implementing digital-based learning in English classes. The benefits most frequently reported in the articles analyzed included increased student motivation to learn, increased student participation and engagement in learning, easier access to authentic learning resources, support for autonomous





learning, improved communication and collaboration, improved English language skills, and the provision of faster and more accurate feedback (Maulida et al., 2022).

Learning motivation was the most frequently identified benefit in the research. The use of digital technology makes the learning process more engaging, interactive, and in line with the characteristics of today's digital generation. Informal digital learning experiences can increase student interest and engagement in learning English. The use of social media and learning applications also allows students to learn more flexibly according to their individual needs and learning styles (Maulida et al., 2022).

The study's findings indicate that the implementation of digital technology still faces several challenges. The most frequently identified challenge was limited internet infrastructure, cited in eight studies, followed by low digital literacy (six studies), insufficient teacher training (five studies), digital media distractions (four studies), and dependence on technology (two studies).

Limited internet access remains a major obstacle, especially in regions with inadequate technological infrastructure. This situation creates disparities in access to digital learning and has the potential to reduce the effectiveness of technology implementation in English language learning. Low digital literacy among both teachers and students is also a significant challenge. Several studies have shown that successful technology use depends heavily on the user's ability to utilize it effectively.

Lack of teacher training is also a factor hindering the optimal use of digital technology in learning. Teachers are required not only to master English language materials but also to possess adequate digital competencies to design innovative and effective learning. Therefore, improving teachers' digital competencies is a crucial aspect that requires attention from educational institutions and policymakers.

DISCUSSION

The results of this Systematic Literature Review (SLR) indicate that digital-based learning has become a primary focus of English language education research during the 2020–2026 period. Demonstrated that digital technology positively contributes to the English learning experiences of Indonesian students (Hidayat et al., 2022). That digital trends provide new opportunities to improve the effectiveness of English language learning and evaluation (Susanty et al., 2021). Unlike previous research, which generally focused on only one type of technology, this study provides a more comprehensive overview of the development of various digital technologies, research trends, benefits, and implementation challenges over the past six years.





This research broadens understanding of how digital transformation impacts English language learning more broadly and sustainably (Maulida et al., 2022).

Artificial Intelligence (AI) in English language learning can increase learning motivation through more personalized and adaptive learning experiences (Moybeka et al., 2023). AI-based technology can assist in the development of more innovative learning materials tailored to student needs (Medina et al., 2024). However, this study found that the use of AI is not merely a learning aid, but is beginning to evolve into a learning partner capable of providing instant feedback, personalized learning recommendations, and more authentic language interaction simulations. This demonstrates a shift in technology's function from being merely a learning medium to an integral component of the teaching and learning process.

From an educational technology perspective, this finding is highly significant because it demonstrates that technological developments are not only transforming learning tools but also shifting the educational paradigm itself. The integration of AI, social media, gamification, and other digital platforms supports the creation of more adaptive, flexible, and student-centered learning. Modern educational technology must be designed to support personalized learning, increase student engagement, and provide broader access to learning resources. Technology is no longer viewed as a complement to the learning process, but as a strategic factor determining the quality of the learning experience in the digital age (Maulida et al., 2022).

This study also found that social media is one of the most widely utilized technologies in English language learning. Wulandari (2025) found that the use of TikTok can increase student engagement in learning to speak English (Wulandari et al., 2024). Digital technology integration can bridge the gap between technology use and student engagement in the classroom (Chaerani et al., 2024). This study demonstrates that social media serves not only as a source of learning materials but also as a learning environment that allows students to interact directly with authentic language and global culture. Social media functions beyond mere communication to become a learning space that supports the simultaneous development of language competencies and digital literacy.

Increasing attention to self-directed learning (Pratiwi et al., 2023). The use of digital technology encourages students' independent learning in online English learning. Compared to previous research that primarily highlighted the benefits of technology on motivation and learning outcomes, this study demonstrates that digital technology also plays a role in developing lifelong learning skills. The ability to self-regulate learning processes, seek relevant learning resources, and evaluate learning progress are essential competencies needed in the 21st century.





This study has important practical implications for various parties. For teachers, the results of this study demonstrate the need to improve digital competencies so they can effectively select, integrate, and evaluate the use of technology in accordance with learning objectives. Teachers no longer act as the sole source of information, but as facilitators who guide students in using technology critically and responsibly. Teacher training and professional development programs need to focus on mastering the latest educational technologies, including the use of AI in English language learning.

For students, this research shows that digital technology can increase motivation, engagement, access to authentic learning resources, and learning independence. Students also need to be equipped with digital literacy and critical thinking skills to avoid becoming dependent on technology. The use of AI and social media should be directed to support the learning process, not replace students' analytical skills and creativity. Developing students' digital competencies needs to be an integral part of modern educational curricula.

For educational institutions and policymakers, this research emphasizes the importance of providing adequate technological infrastructure, equitable internet access, and policies that support the integration of technology into learning. The persistent gap in technology access identified in various studies demonstrates that the success of digital transformation depends not only on technological innovation but also on strong institutional support. Educational institutions need to develop long-term strategies that include technology investment, human resource training, and digital-based curriculum development to ensure that technology utilization provides optimal benefits for all students.

The results of this study demonstrate that digital-based learning has evolved from a mere online learning solution to an educational approach capable of transforming the English language learning process as a whole. This is a significant contribution to the field of educational technology by demonstrating that appropriate technology integration can improve learning quality, strengthen learning independence, and prepare students for the demands of a future digital society.

CONCLUSION

Based on the results of a Systematic Literature Review (SLR) of 25 articles published between 2020 and 2026, it can be concluded that digital-based learning has become a crucial approach to English language learning in the digital era. Various technologies, such as Learning Management Systems (LMS), artificial intelligence (AI), social media, mobile learning applications, gamification, and video conferencing platforms, have been utilized to support the





development of English language skills. The synthesis of these results indicates that digital technology positively contributes to increased learning motivation, student engagement, access to authentic learning resources, independent learning, and the development of English language skills. However, its implementation still faces challenges such as limited internet infrastructure, low digital literacy, lack of teacher training, and the potential for disruption and dependency on technology.

The findings of this study have important implications for educational practice. For teachers, the results demonstrate the importance of mastering digital competencies so that technology can be effectively integrated into the learning process. Teachers need to utilize technology not only as a medium for delivering material but also as a means to create more interactive, collaborative, and student-centered learning. For students, the use of digital technology can support independent learning and increase access to a variety of relevant learning resources. Educational institutions need to ensure the availability of adequate infrastructure, technical support, and professional program development to ensure optimal and sustainable implementation of digital-based learning.

Based on the research findings, it is recommended that schools and educational institutions continue to strengthen the integration of technology in English language learning by providing adequate facilities and improving the digital competencies of teachers and students. Furthermore, the development of educational policies that support digital transformation is necessary to create a learning environment that adapts to technological developments.

For future research, it is recommended to conduct studies that focus on the effectiveness of specific technologies in English language learning through more robust research designs, such as experiments, quasi-experiments, and longitudinal studies. Future research could also explore the use of rapidly developing technologies, such as Artificial Intelligence (AI), Generative AI, Virtual Reality (VR), Augmented Reality (AR), and adaptive learning systems, to deepen our understanding of technology's potential to improve the quality of English language learning in the future.

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