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TECHNOLOGY INTEGRATION IN INDONESIAN EFL CLASSROOMS: PATTERNS, CONSIDERATIONS, AND IMPACTS

Annisa Nurul Lestari[1], Sofendi[2], Machdalena Vianty[3]
[123]*Language Education Study Program, Faculty of Teacher Training and Education, Universitas Sriwijaya, Indonesia*

Corresponding author: machdalenavianty@fkip.unsri.ac.id

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Abstract: This study examines how educational technologies are integrated into English as a Foreign Language (EFL) teaching and learning at a public senior high school in Indonesia from both teacher and student perspectives. Data were collected through open-ended questionnaires from 306 students and semi-structured interviews with seven English teachers and analyzed using Braun and Clarke's (2006) Thematic Analysis. The findings reveal that a wide range of technologies including hardware, communication tools, learning platforms, AI tools, online dictionaries, presentation tools, and social media support EFL learning. Teachers' technology use is influenced by pedagogical clarity, practicality, device compatibility, and school-supported facilities, while students utilize digital tools to enhance comprehension, vocabulary, pronunciation, and assignment completion. Technology improves students' motivation, engagement, and participation, but challenges such as unstable internet, limited devices, technical disruptions, and lack of dedicated multimedia spaces remain. Coping strategies include preparing backup materials, sharing devices, using school Wi-Fi, employing offline alternatives, and seeking peer or teacher support. Overall, technology positively contributes to learning effectiveness, but strengthening digital readiness and school infrastructure is essential to maximize its potential. This study uniquely triangulates teacher and student perspectives in a resource-constrained context, offering practical implications for EFL classrooms.
Keywords: *technology integration; EFL classroom; Indonesian high school; digital tools; classroom practices*

INTRODUCTION

The rapid development of digital technologies has transformed the landscape of education and reshaped how teachers and students interact with learning materials, particularly in English as a Foreign Language (EFL) contexts. In Indonesia, the integration of technology into classroom practices has become increasingly significant following national reforms that emphasize digital literacy, flexible learning, and student centered instruction. Through the implementation of various educational policies, schools are encouraged to utilize technological tools that enhance engagement, expand access to resources, and support communication beyond traditional classroom boundaries. As a result, technology is now viewed not only as a pedagogical support but also as a fundamental component of modern teaching and learning practices. Technology in education has developed into smart learning environments that integrate digital tools, data driven systems, and interactive platforms to create adaptive, flexible, and learner centered learning experiences (Maulidiya et al., 2024). In EFL classrooms, technology provides meaningful opportunities for students to develop language skills through interactive, authentic, and multimodal resources. Studies have highlighted that digital platforms such as Learning Management Systems, mobile applications, online dictionaries, collaborative tools, and video based learning contribute to improving learners' motivation, autonomy, and exposure to real world language use (Ahmada & Rizkiyah, 2025). The use of digital tools supports flexible and personalized learning experiences, allowing

students to engage in self directed learning (Mncube et al., 2026).

Technology in education refers to the use of computers, the internet, digital media, and other tools to support teaching and learning processes (Todino et al., 2022). According to Kasumu and Augustine (2022), educational technology enhances the quality of learning by making instruction more effective, engaging, and accessible. A more specific term within this field is Information and Communication Technology (ICT), which refers to digital tools used to collect, process, store, and communicate information (Anisyah et al., 2025). However, while many studies emphasize the positive contribution of technology to learning outcomes, other scholars caution that technology integration does not automatically lead to effective learning unless it is supported by appropriate pedagogical strategies, teacher readiness, and contextual alignment. This suggests that the impact of technology in EFL classrooms is complex and requires careful examination beyond its perceived benefits (Ratnasarie Sy et al., 2023).

Recent studies in EFL contexts consistently demonstrate that technology integration can enhance language learning outcomes, particularly in terms of students' motivation, engagement, and autonomy. In addition, recent research highlights that technology supported learning environments can create more interactive and student centered experiences, which contribute to deeper learning and improved language proficiency (Li et al., 2025). However, these studies also reveal that the effectiveness of technology largely depends on how it is pedagogically implemented. Furthermore, the integration of artificial intelligence and digital platforms in EFL contexts has been found to enhance learners' motivation and engagement by providing adaptive and personalized learning experiences (Wang et al., 2024). While some researchers focus on specific tools such as mobile applications or Learning Management Systems, others highlight broader frameworks of digital pedagogy, emphasizing the importance of aligning technology use with instructional goals. Moreover, systematic evidence suggests that the success of technology integration is strongly influenced by instructional design and contextual factors, rather than the technology itself (AlTwijri & Alghizzi, 2024). This body of research represents the current state of the art, showing a shift from viewing technology as a supplementary tool toward understanding it as an integral component of teaching and learning ecosystems.

Technology facilitates personalized learning pathways that allow students to engage with content based on their needs and preferences. Technology facilitates personalized learning pathways that allow students to engage with content based on their needs and preferences. Recent studies also show that technology enhanced language learning environments can increase learner engagement and autonomy through interactive and self directed learning experiences (Kohnke et al., 2023). Similarly, Blanc et al., (2025) explain that technology supported learning environments encourage students to take greater responsibility for their learning and build digital competencies required in the 21st century. For instance, learning platforms can provide adaptive feedback based on individual performance, allowing students to set realistic and achievable goals and adjust their study plans accordingly (Mejeh et al., 2024). In addition, the self directed use of digital technologies beyond the classroom has been found to support more flexible and personalized learning processes, enabling learners to take control of their own language development (Lai & Zheng, 2023) These findings illustrate that technology has the potential to enrich the EFL learning experience when carefully integrated into pedagogy. At the same time, research has also reported that excessive reliance on technology, limited pedagogical integration, or insufficient digital competence may reduce instructional effectiveness and increase cognitive or technical burdens for both teachers and learners.

Despite these advantages, technology integration in Indonesian schools faces continuing challenges. Recent studies highlight that infrastructure limitations, particularly unstable internet access and unequal distribution of digital resources, remain significant barriers to effective technology integration in developing educational contexts (Aboagye et al., 2020). Previous research reports that issues such as unstable internet connectivity, limited access to devices, insufficient training, and varied digital competencies among teachers influence the effectiveness of technology use in the classroom. In addition, research shows that teachers' digital competence and confidence play a crucial role in determining whether technology can be meaningfully integrated into classroom practices (Falloon, 2020). Teachers often express concerns

about balancing technological demands with curriculum expectations, while students may struggle with unfamiliar digital platforms or lack consistency in accessing digital tools. Moreover, studies indicate that students in resource limited settings often face challenges related to digital literacy and access, which can hinder their ability to fully benefit from technology enhanced learning (Antoninis et al., 2023). Studies in the Indonesian context (Inderawati et al., 2020) show that although teachers generally have positive attitudes toward technology, its implementation remains inconsistent due to limited infrastructure and variations in teachers' technological preparedness. This indicates a gap between policy aspirations and classroom realities, especially in schools where resources and digital support systems are limited.

Although prior studies provide valuable insights, most of them tend to examine technology integration from a single perspective, either focusing on teachers or students, or concentrate on specific tools rather than exploring the interaction between pedagogical, technological, and contextual dimensions. Furthermore, limited attention has been given to how technology is experienced simultaneously by both teachers and students within everyday classroom practices, particularly in suburban or resource constrained school settings. This reveals a critical research gap in understanding the holistic and context dependent nature of technology integration in EFL classrooms.

These challenges also appear in the context of this public senior high school. Based on initial observations, student questionnaires, and interviews with teachers, it was revealed that technology was used frequently but not always systematically. Both teachers and students make use of tools such as Google Classroom, WhatsApp, PowerPoint, projectors, and online videos for instructional purposes. However, the use of these tools is often influenced by factors such as internet availability, personal familiarity with applications, and the perceived usefulness of digital resources. Some teachers integrate technology to enhance engagement and clarify materials, while others view it as an additional challenge due to technical barriers. Students similarly report that technology helps them understand lessons more easily but may also create difficulties when devices or connections fail. These conditions demonstrate that the integration of technology in an EFL setting is complex and context dependent. Addressing this gap, the present study offers a novel contribution by simultaneously examining both teachers' and students' perspectives on technology integration within a real classroom context. Unlike previous studies that isolate variables or tools, this research adopts a comprehensive approach by integrating the Technology Acceptance Model (TAM) and the Technological Pedagogical Content Knowledge (TPACK) framework. This combination provides a more holistic understanding of how technological acceptance and pedagogical competence interact in shaping classroom practices.

Therefore, this study aims to explore how educational technologies are integrated into EFL teaching and learning in a public senior high school in Indonesia. Guided by the Technology Acceptance Model (TAM) and the Technological Pedagogical Content Knowledge (TPACK) framework, which together provide insight into users' perceptions of technology use and teachers' ability to integrate technology with pedagogy and content, the research investigates: (1) the types of technologies used by teachers and students; (2) the considerations underlying their use; (3) the benefits and challenges encountered; and (4) how technology influences teaching practices and students' learning experiences. TAM is employed to understand teachers' and students' acceptance of educational technology in terms of perceived usefulness and ease of use, while TPACK informs the analysis of how teachers integrate technology meaningfully into instructional practices. This study employs a qualitative design using open ended questionnaires and semi structured interviews to gain rich and nuanced insights from both teachers and students.

The significance of this study lies in its potential to provide context specific insights into the realities of technology integration in Indonesian EFL classrooms, particularly in underrepresented school settings. The findings are expected to contribute to the existing literature by offering a more nuanced understanding of the interplay between technology, pedagogy, and context, as well as informing teachers, school leaders, and policymakers in designing more effective, inclusive, and sustainable technology enhanced learning environments.

METHOD

This study was conducted in a public senior high school in Indonesia during the first semester of the 2025/2026 academic year. The study adopted

a qualitative research design to explore teachers' and students' experiences with the integration of educational technology in EFL classrooms. This design was considered appropriate because it allowed the researcher to gain in-depth and contextualized insights into how technology was used, perceived, and experienced in everyday classroom practices.

The participants of this study consisted of all English teachers and students from Grades 10, 11, and 12 at the selected public senior high school. All seven English teachers at the school were included through purposive sampling, as they were directly responsible for planning, selecting, and implementing educational technologies in English instruction. Their participation was essential to understanding pedagogical decisions, instructional strategies, and challenges related to technology integration.

The student participants were selected using purposive and convenience sampling, focusing on students who actively participated in technology-supported English learning activities. Rather than aiming for statistical representativeness, the selection of student participants was intended to capture a wide range of experiences and perspectives relevant to the study's qualitative goals. A total of 306 students from Grades 10, 11, and 12 voluntarily participated by completing the open-ended questionnaire. The relatively large number of student participants was intended to enhance the richness and variation of qualitative responses rather than to achieve generalizability.

The inclusion of all grade levels was intended to ensure that the study represented students' experiences across different stages of high school education. By involving Grades 10, 11, and 12, the researcher aimed to gain a more comprehensive understanding of how technology is integrated and used in English classrooms at various levels. Grade 10 students are in the early stage of their high school journey, learning to adapt to new academic environments and classroom technologies. Grade 11 students are in the middle stage, more academically stable, and have already developed familiarity with using digital tools in their English lessons. Meanwhile, Grade 12 students, although they are more focused on final examinations and university preparation, still participate in technology-based classroom activities such as review sessions and test preparation. Including all three grade levels helps provide a broader and more balanced picture of how educational technology supports classroom learning in different student contexts.

Data were collected through open-ended questionnaires and semi-structured interviews. The open-ended questionnaire was administered to students and consisted of items designed to explore their experiences with technology-supported English learning. The questions were developed and categorized based on the constructs of the Technology Acceptance Model (TAM) and the Technological Pedagogical Content Knowledge (TPACK) framework. Items aligned with TAM elicited information on students' perceived usefulness and perceived ease of use of educational technologies, while TPACK-based items explored how students experienced the integration of technological, pedagogical, and content elements during English learning.

The student questionnaire consisted of seven main open-ended questions that asked students about their use of educational technology, the types of technologies they commonly used, the reasons for using these technologies, and how digital tools supported their learning activities. Additional questions examined perceived benefits, encountered challenges, and strategies used to overcome technological difficulties. The open-ended format allowed students to express their views freely and provide detailed descriptions of their learning experiences during the 2025/2026 academic year.

Semi-structured interviews were conducted with the English teachers to obtain deeper and more contextualized insights into their instructional practices involving educational technology. The interview guide consisted of seven core questions parallel to those given to students but adapted to reflect teachers' professional roles. The interviews explored teachers' use of educational technology, the types of tools employed, reasons for selecting particular technologies, and strategies for integrating them into classroom instruction. Follow-up questions were used to clarify responses and encourage elaboration, allowing for consistency across interviews while generating rich qualitative data.

All qualitative data from student questionnaires and teacher interviews were analyzed using thematic analysis following the six-phase framework proposed by Braun and Clarke (2006). The analysis involved familiarization with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the final interpretation. Student questionnaire responses were coded to identify patterns related

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to technology use, perceived usefulness, challenges, and coping strategies. Teacher interview transcripts were analyzed in parallel to examine pedagogical considerations, instructional practices, and contextual constraints influencing technology integration. Triangulation was conducted by comparing and cross-checking themes emerging from student and teacher data to identify convergent and divergent perspectives, thereby strengthening the credibility of the findings. Throughout the analysis, TAM and TPACK functioned as analytical lenses to interpret themes related to technology acceptance and pedagogical integration.

Ethical considerations were addressed throughout the research process. Prior to data collection, permission was obtained from the school administration. Participants were informed about the purpose of the study, and informed consent was obtained from all teachers and students. For student participants, consent procedures followed school regulations, and participation was voluntary. All participants were assured of confidentiality and anonymity, and pseudonyms were used during data reporting.

To enhance the trustworthiness of the study, several strategies were employed. Credibility was supported through data triangulation between questionnaires and interviews. Member checking was conducted with selected teacher participants to confirm the accuracy of interview interpretations. Dependability was ensured by maintaining an audit trail documenting data collection and analysis procedures. Confirmability was addressed through researcher reflexivity, with reflective notes used to minimize personal bias during data interpretation. These measures strengthened the inflexibility and transparency of the qualitative analysis.

RESULTS AND DISCUSSION

This section presents the integrated findings and discussion based on three major themes: Patterns of Technology Use, Pedagogical and Practical Considerations, and Impact on Learning Experiences.

Patterns of technology use in EFL classrooms

The findings revealed three main aspects that shape technology integration in the EFL classroom: teachers' digital practices, students' digital habits, and the school context. Teachers' digital practices refer to how teachers select and use technology to support their instructional goals. Students' digital habits show how learners engage with technology to enhance their English learning inside the classroom. The school context highlights institutional factors, such as policies, infrastructure, and support, that influence how technology is applied.

Teachers' digital practices

To better understand how teachers integrate technology into their English language classrooms, this study explored various digital practices implemented by EFL teachers. Data were collected from interviews to identify the types of technologies teachers frequently use and how these tools support teaching and learning processes. The findings highlight the range of digital tools used in classrooms and their perceived benefits in facilitating effective English language teaching.

Table 1. *Teachers' digital practices in technology-Enhanced EFL instruction*

No	Category	Technologies	Teacher's View
1	Instructional Hardware	Projector, laptop, speaker, mobile phone	Teacher 4: "What I use in class is mostly just my handphone." Teacher 3: "I use my laptop to type assignments and connect it to the projector when my group presents." Teacher 1: "I use audio for listening activities; the sound helps students practice listening comprehension." Teacher 2: "With the projector, I can show videos or slides that are more engaging than just talking. Students seem more interested and participate actively."
2	Presentation Tools	PowerPoint, Canva	Teacher 4: "PowerPoint is useful for showing examples, charts, or vocabulary lists. It saves time and reduces the need to write everything on the board." Teacher 1: "I create interactive and colorful worksheets using Canva. Students like the design, and it motivates

			them to participate."
3	Media Platforms	YouTube	Teacher 6: "YouTube is very useful and enjoyable for learning."
4	Digital Assessment Tools	Quizizz, Kahoot!	Teacher 5: "Quizizz is interesting… it has music to increase motivation." Teacher 1: "I often use Kahoot to check students' understanding quickly. It's fun, and students seem more motivated to answer questions."
5	Learning Management System	Google Classroom, Google Forms, Google Drive	Teacher 1: "I use Google Classroom to share assignments and materials with students. It's easier for them to access everything in one place." Teacher 5: "Sometimes I create interactive exercises with Google Forms. Students enjoy answering questions online more than on paper." Teacher 3: "Students can submit their projects via Google Drive. It reduces paper usage and keeps everything organized."
6	Communication Tools	WhatsApp	Teacher 2: "I share the link materials through WhatsApp so students understand more easily."

Teachers in this public senior high school actively integrate various digital tools to support English language teaching and learning. Instructional hardware, such as projectors, laptops, speakers, and mobile phones, is used to make lessons more engaging and to help students understand content through visual and auditory support. This aligns with Mayer's Multimedia Learning Theory (2009), which explains that students learn more effectively when information is presented through both visual and auditory channels, enabling deeper processing and retention. Presentation tools like PowerPoint and Canva allow teachers to organize materials clearly and create interactive, attractive worksheets that motivate students to participate. Moradkhani and Mansouri (2023) supports this by arguing that multimedia-based materials enhance learners' motivation and comprehension because they present information in more concrete and engaging forms.

Media platforms, particularly YouTube, provide authentic and enjoyable content that helps students learn English in real-life contexts. Educational researchers argue that exposure to authentic multimedia enhances learners' engagement and supports deeper understanding. According to Nuralisa et al., (2025), authentic materials offer meaningful language input that reflects real communication, allowing students to develop practical listening and comprehension skills. Similarly, Husnawati et al., (2024) emphasizes that that authentic learning materials positively influence students' intrinsic motivation and participation by making learning content more relatable and applicable to real-life situations. Digital assessment tools, including Quizizz and Kahoot, are also widely used to check students' understanding in a fun and interactive way, offering immediate feedback and sustaining motivation. Chans et al., (2021) state that gamified assessment creates a competitive yet enjoyable learning environment that increases students' motivation and encourages active participation. In addition**,** Mdlalose et al., (2022) found that tools like Kahoot enhance classroom interaction, improve focus, and make assessment more effective by providing instant results that help students track their progress.

Learning Management Systems, such as Google Classroom, Google Forms, and Google Drive, facilitate the sharing of materials, collection of assignments, and delivery of online exercises, which support independent learning and reduce paper usage. Yan (2024) highlight that digital platforms and mobile-supported tools offer flexibility and accessibility, allowing teachers to integrate resources effectively into classroom instruction. In addition, communication tools like WhatsApp are employed to share learning resources and instructions quickly, enabling teachers to support students outside the classroom.

Communication tools such as WhatsApp help teachers and students stay connected outside the classroom. Its quick and easy use allows teachers to send materials, reminders, and explanations, which supports continuous learning. Researchers agree that communication technology can improve teacher and student interaction. Lee et al., (2023) explains that WhatsApp encourages active communication and helps students participate more. Kukulska Hulme and Shield (2008) also state that c

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Students' digital habits

Students in this public senior high school show varied digital habits in learning English, using a wide range of tools to support their learning process. The results show that students in this public senior high school use many different digital technologies to support their English learning. Each tool has a specific function, but together they make learning more practical, easier, and more engaging. Mobile phones are used the most because students can access everything they need in one device. Other technologies, such as presentation tools, communication platforms, media resources, game-based applications, mobile learning apps, AI tools, translation tools, and social media, also help students understand lessons, complete tasks, and stay motivated. These patterns support experts who state that using various digital tools can improve language learning by providing more resources, increasing interaction, and supporting independent learning. Overall, the data shows that technology is now an important part of how students learn English

Table 2. *Students' digital habits in English learning*

No	Category	Technologies	Student's View
1	Instructional Hardware	Mobile Phone, Laptop, Projector, Speaker	189 students (61.8%) used mobile phones because learning becomes practical, easier, and faster. 9 students (2.9%) used projectors, 16 students (5.2%) used laptops, and 2 students (0.7%) used speakers. Overall, these tools make learning more practical, easier, and faster.
2	Presentation Tools	PowerPoint, Canva	9 students (2.9%) used PowerPoint and 5 students (1.6%) used Canva, mainly for typing assignments and presentations.
3	Communication Tools	WhatsApp	131 students (42.8%) used WhatsApp for sharing materials, links, instructions, and communication.
4	Media Platforms	YouTube	78 students (25.5%) used videos for comprehension and review.
5	Game-Based Tools	Quizizz, Kahoot!	9.8% used Quizizz and 6.5% used Kahoot. These tools make learning more enjoyable.
6	Mobile Learning Apps	Duolingo, BBC Learning English	Duolingo (7.5%) and BBC Learning English (1%) are used to practice vocabulary, grammar, and pronunciation.
7	AI Tools	ChatGPT, Gemini AI, Meta AI, CiciAI, DeepL	ChatGPT (54.2%), Gemini AI (10.8%), Meta AI (3.6%), CiciAI (6.5%), and DeepL (1.6%) are used for explaining lessons, generating sentences, and translating difficult words.
8	Translation & Dictionary Tools	Google Search, Google Translate, Oxford Dictionary	Google Search (26.5%), Google Translate (34%), and Oxford Dictionary (1%) are used because they are fast, practical, and help with word meaning and vocabulary improvement.
9	Social Media	TikTok, Instagram	TikTok (4.9%) and Instagram (2.6%) are used for speaking tasks, grammar content, and short videos.

Students used a wide range of technologies to support their English learning, and each tool served different learning purposes. For instructional hardware, most students relied on mobile phones, with 189 students (61.8%) reporting frequent use because phones make learning more practical, easier, and faster. A smaller number used other devices such as projectors (9 students or 2.9%), laptops (16 students or 5.2%), and speakers (2 students or 0.7%), mainly to support classroom presentations and audio clarity. This indicates that mobile phones remain the most dominant hardware because they are accessible and multifunctional. According to Chen and Tang (2023) mobile devices are widely used in language learning because they support flexibility and allow learners to access many tools in one device. In terms of presentation tools, students used applications like PowerPoint and Canva. Only 9 students (2.9%) used PowerPoint and 5 students (1.6%) used Canva, mainly for typing assignments and preparing visual presentations. This suggests that while presentation design tools are helpful, they are not the main focus of students' daily learning activities. Communication tools, especially WhatsApp, played a major role. A total of 131 students (42.8%) used WhatsApp to receive materials, links, instructions, and to communicate with teachers and peers. This shows that instant messaging apps are essential for maintaining

learning flow. As supported by Burhanuddin and Sofa (2024) shows that students tend to choose WhatsApp over formal LMS because it offers easier access and faster communication that supports collaboration and interaction among learners. Students also used various media platforms, with 78 students (25.5%) choosing YouTube for understanding lessons, improving comprehension, and reviewing materials through videos. Game-based learning tools were also used, including Quizizz (9.8%) and Kahoot! (6.5%), which made learning more enjoyable and interactive. Mobile learning applications such as Duolingo (7.5%) and BBC Learning English (1%) helped students practice vocabulary, grammar, and pronunciation. These apps promote independent learning, which aligns with Otahanova (2025) who states that mobile apps encourage self-paced language practice. Artificial intelligence tools were among the most frequently used. ChatGPT was used by 54.2% of students, followed by Gemini AI (10.8%), Meta AI (3.6%), CiciAI (6.5%), and DeepL (1.6%). Students used these tools for explanations, generating sentences, translating difficult words, and understanding complex topics. This supports the argument by Zheng and Wang (2023) that AI tools help students access immediate feedback and clearer explanations. Translation and dictionary tools also contributed to learning. Google Search was used by 26.5% of students, Google Translate by 34%, and the Oxford Dictionary by 1%. These tools provided practical help for identifying word meanings and increasing vocabulary knowledge. Finally, social media platforms such as TikTok (4.9%) and Instagram (2.6%) were used for speaking tasks, grammar content, and short learning videos. This demonstrates that students also learn informally through engaging and entertaining content. As argued by Sumin (2020), social media supports language learning because it provides authentic examples of real language use.Overall, the data shows that students combine hardware, communication apps, media platforms, learning apps, AI tools, and social media to create a flexible and dynamic English learning environment. The findings confirm expert views that digital tools enhance convenience, motivation, and personalized learning.

School context

The data shows that in this public senior high school provides several forms of institutional support that help teachers and students integrate technology effectively in the classroom. These supports include reliable internet access, multimedia facilities, teacher-led use of digital tools, and students' alignment with school-provided resources. Together, these factors create a learning environment where technology can be used smoothly and purposefully during lessons. This reflects the view of experts such as Mursalina et al., (2025), who explain that school-level support strongly influences how technology is used in daily teaching practices.

Table 3. *School context supporting technology integration*

No	School Aspect	Description of Support	Supporting Evidence
1	Internet Access	Wi-Fi for teachers and students	"Students can use the school's Wi-Fi… this helps them continue learning." (T1)
2	Multimedia Facilities	Projectors, speakers, and labs used daily	"We have speakers and projectors for listening & presentations." (T2)
3	Teacher-Led Integration	YouTube, projectors, and LMS embedded in lesson stages	"I use the projector and YouTube in the pre-activity stage." (T7)
4	Student Alignment with School Facilities	Students follow teacher instructions using school-supported tools	"We open the links directly in class using Wi-Fi." (Student)

The first type of support is the availability of internet access for both teachers and students. The statement from Teacher 1 *"Students can use the school's Wi-Fi… this helps them continue learning."* it shows that Wi-Fi allows students to access materials, search for information, and complete digital tasks more easily. This aligns with Celestin et al., (2025), who state that stable internet access is essential for meaningful technology integration. Second, the school provides multimedia facilities such as projectors, speakers, and computer labs, which are used regularly for lessons. As mentioned by Teacher 2, these tools support listening activities and presentations, making lessons more interactive. This supports Mayer's Multimedia Learning Theory (2009), which argues that combining visual and auditory input improves

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comprehension. Third, teachers actively integrate digital tools such as YouTube, Learning Management Systems, and projectors within the lesson stages. Teacher 7 explains the use of YouTube and projectors in the pre-activity phase, showing that technology is embedded in structured teaching routines. This is consistent with Zhang and Zhou (2023), who highlight that teacher practice plays a key role in effective technology integration. Finally, students' actions match the school's technological support. They use Wi-Fi and digital links provided by teachers directly during class. The student statement ("We open the links directly in class using Wi-Fi.") shows that students adapt to the tools and facilities available. This aligns with Abdulganie et al., (2025) note that students' engagement with school-provided technology increases participation and learning efficiency.

Pedagogical and practical considerations for technology integration

Teachers use technology in their English classrooms based on three main considerations: pedagogical purposes, practical needs, and institutional or situational factors. Pedagogical purposes mean that teachers choose technology to support teaching and learning. They use digital tools to explain materials more clearly, make lessons more interactive, and help students practice their English skills in different ways. Practical considerations are related to what is easy and realistic to use in daily teaching. Teachers think about the availability of devices, internet connection, how simple the tools are, and whether the technology can save time during teaching. Institutional or situational influences come from the school environment. Teachers' choices depend on school policies, available facilities (such as projectors or Wi-Fi), administrative support, and training opportunities. Classroom conditions and students' readiness also influence how technology is used.

Pedagogical purposes

This presents the various types of technologies used by teachers to support pedagogical purposes in English teaching. These technologies are selected because they help make lesson content clearer, more engaging, and easier for students to understand. Each tool serves a specific learning function, such as presenting materials, building background knowledge, supporting listening practice, or guiding students in writing activities. The table also includes teachers' views to show how these technologies contribute to improving students' comprehension and participation during lessons.

Table 4. *Pedagogical purposes*

Type of Technology	Category	How the Technology Supports Learning	Teacher's View
PowerPoint & Canva Slides	Presentation Tools	To present and clarify lesson content and provide models of text types. Visual elements (images, colors, layout) make concepts clearer, more engaging, and easier to understand.	Teacher 2: "I use PowerPoint… the pictures, colors, and text make the lesson clearer and more interesting."
Projector	Instructional Hardware	To display learning materials to the whole class. Helps students see examples, images, and explanations clearly, increasing focus and comprehension.	Teacher 5: "The projector helps us understand the material better because we can see the pictures and explanations clearly."
YouTube Videos	Media Platforms	To build background knowledge before reading or speaking and provide authentic examples. Videos give context, real-life examples, and support students' understanding of the text.	Teacher 1: "I show a short video so students get the idea and context before we start reading."
Audio Listening Materials	Instructional Media	To develop listening comprehension and pronunciation skills. Audio helps students recognize sounds, intonation, and meaning in dialogues.	Teacher 7: "I use audio for listening activities, especially when teaching short dialogues."
Padlet / Online Writing Tools	Digital Writing Tools	To practice writing skills and encourage interactive learning. Students can write texts, view peers' work, and respond to each other.	Teacher 2: "They can also respond to each other, making the activity more interactive."

It shows that teachers use technology primarily to support learning, engagement, and skill development. Tools such as PowerPoint/Canva slides, projectors, YouTube videos, audio materials, and online writing platforms are chosen because they help explain content more effectively and give students more meaningful exposure to English. This finding aligns with Clark and Mayer (2016) who emphasize that well-designed multimedia presentations can reduce students' cognitive load and make complex ideas easier to understand. Teachers' comments in the table also reflect this idea, especially their emphasis on using visuals to make lessons clearer and more interesting. The use of videos and authentic listening materials aligns with Rakhmawati et al., (2023) who argues that video resources provide real-life language situations that help learners build background knowledge and understand context before engaging with texts. Teacher 1's practice of showing short videos before reading activities is consistent with this view. Interactive tools like Padlet support collaborative writing and peer learning. When teachers note that students "respond to each other," it shows that technology helps create these interactive learning spaces. Overall, the technologies listed in Table 4 function as pedagogical support tools that enhance the understanding of lesson content, provide authentic input, and encourage collaborative learning, which are widely recognized in the literature as essential for meaningful language learning.

Practical considerations of technologies

This presents the practical factors that shape teachers' and students' decisions when using technology in English classrooms. These factors include simplicity, efficiency, device availability, and internet accessibility. Each of these practical considerations influences how technology can be integrated into daily learning activities. The table also highlights how both teachers and students respond to these conditions, showing that practical realities often determine which tools are chosen and how effectively they can be used.

Table 5. *Practical considerations of technologies*

Practical Factor	Description	How It Influenced Teachers	How It Influenced Students
Simplicity & Ease of Use	Tools needed to be simple, familiar, and quick to operate	Teachers selected tools that were easy and quick to prepare. Teacher 1: "I choose Canva because it is simple and easy for me to use."	Students could follow lessons smoothly because formats were familiar. Student: "Mobile phone makes it easy to open materials."
Efficiency & Fast Access	Technology should save time and make tasks faster	Teachers preferred tools that automated checking. Teacher 6: "Google Forms is very practical… I can check the answers automatically."	Students used phones to complete tasks quickly. Student: "It is faster for us to use our phones than to write everything."
Device Availability (Mobile Phones)	Most students owned Android phones, guiding tool selection	Teachers chose applications compatible with students' devices. Teacher 2: "Most students have Android phones, so I can easily share materials through WhatsApp."	Students accessed links, videos, and materials easily. Student: "I bring my phone because it is easier to open the materials and do the assignments… I can access everything faster with my phone."
Internet Accessibility (School Wi-Fi)	School Wi-Fi supported online learning when students lacked personal data	Teachers relied on school Wi-Fi to support online activities. Teacher 1: "If students have limited internet access at home, they can use the school Wi-Fi."	Students used school Wi-Fi to complete assignments. Student: "We use school Wi-Fi when the teacher gives online assignments."

The findings in Table 5 show that teachers prefer technologies that are simple, efficient, and suitable for the devices students commonly use. Teachers often select tools that are easy to operate and require little preparation time. This supports the conclusion of Scherer et al. (2020), who found that ease of use strongly predicts teachers' willingness to adopt technology in classroom settings. The teacher statements in the table reflect this pattern, especially the choice of Canva because it is easy and familiar. Efficiency is another key factor. Teachers choose tools that help them complete tasks quickly, including those with automated scoring features such as Google

Forms. This aligns with Bond et al. (2021), who reported that teachers consistently adopt digital tools that increase instructional efficiency and reduce manual checking. The availability of mobile phones also influences technology choices. Because most students own Android phones, teachers intentionally choose applications that work well and are suitable for students' devices. This supports Nguyen et al. (2023), who found that accessible and familiar devices increase students' engagement and help them complete tasks more effectively. Student responses in the table illustrate that mobile phones allow them to access materials quickly and follow lessons without difficulty. Internet access, especially through school Wi-Fi, also plays an important role. Teachers rely on school Wi-Fi to support online assignments when students have limited mobile data. This is consistent with findings by Alshammari (2022), who states that stable internet access is essential for successful digital learning. The student responses confirm that they use school Wi-Fi to complete assignments and access online materials provided by teachers. The practical considerations identified in Table 5 show that simplicity, efficiency, suitability for student devices, and internet access are central to effective technology use in English classrooms. These factors help both teachers and students engage more smoothly with digital learning activities.

Impact of technology on learning experiences

Technology has a clear impact on learning experiences because it brings both benefits and challenges for teachers and students. The benefits include making teaching more efficient and helping teachers present materials more clearly, while students can learn more easily through videos, audio, and interactive tasks. However, both teachers and students also face challenges such as limited internet access, device problems, and unfamiliarity with certain applications. To overcome these issues, they use coping strategies like choosing simpler tools, using school Wi-Fi, preparing backup materials, asking peers for help, and learning how to use digital platforms step by step. Overall, technology supports learning, but it also requires adjustment and problem-solving from both teachers and students.

Benefits for teacher and students

The findings from the study show that technology provides several meaningful benefits for both teachers and students in the English classroom. Digital tools help create more engaging learning experiences, make teaching more efficient, and support students in understanding lesson materials more clearly. Technology also strengthens the development of all four language skills. Such as listening, speaking, reading, and writing. It preparing students for future digital expectations in higher education and communication. These benefits reflect the broader view in the literature that technology can enhance students' motivation, provide richer learning resources, and improve the overall quality of teaching when used effectively.

Table 6. *Benefits for teachers and students*

Benefit Category	Description	Teacher's View	Student's View
Increased Motivation & Engagement	Technology makes lessons more interesting and increases student enthusiasm	Teacher 1: "It increases students' interest… They become more enthusiastic."Teacher 3: "They become more comfortable, active, creative, innovative, and enjoy the process."	Mobile phone user: "We use our phones to follow the lesson because the teacher always gives online materials or videos."
Teaching Efficiency	Digital tools save preparation time and simplify instruction	Teacher 2: "It is more practical and saves time… class time becomes more efficient."	Google Forms user: "When the teacher gives a link or Google Form, it is faster for us to use our phones than to write everything."
Improved Comprehension	Visuals and videos support clearer understanding	Teacher 5: "With Canva, students understand more clearly. With videos, they grasp it easily."	Canva user: "Canva makes the explanation clearer because the pictures and layout help me understand the topic."YouTube user: "YouTube videos help me

			catch the pronunciation and understand the material more easily."
Support for All Language Skills	Technology enhances reading, writing, listening, and speaking activities	Teacher 1: "Technology can be used for all skills… depends on how we use it."	"Technology makes learning more complete… I can learn vocabulary, grammar, and speaking from different platforms."
Future Digital Skills	Technology builds students' readiness for university and digital communication	Teacher 7: "Canva helps them prepare for university, especially in making presentations."	Canva user: "Canva helps me learn how to design academic presentations, which I will need in university."

Technology increases motivation and engagement. Teachers reported that using digital tools such as mobile phones, online materials, and videos makes lessons more interesting and encourages active participation. Students also expressed that technology helps them follow lessons more enthusiastically and supports clearer comprehension of learning content. This aligns with research showing that digital technologies can make learning more engaging and interactive, which in turn improves students' interest and involvement in educational activities. Educational digital tools help create an environment in which students are more willing to participate and explore content beyond traditional methods (Haleem et al., 2022). Technology also enhances teaching efficiency and understanding. Teachers noted that tools such as Google Forms and Canva save time in preparation and daily instruction, while visuals and videos support clearer comprehension. Students similarly reported that digital content made pronunciation, vocabulary, and skill practice easier to grasp. Another key benefit shown in the data is support for multiple language skills and future readiness. Technology facilitates activities across listening, speaking, reading, and writing, making learning more holistic. Teachers also noted that Canva helps prepare students for future academic requirements such as creating presentations. This supports the view that digital literacy is crucial for students' success in higher education and modern workplaces. Research confirms that the integration of technology supports not only academic skills but also the development of twenty-first century competencies such as digital literacy, collaboration, and self-directed learning (OECD, 2025).

Challenges of integrating technologies

Despite the benefits of using technology in the English classroom, the findings also show that teachers and students encounter several challenges that affect the smooth implementation of digital tools. These challenges come from technical issues, device limitations, connectivity problems, learning difficulties, and the lack of proper facilities. Understanding these obstacles is important because successful technology integration depends not only on the availability of tools but also on the readiness of users and the support provided by the school environment. Research suggests that technology can only enhance learning when the infrastructure is reliable and when learners have the skills and resources needed to use it effectively. Therefore, the challenges identified in this study highlight areas that require improvement to ensure more equitable and sustainable technology use in the classroom.

Table 7. *Challenges that faced teachers and students*

Challenges	Description	Teacher's View	Student's View
Unstable Internet	Weak Wi-Fi disrupts online activities	Teacher 5: "The school has Wi-Fi, but not all classrooms can access it because of limited coverage."	Student: "Sometimes the school's network is slow, so the videos or links from the teacher cannot be opened."
Limited / Low-Spec Devices	Some students have old phones, low storage, or no device	Teacher 3: "Some students have phones with very low specifications, or they do not have a phone at all."	Student: "My phone sometimes lags when opening Canva or videos. If I run out of data, I have to borrow a friend's phone."
Technical Problems	Projector issues, power outages, and buffering	Teacher 6: "The challenges are mostly technical—power outages or the Wi-Fi suddenly	Student: "If the electricity goes out, the lesson using the projector stops immediately."

	videos	stops."	
Low Motivation or Overload	Not all students stay engaged; fast-paced or too many online tasks	Teacher 1: "The main challenge is students' interest in learning."	Student: "Sometimes I get confused when the video material is too fast; online quizzes can be tiring."
Low Vocabulary Proficiency	Students struggle to understand English videos or instructions	Teacher 7: "Students have ideas, but they struggle to express them because they lack vocabulary."	Student: "When I watch English videos, I often do not understand because there are many new words."
Lack of Dedicated Facilities	No multimedia room; basic classroom setup is insufficient	Teacher 5: "It would be better if there were a special multimedia room for English."	Student: "It's more comfortable to watch learning videos in a special room, not a regular classroom."

The findings show several challenges in using technology for English learning in a public senior high school in Indonesia. First, teachers reported that unstable internet and limited school Wi-Fi coverage often disrupted online activities, such as watching videos or completing digital assignments. A student also confirmed that slow network connections sometimes prevented them from opening teacher-provided videos or links. Akramuzzaman (2024) supports this finding, noting that disparities in device availability create unequal learning opportunities in EFL classrooms.

Third, technical disruptions in the classroom, such as power outages, projector failures, and slow-loading videos, frequently interrupted lessons. Teacher and student responses revealed that even minor technical issues could halt the learning process. Hamliyah et al. (2024) highlight that frequent technical interruptions negatively affect the continuity and effectiveness of digital learning activities. Fourth, low student motivation and insufficient vocabulary knowledge affected engagement with technology-based materials. Some students admitted feeling confused when videos moved too quickly or when online tasks were repetitive, while teachers observed that students struggled to express their ideas due to limited vocabulary. Esfandiari and Mazharpour (2025) state that Technology can increase students' motivation at the early stages of learning, but sustaining this motivation requires engaging materials, effective teaching strategies, and active teacher support. Fifth, the lack of a dedicated multimedia room limited students' ability to engage with learning videos comfortably. Teacher 5 suggested that having a special room would improve the learning experience. Gunawan (2025) similarly notes that the absence of specialized facilities constrains the effective use of digital resources in schools.

Finally, preparing lessons that involve technology required additional time and careful planning from teachers, which added to their workload. Kusrini, Wardani, and Sotlikova (2024) indicate that technology-based lesson preparation demands adequate planning to maintain teaching efficiency without overburdening educators.

Coping strategies

This presents the coping strategies used by both teachers and students to address various challenges encountered during technology integration in English classrooms. These strategies reflect how classroom stakeholders adapt when facing technical, infrastructural, or motivational barriers. The responses from teachers and students show that even with several limitations such as unstable internet, limited devices, and insufficient facilities, they consistently try to find practical solutions so learning activities can continue smoothly. This shows that resilience and adaptability have an important role in ensuring that technology-supported learning can still progress well under constrained conditions.

Table 8. *Coping strategies*

Challenge	Coping Strategies	Teacher's View	Student's View
Unstable Internet	Preparing backup materials; using personal hotspot	Teacher 4: "I always prepare a PowerPoint, so if the video stops, the lesson can continue."Teacher 6: "If the school network is down, I use my personal hotspot."	Student: "I follow lessons using offline slides or teacher hotspot support.""I can get the hotspot from my friend in class."
Limited /	Device sharing /	Teacher 3: "Students who do not	Student: "If my phone lags or I

Low-Spec Devices	collaborative work	have a phone or have low-spec devices can work together with their seatmates."	run out of data, my friend lets me use theirs so I can still join the activity."
Technical Problems	Preparing backup materials; alternative communication via WhatsApp	Teacher 5: "If the projector cannot be used, I send the video or material through WhatsApp."	Student: "Even if the projector doesn't work, we can still open the material from WhatsApp."
Low Motivation / Overload	Motivation and emotional support; balancing digital and non-digital tasks	Teacher 1: "When I see students losing interest, I approach them and ask what is going on."Teacher 7: "I adjust technology use based on students' needs and learning objectives."	Student: "It helps when the teacher explains slowly or repeats the video so we can understand.""I feel motivated because my teacher keeps reminding us that using technology will help us learn faster and understand the material better."
Low Vocabulary Proficiency	Encouraging independent vocabulary building	Teacher 2: "I ask them to search new words on Google Translate and create their own small dictionary."	Student: "When I don't understand a word, I search it on Google Translate so I can follow the lesson."
Lack of Dedicated Facilities	Using offline materials / alternative settings	Teacher 5: "It would be better if there were a special multimedia room."	Student: "It's more comfortable to watch learning videos in a special room (multimedia room), not a regular classroom."

The coping strategies used by teachers and students in this public senior high school practical and adaptive responses to various challenges during technology-enhanced learning. For unstable internet, teachers prepare backup slides and use personal hotspots, while students rely on offline files or shared internet; this aligns with Ranbir (2024), who highlights that careful preparation and infrastructural readiness are essential for supporting technology integration. When facing limited or low-spec devices, teachers encourage students to share devices and work collaboratively, which is consistent with Dinçer (2024), who notes that collaborative practices help reduce digital inequality and ensure participation for all learners. For technical problems such as projector failures, teachers send materials through WhatsApp so learning can continue, echoing Al Muuti et al., (2025), who emphasize that flexible communication tools are crucial for sustaining ICT-based instruction during unexpected disruptions. To address low motivation or overload, teachers provide emotional support and adjust the amount of digital work, supporting Ranbir's (2024) argument that learner engagement improves when teachers balance digital demands with supportive pedagogy. For low vocabulary proficiency, students are guided to use translation tools and build their own vocabulary lists, which aligns with Dinçer's (2024) view that self-directed digital strategies help learners strengthen both language and technological skills. Finally, the need for dedicated multimedia facilities reflects Al Muuti et al.'s (2025) findings that improving school infrastructure is essential for allowing technology-based learning to function optimally. Overall, these strategies show that adaptability, collaboration, and pedagogical support are central to overcoming technological challenges in the classroom.

CONCLUSION

The findings of this study show that technology plays an important role in supporting English learning in a public senior high school in Indonesia. Both teachers and students use various digital tools to improve understanding, engagement, and learning effectiveness. This shows that technology has become a regular part of everyday teaching and learning activities. However, several challenges were identified, including limited access to devices, unstable internet connections, technical problems, and difficulties with vocabulary. These challenges suggest that effective technology use depends not only on the availability of digital tools but also on reliable infrastructure and continuous pedagogical support. This study contributes to discussions on digital readiness and classroom implementation by highlighting the need for stronger school support, better facilities, and the development of digital competence among teachers and students. These efforts are necessary to ensure that technology supports learning in meaningful and sustainable ways.

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In addition to its practical implications, this study contributes to existing research by providing a clear dual-perspective view of technology integration in EFL classrooms. By including both teachers' and students' experiences, this study presents a detailed picture of daily technology use, the challenges faced, and the coping strategies applied in a public senior high school with limited resources. This contribution is important because similar school contexts receive limited attention in previous studies.

Despite these contributions, several limitations should be acknowledged. First, this study was conducted in a public senior high school, which limits the generalization of the findings to other educational settings. Second, the data relied mainly on self-reported questionnaires and interviews, which may be influenced by social desirability bias. Third, the absence of classroom observations reduced opportunities to compare reported practices with actual classroom activities. In addition, the sampling approach represents a methodological limitation in aligning qualitative research goals with participant selection procedures. Recognizing these limitations strengthens the transparency and academic quality of this study.

Future research is recommended to extend the findings of this study. Longitudinal research can explore how technology use develops over time as teachers and students gain more experience and support. Design-based research can also be used to test the effectiveness of the coping strategies identified in this study. Furthermore, future studies may include classroom observations and involve multiple schools to provide a more comprehensive understanding of technology integration in EFL contexts.

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