# The Implementation of Digital Technology in ELT Classrooms

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Abstract. This systematic literature review (SLR) examined the implementation of digital technology in English Language Teaching (ELT) classrooms, focusing particularly on the Indonesian context. A total of 45 sources were systematically reviewed between 2015 and 2024. The data were collected through a structured search using databases such as Google Scholar, Garuda Dikti, BASE, ERIC, and Semantic Scholar, employing keywords including ICT, EFL, digital learning, and technology integration. The review followed a phenomenological qualitative approach to identify, interpret, and synthesize patterns across the studies. Results indicate that the use of digital technology—such as Computer-Based Learning, E-learning, Blended Learning, and Mobile-Assisted Language Learning—has significantly enhanced students' engagement and learning outcomes, with approximately 80% of the reviewed studies reporting improvements in motivation and classroom interaction. To optimize these benefits, educational institutions should strengthen ICT infrastructure and provide targeted teacher training programs to enhance digital pedagogical competence.

Keywords: ICT, ELT, Digital, Technology, Literature Review

# 1 Introduction

Nowadays, many aspects of humans' lives are highly connected to digital technology as one of the results of the rapid development of the information and communication technology (ICT). ICT include any devices that can save, store, retrieve, change, send, or receive information electronically in a digital form, such as laptops or computers, digital television, and email. Hence, ICT refers to any applications of digital technology that facilitate information used by individuals, organizations, and institutions. It is also a type of technology that facilitates tasks involving information. These tasks include communication enablement, facilitation, and support include data gathering, processing, storing, and data presenting.

In education context, ICT plays an important role in the teaching and learning process, including in ELT (English Language Teaching) classes. ICT has been an option that is inseparable component to the teaching and learning process as it offers the ease of teaching and learning by providing interesting methods and media that can be accessed easily by both the teachers and the students. Using modern technology for English teaching encompasses various innovative methods, tools, applications, equipment, systems, and strategies that are specifically connected to teaching English language and contribute to achieving the desired objectives[1]. For students, ICT could serve a bunch of joyful experience during the learning sessions, not

only in the classroom but also outside the classroom. Hence, they become more interested to learning English. For teachers, ICT has been an aid to facilitate their needs to deliver the learning materials faster and easier in addition to the joyful experience it could serve.

There are number forms of digital technology considered to create positive effects to the teaching methods, strategies, and media that are applicable in the learning processes. The learning media that is integrated to digital technology also has altered students' behavior to become more active, creative, and dynamic to the rapid development of the globalization era. Along with the globalization development, the advancement of technology has also changed the English language teachers' roles as the exclusive sources of information and knowledge to become learning hold responsibility for designing and managing instructional programs that support students in developing essential language competencies.

Technology can be incorporated into English language through multiple modalities and approaches, including the web-based and non-web-based technology[2]. The web-based technology includes e-mail, websites, YouTube, LMS (learning management system), teleconference tools (such as zoom and g-meet), gamification, online quiz, g-forms, digital dictionaries, etc. Meanwhile, the non-web-based technology includes mobile phone, computer or laptop, LCD, projector, video, music, film, audio, sound system, PowerPoint presentations, and Microsoft Word. These technologies are applicable as the instructional media in teaching all aspects of language lesson at any levels of education in English classrooms.

In this modern era, understanding and mastering digital technology are considered as fundamental as reading, writing, and numeracy. Thus, the digital technology has been introduced to the citizens even from their early lives. Schools and other education institutions have integrated their teaching and learning process into the digital technology since it is recognized as a supplement to increase the worth of education in the modern knowledge area[3]. However, despite its growing use, challenges remain significant, including disparities in infrastructure, unequal access to reliable internet, and limited digital literacy among both teachers and students. These issues create a research gap, as most existing studies have focused on the benefits of ICT in ELT globally but have not sufficiently examined its implementation, challenges, and outcomes within the Indonesian context. By looking at how important technology for students, the researcher was interested in finding the implementations of ICT in ELT classes, especially in Indonesian context.

In education context, the study or practice of educational technology is aimed at helping students in the teaching and learning process within schools[4]. It can also involve using existing technology as a teaching method to generate learning concepts. In the era of the fifth industrial revolution, educational systems are expected to produce graduates with most up-to-date technological competence which has led to the popularity of digital technology for education[5]. Hence, the use of digital technology in education is inevitable.

Through the use of digital technology, the educational systems have changed from the traditional or conventional learning patterns into a media learning pattern in which the learners can pick the learning materials based on their interests, so that they could be more motivated in their learning process. Pardede mentions that have encountered English language and culture through various media, including audio and video recordings, satellite broadcasts, films, and digital technologies since teachers started employing multimedia approaches to facilitate curriculum delivery within the classroom in the 1930s[6]. This has influenced the development of the internet and new applications. Since then, the usage of digital technology applications in English instruction has grown steadily in every level of education.

In the academic world of the 21st century, there is a growing emphasis on technology literacy for educators, leading to a greater demand for teachers to incorporate technology in their instruction, especially in the context of teaching English[7]. It is important to incorporate digital technology into English language training because it fills a genuine demand for students studying English who grew up with technology. Hence, teachers and students need to widen their views to the presentation of technology that can help them teach and learn English effectively. As a result, the various types of digital technology (such as audio, visual, and video) becomes one of the important components in EFL classrooms where the decisions of which technology to use will rely on the EFL teachers' capabilities to blend it with the best EFL teaching methods. The teachers' choices will let students have challenging and authentic materials in their learning process.

There are several benefits of incorporating digital technology into EFL. Some scholars have found out the benefits of digital technology in EFL classrooms as follow:

- It promotes the use of authentic resources in EFL classrooms, enabling teachers to include native audio or music, real-world language interactions through video materials, and even immersive experiences with native speakers via virtual reality tools[8].
- 2. It helps teachers to prepare their lessons more successfully since they can learn to develop their teaching plan from the uploaded materials in internet[9]. Hence, students are less exhausted and anxious.
- 3. It offers more engaging, captivating, and dynamic educational resources that help raise students' motivation and engagement levels[10].
- 4. It bridges the gap and offers a way to learn in remote or difficult situations, like the COVID-19 Pandemic[5].

In fact, digital technology helps EFL teachers improve their EFL teaching abilities in addition to assisting with English language instruction. For instance, it may be challenging for listening teachers to pronounce words in a way that is native to the language. Using digital technology, teachers can develop word pronunciations that are similar to native speakers. In another case, when teachers assess the reading materials' complexity, reading teachers can also readily supply more appropriate reading materials based on the reading proficiency of their pupils. All things considered, there are many advantages to using digital technology in EFL instruction nowadays, but teachers must gain the necessary understanding to use it effectively.

The educational system and national life are greatly influenced by the role of English language. Acting as a link language, it has significantly contributed to the progress of learning, representing the perspectives and approaches in all facets of life. There should be a greater emphasis on practical and language-centered methods in the teaching of English[11]. The focus of English instruction should be on understanding the language rather than its literary aspect[12]. Geographical, cultural, and political factors play a significant role in shaping the prominence of English in a country's everyday life. The influence of English on daily life and personal development is determined by how it is taught and its current role[13].

The earlier studies tend to emphasize the advantages of ICT, such as increased motivation and access to authentic materials, while paying less attention to its drawbacks, such as reduced social interaction and potential learning distractions. Consequently, there is a need to review how ICT is being applied, perceived, and optimized by different stakeholders, such as teachers, students, and parents in Indonesian ELT classrooms.

Based on these considerations, this study aims to systematically review and analyze the implementation of digital technology in ELT classrooms, identifying both the benefits and

challenges associated with its use. The specific research questions guiding this review are as follows:

- 1. How has digital technology been implemented in ELT classrooms, particularly within the Indonesian context?
- 2. What are the pedagogical benefits and drawbacks of using digital technology for English teaching and learning?
- 3. What implications can be drawn to improve ICT integration in future ELT practices?

  By addressing these questions, this study provides insights into the evolving role of digital technology in English education. It contributes to existing scholarship by offering a balanced synthesis of current evidence, identifying research gaps, and proposing recommendations for more effective ICT integration. Ultimately, this review aims to support educators, policymakers, and researchers in leveraging digital technology to enhance the quality and equity of English language teaching in Indonesia and beyond.

#### 2 Methods

This is a qualitative study designed in the form of systematic literature review (SLR) using a qualitative phenomenological approach to explore and interpret the implementation of digital technology in English Language Teaching (ELT) classrooms. The research methodology adopted a scope review study, which is a literature review process between new theories and ideas. The SLR method was selected as it allows researchers to systematically locate, assess, and integrate relevant studies pertaining to a defined research area. The phenomenological lens was applied to understand how technology has been experienced and implemented in teaching and learning processes, based on evidence drawn from multiple sources.

Following the framework proposed by Kitchenham and Charters[14], the research process consisted of three major stages: (1) planning the review, (2) conducting the review, and (3) reporting the results[15]. Each stage involved clearly defined steps, inclusion/exclusion criteria, and data analysis procedures to ensure reliability and transparency. The method of scoping study involves identifying relevant literature that is separated from the research design. Following this approach, the study examined and evaluated the literature pertaining to the use of digital technology in English instruction. Here, in this study, the researcher examined the implementation of digital technology in EFL classroom in Indonesian context.

The researcher has collected data and information in the forms of books and academic works from library. Also, the data search was conducted electronically in the form of e-books from the e-library as well as published articles from education journals and proceedings, for examples *Google Scholar*, *Garuda Dikti*, *BASE*, *ERIC*, and *Semantic Scholar* by using proper keywords, such as 'ICT', 'technology', 'digital', 'EFL', 'teaching and learning', 'technology in EFL classroom', etc. The search covered publications from January 2015 to March 2024. To ensure comprehensiveness, backward and forward reference tracking was also applied. This process resulted in an initial pool of 97 records, which were then screened for relevance and quality.

# 2.1 Research Procedures

Upon obtaining the data, the researcher presented a descriptive qualitative study design that reflected the model used in the previous studies. Further, the researcher analyzed the data that had been collected by using phenomenological approach which tries to understand phenomenal issue from an amount of data so that the core problem can be answered with valid and reliable principles [16]. This study has been conducted by following these steps:

- 1. searching for and collecting data and information related to the topic,
- 2. sorting out the unrelated data and information gathered,
- 3. analysing all data and information collected by using the document analysis proposed by Fraenkel and Wallen[17] which more focused on a factual content analysis,
- 4. presenting the results of analysing the data and information,
- 5. drawing conclusion

As for the inclusion criteria for the reviewed studies were as follows:

- Studies published between 2015 and 2024 to capture the most recent developments in ICT and ELT.
- 2. Peer-reviewed journal articles, e-books, and conference proceedings related to digital technology in English teaching or learning.
- 3. Studies written in English and focusing on EFL or ESL contexts, particularly those relevant to Indonesia or comparable educational settings.
- 4. Research that explicitly discussed the use, impact, challenges, or strategies of integrating ICT in language classrooms.

While the exclusion criteria included:

- 1. Studies focusing on general education technology without specific reference to ELT.
- 2. Non-academic sources such as blogs, personal essays, or promotional materials.
- 3. Duplicated publications or studies lacking sufficient methodological detail.

# 2.2 Screening Process and Data Sources

After removing duplicates and irrelevant materials, the final dataset consisted of 45 studies comprising 35 journal articles, 8 e-books, and 2 conference proceedings. Figure 1 illustrates the data selection process of this study.

#### **PRISMA Flow Diagram for Study Selection**

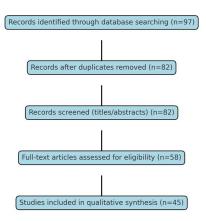


Fig. 1. PRISMA Flow Diagram from Study Selection

The stages of screening included:

- 1. Identification: Compilation of all potentially relevant studies.
- 2. Screening: Evaluation of titles, abstracts, and keywords for relevance.
- 3. Eligibility: Full-text review to ensure studies met inclusion criteria.
- 4. Inclusion: Final selection of studies included in the synthesis.

# 2.3 Data Collection Technique

Data were collected using the **document analysis method** proposed by Fraenkel and Wallen[18], emphasizing factual content analysis. The steps included:

- 1. Searching and collecting literature related to digital technology in ELT.
- 2. Sorting and excluding irrelevant or low-quality studies.
- 3. Categorizing the remaining studies based on technology types, research focus, participant perspectives, and outcomes.
- 4. Synthesizing and interpreting the data thematically to identify trends and challenges.

To ensure rigor, data collection and analysis were performed iteratively and continuously until data saturation was reached. The study maintained detailed records of the search process, inclusion criteria, and coding framework to enhance transparency and reproducibility.

#### 2.3 Data Analysis

The data were analyzed using **qualitative content analysis** to identify patterns and recurring themes within the literature. The analysis focused on:

- 1. Forms of digital technology applied in ELT (e.g., e-learning, mobile learning, blended learning).
- 2. Pedagogical outcomes and challenges reported in the studies.
- 3. Implementation patterns specific to the Indonesian context

Qualitative data analysis activities are conducted interactively and continuously until the data is saturated[19]. In this case, the phenomenological approach was used to interpret the underlying experiences and perceptions of teachers and students regarding digital technology use in ELT. The analysis involved three key activities:

- 1. Data reduction: Selecting and simplifying relevant information.
- 2. Data display: Organizing findings into thematic matrices for clarity.
- 3. Conclusion drawing and verification: Interpreting patterns, comparing findings, and ensuring consistency across sources.

This methodological framework ensured that the review was systematic, transparent, and replicable, allowing the study to present credible conclusions on the implementation of digital technology in ELT classrooms.

# 3 Results

#### 3.1 The Implementation of Digital Technology in ELT Classrooms

The use of digital technology in ELT instruction originally aimed to develop software for creating teaching materials and to establish a virtual learning environment for enhancing teaching and learning activities[20]. It is essential for educational digital technology to be customized to the teacher's individual practices and routines. It has been noted that for effective ELT instruction, a balanced approach that integrates both educational and technology perspectives is crucial[19]. Since teachers manage the knowledge transmission during teaching

and bear the responsibility for the quality of education, the priority in ELT classrooms should be the educational approach to digital technology implementation. Ideally, there should be seamless integration of teaching and technology, without any noticeable interface [21]. Across the reviewed studies, digital technologies were categorized into five dominant forms:

- Computer-Based Learning. In the field of education, the introduction of this computer technology is very important for English language learning, because there are so many benefits that can be provided by computers[21]. There are several activities in CBL, such as managing written files. At a higher level, computers or laptops can be used to create, be it in the fields of design, art, music, etc. There are many computer-based learning models, including computer-based instruction (CBI), Computer Assisted Instruction (CAI), ICT, Computer-Based Training (CBT) and Computer-Based Education (CBE)[22].
- 2. *E-learning*. E-learning is a learning system that utilizes computer technology and the internet as a learning medium. Students can access learning materials of English language in the form of videos, images, text or sound anywhere without having to meet face to face with the teacher[23]. Content enrichment such as materials that can be downloaded by students, online exams or student assessment systems, etc. in the form of websites. Elearning systems generally do not replace conventional ELT classroom learning models, but only as a support for student teaching and learning activities and provide convenience for teachers in conveying information to their students[24].
- 3. *Blended learning*. Blended learning brings together in-person interactions with teachers and students and online engagement, overcoming geographical barriers. Teachers will provide their materials in real time via phone conference, video conference or online chat. They can provide feedback to each other in the form of questions, answers or statements[25].
- 4. *Digital library*. According to the association of research libraries, the purpose of a digital library is to provide smoothness in the systematic development process by storing, collecting, and organizing knowledge and information in digital format[26]. Students can access books in digital form and study them, without having to come to the library directly or having to buy books in physical form. Of course, this is beneficial because students can learn anywhere and anytime.
- 5. Use of teaching and learning support tools. The teaching and learning process is not always the teacher teaching and delivering teaching materials verbally. But can also use videos, images or materials created using a computer or laptop. Then displayed again using technology in the form of a projector so that the object is larger and can be seen by all students[27].

Based on the reviewed literature, approximately 80% of studies reported that the use of these technologies led to improved student motivation, participation, and performance. However, challenges were also identified, particularly in under-resourced schools.

# 3.2 The Roles of Digital Technology in ELT Classroom

Digital technology plays a central role in transforming ELT classrooms into more interactive and student-centered learning spaces. It enables teachers to design authentic, contextrich materials that mirror real-world communication. Several studies found that technology integration:

- 1. Enhances motivation and engagement: Digital media (videos, gamification, and social platforms) make learning enjoyable and relevant to students' daily lives.
- 2. Supports teacher preparation: Teachers benefit from online resources that assist in lesson planning and material design.
- 3. Facilitates accessibility and inclusivity: Students in remote areas can participate in online or hybrid learning environments.
- 4. Improves English proficiency: Tools such as pronunciation software, vocabulary applications, and grammar platforms (e.g., Duolingo, Grammarly) enhance specific language skills.

Empirical findings suggest that digital learning tools contribute to better learning outcomes. For instance, studies found that students using interactive online platforms exhibited a 15–20% increase in performance compared to traditional classroom methods. Teachers also reported greater flexibility in managing time and materials.

#### 3.3 The Advantages and Disadvantages of Using Digital Technology in ELT Classroom

There are several advantages and disadvantages of using digital technology in ELT classroom as follow:

- 1. Advantages of ICT in ELT classroom:
- 2. Accessing the required information for educational purposes will become quicker and more efficient. The evolution of e-learning is contributing to the advancement of learning technique[28]. Furthermore, the progress in digital technology will facilitate the creation of virtual classrooms or teleconference-based ELT classes, eliminating the necessity for educators and students to be physically present in the same location.
- 3. Disadvantages of ICT in ELT classroom:

While the benefits of ICT are substantial, its disadvantages must be recognized to achieve balanced implementation. The reviewed studies identified several recurring challenges:

- 1. Infrastructure limitations: Many schools, particularly in rural Indonesia, lack sufficient internet bandwidth and digital facilities.
- 2. High operational costs: Internet connectivity and maintenance of digital devices are financially demanding. Some people experience problems in weak economic arrangements [30].
- 3. Limited digital literacy: Some teachers and students struggle to operate educational software effectively
- 4. Reduced social interaction: Over-reliance on digital media can diminish interpersonal communication and collaborative skills.

From a broader perspective, teachers reported technostress due to the constant need to adapt to new platforms, while parents expressed concern about excessive screen time and the potential for distraction from non-educational content. These findings align with prior research emphasizing the need for balanced technology integration

#### 3.4 Comparative Insights from Existing Literature

Comparison with international studies revealed both similarities and distinctions. Globally, ELT practitioners acknowledge the transformative role of technology in promoting autonomous learning. However, in Indonesia, the implementation gap remains evident due to infrastructure and training disparities. Studies from countries such as Malaysia and South Korea

demonstrate higher levels of ICT integration supported by institutional frameworks, whereas Indonesian teachers often rely on personal initiative and limited resources.

#### 3.5 Synthesis of Finding

Table 1 below summarizes the thematic synthesis of benefits and challenges across multiple perspectives.

Perspective	Key Benefits	Key Challenges
Students	Increased motivation, flexible access, multimedia engagement, improved autonomy	Internet dependence, distractions, limited self- regulation
Teachers	Access to authentic materials, enhanced lesson design, efficient evaluation	Technostress, limited training, unequal digital literacy
Parents	Easier monitoring of children's learning progress	Concerns about screen time, reduced social interaction
Institutions	Broader reach, cost-effective resource sharing, digital archives	Infrastructure costs, inconsistent policy support

Table 1. Summary of Digital Technology Implementation in ELT

Overall, the evidence suggests that while ICT integration in ELT yields substantial pedagogical benefits, its success largely depends on institutional support, teacher competence, and equitable access to technology.

#### 4 Discussions

The findings reinforce previous literature emphasizing the dual nature of technology in education, it is both an enabler and a challenge. Compared to global contexts, Indonesian ELT classrooms demonstrate significant progress in adopting digital tools, yet implementation remains uneven. The review also highlights contradictory findings, while many studies celebrate technology as a driver of engagement, others caution that overreliance can hinder critical thinking and interpersonal skills. Theoretically, this review supports constructivist and sociocultural learning theories, which perceive technology as a medium that facilitates interactive learning, learner-centered education. Practically, the results underscore the need for teacher professional development focused on digital pedagogy and sustainable ICT policies in schools.

However, every EFL student had a positive impression of the use of digital English learning in ELT classroom[29]. Studying English through digital tools not only improved their learning efficacy but also had a significant impact on other areas of language learning and increased language productivity. In recent years, scholars in English Language Teaching (ELT) have explored how EFL learners' study and develop their English language skills outside of a formal classroom using readily available digital devices and online resources due to the rapid advancement of technology[30]. This situation is known as informal digital learning of English (IDLE), which is defined as self-directed, autonomous learning that makes use of a range of digital devices, including social media, websites, and cellphones, to acquire and practice the language. Thus far, research has indicated a substantial correlation between increased levels of English language competence, vocabulary development, and intercultural communication skills and digital *English* learning outside of the classroom[31]. Digital gadgets have the potential to

enhance the autonomy of English as a foreign language (EFL) learner and provide them with opportunities for language practice[32].

Related to the English teaching and learning activities, there have been numbers of studies searching for the use of digital technology in the form of social media. The utilization of social media has grown to become the predominant form of media among individuals, reshaping the way people engage in communication and seek out information. Despite not being initially intended for educational purposes, it has garnered the attention of educators, particularly within the realm of English language learning. Numerous research studies have affirmed the potential of social media as a learning tool in English classrooms. A recent study was conducted by Safitri, et. al.[33]to investigate high school students' views on the use of social media for English learning. The findings of the study revealed that students engaged in using social media to enhance their English skills, with *YouTube* being the primary social media platform for English learning. Furthermore, they highlighted that social media serves as a source of English content, aiding them in practicing their language skills and expanding their vocabulary and pronunciation knowledge.

In a prior study by Faryadi[34], an investigation was carried out to determine if the use of *Facebook* had a positive impact on the English language proficiency, critical thinking, comprehension skills, and motivation of undergraduate students at Universiti Sains Islam Malaysia (USIM). A total of 900 undergraduate students took part in the study. The results of both a pre-test and a post-test indicated that students who utilized Facebook performed better (88.8% passed) compared to students who did not have exposure to *Facebook* (60% passed). The study's findings suggested that *Facebook* had a beneficial influence on students in enhancing their English proficiency, in addition to aiding in the acquisition of new vocabulary and terminologies. This research provides valuable insights for future researchers regarding the instructional approach to English language learning and assists them in creating a dynamic interactive multimedia learning environment within their classroom. When educators choose their teaching materials carefully, it can also boost students' engagements and learning effectiveness. This is because engaging materials can spark students' high levels of curiosity, make learning easier, and encourage greater student participation. Communication between teachers and students is also fostered through learning media.

A straightforward website learning tool also aids students in developing their English language skills[35]. One of the finest ways for students to swiftly enhance their English language proficiency, but there are still plenty of other options available to them. Using a website that is very simple to access online is one way to learn English for free. EFL Students should visit and use *Grammarly*, *Duolingo*, *BBC Learning English*, *VOA Learning English*, and *British Council* as recommended English learning resources[36].

Learning a language with the use of a portable mobile device is known as Mobile-Assisted Language Learning (MALL). It represents a subcategory of both computer-assisted language learning and mobile learning. Stockwell[37] conducted a comparison of the effects of a mobile-assisted learning platform and a PC-based platform on vocabulary results among language learners using smartphones. The findings indicated that there was no discernible variation in the learners' scores attained on the two platforms, and that learning via a mobile platform required a significantly longer time. It was discovered that the mobile interface and screen size where the reasons why learning activities on this platform took longer to complete. A recent analysis of MALL research indicates that many studies focus more on describing than introducing new ideas, and suggests conducting larger and longer-term research on the impact of mobile devices, especially the iPad, on language teaching and learning. MALL encompasses fifteen types of applications commonly utilized by students in English education programs to enhance their

learning, such as Kamusku, Google Translate, BBC, Grammar Test, English Idiomatic, U dictionary, YouTube, Elsa Speak, Duolingo, Quizlet, Speech Notes, Kahoot, Zoom, Google Meet, and Kine Master.

# **5** Conclusion

This systematic literature review has demonstrated that the implementation of digital technology in English Language Teaching (ELT) classrooms has significantly reshaped teaching and learning processes. Based on the synthesis of 45 reviewed studies (35 journal articles, 8 e-books, and 2 proceedings), it can be concluded that digital technologies—such as Computer-Based Learning, E-learning, Blended Learning, Digital Libraries, and Mobile-Assisted Language Learning—have enhanced classroom interactivity, flexibility, and learner autonomy.

Approximately 80% of the reviewed studies reported that the integration of digital technology improved student motivation, engagement, and achievement. Students benefited from more accessible, authentic, and varied learning materials, while teachers gained flexibility in lesson design and delivery. Institutions also experienced greater efficiency in managing resources and expanding learning opportunities beyond physical classrooms.

Nevertheless, challenges persist. The most common issues include limited internet infrastructure, unequal access to digital devices, high operational costs, and gaps in digital literacy among both teachers and students. These challenges are particularly evident in Indonesia's rural and underfunded schools, leading to an implementation gap compared to other countries with more developed ICT ecosystems.

Overall, the integration of ICT in ELT has proven transformative but requires continuous support to ensure sustainability and equity. The study reinforces the need for balanced technology adoption, where digital tools complement, rather than replace, human interaction and pedagogical creativity. When effectively integrated, ICT not only enhances English language proficiency but also fosters essential 21st-century competencies, including critical thinking, collaborative problem-solving, and digital communication skills. There are some suggestion from the result of this study:

## 1. For Educational Institutions:

Schools, universities, and training centers should prioritize the development of adequate ICT infrastructure, including high-speed internet, updated hardware, and access to digital libraries. Policies promoting equitable access—particularly for students in remote areas—are essential to ensure inclusive digital education.

## 2. For Teachers:

Teachers should engage in ongoing professional development to strengthen their digital pedagogical competencies. Training programs focusing on instructional design, e-learning management, and the ethical use of technology will help teachers integrate ICT more effectively into their lessons.

#### 3. For Students:

Students must cultivate digital literacy and self-regulation skills to use technology responsibly and productively. Schools should guide students to leverage ICT for academic purposes rather than entertainment or non-educational activities.

# 4. For Parents:

Parents play a key role in monitoring and supporting children's digital learning activities. They should encourage responsible internet use at home while maintaining open communication with teachers regarding learning progress and challenges.

#### 5. For Policymakers:

Educational policymakers should design comprehensive digital education strategies that address infrastructure disparities, provide sustainable funding, and align with national education goals. Collaboration with private sectors and international partners can further enhance ICT integration initiatives.

#### 6. For Future Researchers:

Future studies should conduct longitudinal and comparative research to examine the long-term impact of digital technology on learning outcomes, especially in varied geographical and socioeconomic contexts. Exploring cross-perspectives—from teachers, students, and parents—will provide a more holistic understanding of ICT's role in ELT.

## References

- [1] Prayudi RA, Hakiki AK, Putra NRD, et al. The use of technology in english teaching & learning process. J Ris Dan Inov Pembelajaran 2021;1:102–11.
- [2] Pasaribu GR, Daulay SH, Saragih Z. The implementation of ICT in teaching English by the teacher of MTS Swasta Al-Amin. English Lang Educ Spectr 2023;3:47–60.
- [3] Chen AN, Castillo J, Ligon K. Information and communication technologies (ICT): Components, dimensions, and its correlates. J Int Technol Inf Manag 2015;24:2.
- [4] Octaberlina LR. Exploring the use of digital technology in English language teaching: strategies and methods for effective implementation. ENGLISH Fr Acad J English Lang Educ 2023;7:217–34.
- [5] Muslimin AI, Mukminatien N, Ivone FM. TPACK-SAMR digital literacy competence, technostress, and teaching performance: correlational study among EFL lecturers. Contemp Educ Technol 2023;15.
- [6] Yermekkyzy A. Using ICT Applications in EFL Teaching: Challenges and Experiences of Novice vs. Exp English Teach 2022.
- [7] Iskandar I, Sumarni S, Dewanti R, et al. Infusing Digital Literacy in Authentic Academic Digital Practices of English Language Teaching at Universities. Int J Lang Educ 2022;6:75–90.
- [8] Parvin RH, Salam SF. The effectiveness of using technology in English language classrooms in government primary schools in Bangladesh. FIRE Forum Int. Res. Educ., vol. 2, ERIC; 2015, p. 47–59.
- [9] Altınay F, Dagli G, Altınay Z. The role of information technology in becoming learning organization. Procedia Comput Sci 2016;102:663–7.
- [10] Hassan MM, Mirza T. The digital literacy in teachers of the schools of Rajouri (J&K)-India: Teachers perspective. Int J Educ Manag Eng 2021;11:28.
- [11] Huang X, Hu X. Teachers' and Students' Perceptions of Classroom Activities Commonly Used in English Speaking Classes. High Educ Stud 2016;6:87–100.
- [12] Barzani SHH. The perceptions of EFL teachers and students on the use of short stories to enhance reading comprehension. Asian EFL J 2020;27:325–41.
- [13] Salomone R, Salomone RC. The rise of English: Global politics and the power of language. Oxford University Press; 2022.
- [14] Kitchenham B, Charters S. Guidelines for performing systematic literature reviews in software engineering 2007.
- [15] Merta LWS, Ratminingsih NM, Budasi IG. The integration of technology in English language teaching to stimulate students' critical thinking. Lang Circ J Lang Lit

- 2023;17:333-41.
- [16] Siddique N, Rehman SU, Khan MA, et al. Library and information science research in Pakistan: A bibliometric analysis, 1957–2018. J Librariansh Inf Sci 2021;53:89–102.
- [17] Huberman A. Qualitative data analysis a methods sourcebook 2019.
- [18] Fraenkel JR, Wallen NE. How to design and evaluate research in education. ERIC; 1990.
- [19] Yusny R, Rizki F, Trisnawati IK, et al. Offline or online?: EFL students' perceptions on working in face-to-face and virtual learning modes. Englisia J Lang Educ Humanit 2021;9:113–28.
- [20] Riaz F, Mahmood SE, Begum T, et al. Students' preferences and perceptions regarding online versus offline teaching and learning post-COVID-19 lockdown. Sustainability 2023;15:2362.
- [21] Adara RA, Haqiyah A. Improving Indonesian EFL learners' motivation through computer assisted learning (CALL). J English Lang Stud 2021;6:110–21.
- [22] Bobadilla H. Optimizing Computer-Based Instruction in an Undergraduate Course. Western Michigan University; 2021.
- [23] Sokyrska OS, Buha SY, Kolisnyk MP, et al. Modern trends in ELT through e-learning platforms 2023.
- [24] Paliath G, Evangeline M. E-Learning and Social Media for ELT-Teachers' Perspective. J Lang Teach Res 2022;13:1357–64.
- [25] Menggo S, Darong HC. Blended learning in ESL/EFL class. LLT J A J Lang Lang Teach 2022;25:132–48.
- [26] Almunawaroh NF. The Effectiveness of Using an E-book in ELT: worldwide cases. TLEMC (Teaching Learn English Multicult Context 2020;4:68–74.
- [27] Sarsekeyeva AT, Serik MS, Baigozhina ZHM. Integrating multimedia and digital technology in secondary school english language teaching (elt) program. Bull Shokan Ualikhanov Kokshetau Univ Philol Ser 2022:111–9.
- [28] Haleem A, Javaid M, Asim M, et al. Understanding the role of digital technologies in education: A review. Sustain Oper Comput 2022;3:275–85.
- [29] Masykuri ES, Basuki B. Students' perception of digital media for English teaching learning. Teach English as a Foreign Lang J 2022;1:64–73.
- [30] Lee JS, Sylvén LK. The role of Informal Digital Learning of English in Korean and Swedish EFL learners' communication behaviour. Br J Educ Technol 2021;52:1279– 96
- [31] Lee JS. Quantity and diversity of informal digital learning of English 2019.
- [32] Nugroho A, Singh S. Exploring the Students' Perception of ICT Integration in Indonesian EFL Classroom: A Game Changer or a Setback. Lang India 2024;24.
- [33] Safitri M, Yuliyani A, Hamid F, et al. The use of social media for learning english: students perspective. Indones EFL J 2022;8:269–76.
- [34] Faryadi Q. Effectiveness of Facebook in English language learning: A case study. Online Submiss 2017;4:1–11.
- [35] Famularsih S. Students' experiences in using online learning applications due to COVID-19 in English classroom. Stud Learn Teach 2020;1:112–21.
- [36] Koutská I. Educational technology 'introduced' by the COVID-19 pandemic. Innoeduca Int J Technol Educ Innov 2023;9:115–33.
- [37] Stockwell G. Using mobile phones for vocabulary activities: Examining the effect of platform 2010.