

Students' Experiences, Engagement, and Attitudes in the English Education Revolution: The Role of Interactive Technology

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ABSTRACT

The digital revolution in education has fundamentally transformed English language learning by promoting a more interactive, flexible, and student-centered approach. In this context, students' experiences, engagement, and attitudes toward interactive technology have become crucial for understanding the direction of English education in the modern era. This study aims to explore how students' learning experiences and engagement in technology-based environments influence their attitudes toward the revolution in English education. Using a quantitative approach with multiple linear regression analysis, data were collected through a closed-ended questionnaire. A total of 200 English learners from Iraq and Indonesia participated in the study through online data collection. The findings confirmed that the English language education revolution through interactive technology has a positive and significant effect on students' learning experience, engagement, and attitudes. Additionally, the revolution in interactive education technology was found to simultaneously and significantly affect all three dimensions. Students generally expressed strong support for the transition from traditional methods to more digital, collaborative, and personalized learning environments. Active engagement in interactive platforms contributed to more favorable attitudes toward the educational innovation. These results affirm that interactive technology serves not merely as a support tool, but as a driving force in shaping a sustainable and adaptive learning ecosystem. This study contributes to the fields of English language teaching and educational technology by emphasizing that digital strategies must enhance learning experiences, foster student engagement, and nurture positive learner attitudes in order to meet the needs of 21st-century education.

Keywords: Interactive Technology, Student Engagement, Learning Experience, Educational Attitudes, English Education



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1. INTRODUCTION

In the fast-moving era of globalization, English language learning no longer takes place solely within the confines of a classroom using traditional lecture-based methods. The English education revolution has transformed the learning landscape through curriculum shifts (Rohmah et al., 2024), more communicative teaching methods (Jie & Sunze, 2023), and the integration of technology into the learning process (Rintaningrum, 2023). Curricula that once focused on grammar mastery and translation have now shifted toward communicative and skills-based approaches. According to Assen & Otting (2022), teachers are no longer the sole source of information, but facilitators in a learning environment that emphasizes collaboration and real-world context. Students are expected to take a more active role in the learning process

through activities such as group discussions, simulations, and task-based projects (Ismail et al., 2023; Zhang, 2025). This change is driven by the need to prepare a generation capable of using English functionally in daily life and the workplace. The revolution is also marked by the growing use of online platforms such as Google Classroom, Edmodo, and Zoom to support distance and hybrid learning. Learning is no longer confined by space and time but is accessible anytime and anywhere. This provides flexibility and convenience that are highly valued in modern education. Research by Zou et al. (2021) provides support this transition also demands readiness from both teachers and students in facing new challenges. The English education revolution is not merely a technical shift but a paradigm shift in how teaching and learning take place.

The role of interactive technology in English language learning has become increasingly crucial in meeting the need for methods that bridge theory with real-life language practice. Learning applications such as Duolingo (Li et al., 2024), Grammarly (Mariappan et al., 2025), Quizizz (Lim & Yunus, 2021), and BBC Learning English (Gou, 2023) have proven effective in supporting independent and enjoyable language acquisition. According to Oliveira et al. (2022), with features like gamification, instant feedback, and personalized content, interactive technology significantly enhances student motivation. Moreover, El-Sabagh (2021) stated technology allows students to learn at their own pace and according to their individual learning styles. In the classroom, the use of smartboards, augmented reality (AR), and virtual reality (VR) offers a more vivid and contextual learning experience (Shu & Gu, 2023; Şimşek & Koparan, 2025). Teachers can now simulate conversations or real-life communication scenarios that were once difficult to achieve in conventional learning. Technology facilitates active student participation through polls, interactive quizzes, and online discussions (Lewohl, 2023; Malekjafarian & Gordan, 2024). The availability of audiovisual materials also strengthens listening and speaking skills that are often challenging in traditional settings. Therefore, interactive technology is not just a supplementary tool but has become a foundation for effective and relevant English language instruction.

Students' learning experiences are a key factor in evaluating the success of integrating interactive technology into English education (Hidayat et al., 2022). Students who have positive experiences with technology tend to show higher enthusiasm and improved academic outcomes (Al-Adwan et al., 2023). On the contrary, negative experiences such as limited internet access, confusing platforms, or irrelevant content can lower motivation and interest in learning (Loh et al., 2022). It is therefore essential for educators and developers to understand how students respond to the technology they use. For example, many students feel more confident speaking English using voice recording features in language learning apps, as it allows them to practice without embarrassment. Additionally, personalized and adaptive learning experiences make students feel recognized and supported in their educational journey. Technology that provides instant feedback also helps learners reflect on their mistakes and make timely corrections. However, not all students possess adequate digital literacy or access, making guidance and training still necessary (Reddy et al., 2023). By understanding students' experiences comprehensively, teachers can adjust their instructional approaches to be more inclusive and responsive. This will enhance the overall quality of instruction and position technology as a bridge rather than a barrier to English language mastery.

Student engagement is a critical indicator of effective learning (Chiu, 2023), and interactive technology has had a significant impact in this area (Teng & Wang, 2021). Various studies have shown that tools like Padlet (Lee et al., 2024), Nearpod (Abdullah et al., 2022), and Kahoot (Tao & Zou, 2023) increase active participation in the classroom. According to Ben-Eliyahu (2021), when students are emotionally and cognitively engaged, learning becomes more meaningful and sustainable. In English language learning, this engagement is evident through increased student activity in speaking, writing, and discussing in the target language (Hiver et al., 2024). Technology allows for two-way interaction (Escotet, 2024), in contrast to the one-way delivery of traditional methods. For instance, students can give comments, ask questions, and even assess their peers' responses in real time. Nevertheless, negative phenomena such as excessive multitasking and digital distractions from app notifications have also emerged (Dontre, 2021). This indicates that engagement is not only about presence but also about focus and attention. Therefore, Guzzo et al. (2022) expressed their opinion that digital learning design must be strategic to maintain rhythm and student concentration. Overly complex interactivity can overwhelm learners, so a balanced integration of technology and pedagogy is vital. In this context, teachers play a central role as guides to ensure technology empowers students rather than disorients them in the learning process.

Students' attitudes toward the use of technology in English language learning directly impact the success of educational innovations (Acosta-Enriquez et al., 2024). An open and enthusiastic attitude motivates students to explore various learning resources, try new strategies, and embrace mistakes as part of the learning journey. Conversely, negative attitudes such as distrust in technology or reluctance to adapt often hinder the effective application of modern instructional systems (O. Ajlouni et al., 2023). The education revolution cannot proceed effectively without student support, as they are the central actors in the learning process. Therefore, creating an environment that nurtures positive attitudinal change is essential. This can be achieved through a human-centered approach, open dialogue between teachers and students, and accessible training in using technology in a practical and engaging manner. A positive attitude cultivates an active and reflective learning culture, while a passive attitude may cause students to fall behind

in the digital era. Furthermore, students who recognize the long-term benefits of mastering technology are more motivated to continue learning. By fostering constructive attitudes, students can become active participants in the larger transformation of English language education toward a more adaptive and future-oriented system.

This article offers a novel perspective in English education studies by highlighting the interconnectedness of students' experiences, learning engagement, and attitudes toward interactive technology in the context of educational transformation. While numerous studies have explored the effectiveness of technology, a comprehensive focus on students' perspectives and perceptions remains limited, particularly within the scope of language learning at secondary and tertiary levels. The primary aim of this article is to explore how students' learning experiences, levels of engagement, and attitudes shape their responses to technology in English language learning. By gaining this understanding, the article hopes to contribute meaningful insights toward developing technology-based learning strategies that are more inclusive, adaptive, and effective in supporting the ongoing English education revolution.

2. METHOD

This study employs a quantitative approach using multiple linear regression analysis (Ottaviani & Marco, 2022) to examine the influence of the interactive technology revolution in English language learning on three main variables: students' learning experience, engagement in the learning process, and attitudes toward learning. This method was chosen for its ability to explain the extent to which the independent variable contributes to the dependent variables, both simultaneously and individually. Therefore, this approach is considered appropriate for objectively and measurably illustrating the dynamics of English language learning in the digital era.

The participants in this study consisted of 200 English language learners from two countries: Iraq and Indonesia. This sample size was determined based on the Likelihood theory, which suggests that the minimum number of participants should be ten times the number of items in the instrument. Since the questionnaire contains 20 items, the minimum required number of participants is $20 \times 10 = 200$. With this sample size, the collected data are considered sufficient for conducting valid and generalizable statistical analysis.

The research instrument was a closed-ended questionnaire using a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). The questionnaire consisted of four main sections representing the variables in the research model: (1) The English Language Education Revolution through Interactive Technology as the independent variable (X), (2) Students' learning experience (Y_1), (3) Student engagement in learning (Y_2), and (4) Student attitudes toward the direction of the English language education revolution (Y_3). Each section contained five specific statements designed to comprehensively reflect students' perceptions, engagement, and attitudes toward the use of interactive technology in the context of English language learning, as shown in Table 1.

Table 1. Statements of Instrument

Variables	No	Statements
X : Interactive English Education Revolution	1	I realize that English learning today has undergone a major revolution due to the use of interactive technology.
	2	Changes in the curriculum and teaching methods of English are now highly influenced by advances in digital technology.
	3	Interactive technology has become central in the modern English learning experience in my classroom.
	4	The use of digital platforms (such as e-learning, learning apps, and interactive media) has replaced many traditional approaches.
	5	I feel that English education has evolved to become more digital, collaborative, and technology-driven in recent years.
Y_1 : Students' Experiences	6	I feel a significant change (revolution) in how I learn English since interactive technology was introduced.
	7	My lecturers or instructors actively use digital technology to create a more modern English learning experience.
	8	I believe technology has transformed English learning methods into more dynamic and flexible approaches.
	9	Learning applications, interactive videos, and digital platforms (such as Zoom, Google Meet, Kahoot, etc.) make the learning process feel different from traditional methods.
	10	I am accustomed to using technology in English learning and see it as part of today's educational revolution.

Y ₂ : Students' Engagement	11	Interactive technology makes me more actively engaged in English learning.
	12	I feel more enthusiastic and motivated when technology is used in the English learning process.
	13	Digital technology helps me stay more focused and actively participate during learning activities.
	14	I feel more confident when engaging in technology-based English learning.
	15	English learning becomes more enjoyable and interesting thanks to interactive technological innovations.
Y ₃ : Students' Attitudes	16	I believe the integration of interactive technology is a positive revolution in English learning.
	17	Future English learning will increasingly rely on digital technology.
	18	The technological revolution in education must be accompanied by the digital readiness of both teachers and students.
	19	I feel this learning revolution improves the quality and outcomes of my learning.
	20	Although technology is important, English learning should still balance digital and face-to-face approaches.

The instrument presented in Table 1 was tested for validity using the Pearson Product-Moment correlation technique before being used in the main analysis. Each statement item was found to be valid, as all calculated r values were greater than the critical r value at the 5% significance level. All items across the four sections (X , Y_1 , Y_2 , Y_3) met the validity criteria and were therefore appropriate for data collection. In addition, a reliability test was conducted on the entire instrument using Cronbach's Alpha coefficient. The results showed an overall alpha value of 0.89, which exceeds the minimum threshold of 0.70, indicating that the instrument has a very high level of reliability.

Data collection was conducted online using Google Forms, taking into account the wide geographical distribution of participants across two countries and aligning with the context of digital-based learning. The questionnaire was distributed via digital platforms such as social media, WhatsApp groups, Telegram, and email, accompanied by a brief explanation of the study's purpose, data confidentiality, and a statement of informed consent from participants indicating their voluntary participation.

Data analysis was conducted using multiple linear regression to examine the effect of the independent variable, namely the English Language Education Revolution through Interactive Technology (X), on three dependent variables: Learning Experience (Y_1), Learning Engagement (Y_2), and Attitude toward the English Education Revolution (Y_3). Prior to the regression analysis, several classical assumption tests were performed, including normality, multicollinearity, and heteroscedasticity tests, to ensure that the regression model satisfied the requirements for statistical validity. This analysis aimed to determine the direction of the relationship, the strength of the influence, and the significance level of interactive technology on the three key dimensions of English language learning.

The research hypotheses proposed in this study are as follows: (H_1) the English language education revolution through interactive technology has a positive and significant effect on students' learning experience; (H_2) the English language education revolution through interactive technology has a positive and significant effect on students' engagement in the learning process; (H_3) the English Language education revolution through interactive technology has a positive and significant effect on students' attitudes toward English language learning; (H_4) the English language education revolution through interactive technology simultaneously has a significant effect on students' learning experience, engagement, and attitudes.

3. RESULTS AND DISCUSSION

3.1. Results

3.1.1. Regression of X on Students' Experiences (Y_1)

Table 2. Results of Interactive Technology on Students' Experiences

Model	Unstandardized Coefficients		Sig
	B	Std. Error	
Constant	1.671	0.238	0.000
Interactive Technology (X)	0.669	0.074	0.000

Table 2 presents the research results for the variable of students' learning experience (Y_1). The regression coefficient value is 0.669 with a significance level ($p < 0.001$), indicating that Hypothesis H_1 is accepted. This result can be interpreted as evidence of a positive and significant effect of the interactive

technology revolution on students' learning experience. It demonstrates that applications such as Zoom, Google Meet, Kahoot, and various other digital platforms have created a more flexible, engaging, and suitable learning environment for the digital generation. Table 2 shows a regression coefficient (β) = 0.669, which means that for every 1-point increase in the perception of interactive technology use, the students' learning experience score increases by 0.669 points, assuming other variables remain constant.

3.1.2. Regression of X on Students' Engagement (Y_2)

Table 3. Results of Interactive Technology on Students' Engagement

Model	Unstandardized Coefficients		Sig
	B	Std. Error	
Constant	1.841	0.223	0.000
Interactive Technology (X)	0.712	0.085	0.000

Table 3 presents the research results for the variable of learning engagement (Y_2). The regression coefficient is 0.712 with a significance level of $p < 0.001$, indicating that Hypothesis H_2 is accepted. This result can be interpreted as showing that the interactive technology revolution has a positive and significant effect on students' learning engagement. It supports the finding that students become more active, motivated, and participative when technology is integrated into the learning process. This aligns with the concept of digital pedagogy, which emphasizes collaboration, quick feedback, and content personalization. Table 3 shows a regression coefficient (β) = 0.712, meaning that a one-point increase in the implementation of interactive technology leads to a 0.712-point increase in students' engagement levels.

3.1.3. Regression of X on Students' Engagement (Y_3)

Table 4. Results of Interactive Technology on Students' Engagement

Model	Unstandardized Coefficients		Sig
	B	Std. Error	
Constant	1.724	0.218	0.000
Interactive Technology (X)	0.687	0.079	0.000

Table 4 presents the research results for the variable of students' attitudes toward English language learning (Y_3). The regression coefficient is 0.687 with a significance level of $p < 0.001$, indicating that Hypothesis H_3 is accepted. This result can be interpreted as evidence that the interactive technology revolution has a significant effect on students' attitudes toward English language learning. Students not only accept the changes brought by educational technology but also view them as opportunities to achieve higher-quality learning outcomes. Table 4 shows a regression coefficient (β) = 0.687, which means that every one-point increase in the intensity or quality of the interactive technology revolution leads to a 0.687-point increase in students' positive attitudes toward English language learning.

3.1.4. Simultaneous Testing (Multivariate Regression) of Y_1 , Y_2 , and Y_3

The results of the simultaneous regression analysis on the three dependent variables show a combined adjusted R^2 value of 0.568 and an F value of 49.37, with $p = 0.000$. These results indicate that Hypothesis H_4 is accepted at a significance level of $p < 0.001$. This means that the interactive technology revolution has a significant simultaneous effect on students' learning experience, engagement, and attitudes. The F value of 49.37 and the combined R^2 of 56.8% suggest that interactive technology contributes significantly to shaping students' experiences, engagement, and attitudes. These findings demonstrate that digital transformation in education is not merely a passing trend but a fundamental pillar of modern learning systems.

3.2. Discussion

3.2.1. Transformation of Students' Learning Experience through Interactive Technology

The revolution in interactive technology has fundamentally transformed how students experience the process of learning English. Previously, English instruction was dominated by conventional methods such as classroom lectures (Saira et al., 2021), textbook-based exercises (Winter & Le Foll, 2022), and vocabulary memorization (Çakmak et al., 2021). Today, however, it has shifted toward a more dynamic, visual, and interactive approach (Wang, 2023). Our research findings indicate that most participants reported a significant shift in their English learning experiences since the active integration of digital technology in the classroom. Students noted that the use of digital media, including interactive videos,

educational applications, and online communication platforms, has made the learning environment more engaging and more relevant to real-life contexts.

According to Müller & Mildenerger (2021), this change has also created a more flexible learning environment. Students are no longer entirely dependent on being physically present in class or following fixed schedules. Through platforms such as Zoom (Kohnke & Moorhouse, 2022), Google Meet (Irons, 2022), and Learning Management Systems (Veluvali & Suriseti, 2022), students can access materials, participate in discussions, and complete language exercises outside of regular class hours. This freedom not only increases the accessibility of learning but also allows students to study at their own pace and in a way that suits their individual preferences. For students from diverse backgrounds, particularly in the two countries involved in this study, Iraq and Indonesia, access to digital learning resources offers a major advantage, especially in geographically or socially constrained situations.

Beyond flexibility, based on research by Ai et al. (2025) on 455 students, it was stated that interactive technology also fosters a more personal and relevant learning experience. Supported by Ordóñez Procel et al. (2024) said students can learn through visual and context-based content such as instructional videos, educational games, or communication simulations. These tools help deepen their understanding of language structure and enhance their communication skills in realistic scenarios. For instance, features like breakout rooms in Zoom or project-based activities on digital platforms make learning more collaborative and immersive. This kind of interactivity signals a shift from passive to active and meaningful learning.

This transformation in students' learning experiences is strongly supported by constructivist learning theories, particularly Vygotsky's concept of social constructivism (Cha & Kweon, 2024; Le & Nguyen, 2024; Nithideechaiwarachok et al., 2024), which emphasizes the importance of interaction, context, and learner autonomy in the construction of knowledge. Interactive technology aligns with this perspective by enabling learners to actively engage with materials, peers, and instructors in meaningful ways (Muir et al., 2022). Furthermore, empirical studies by Huang & Sun (2023) and Ait-Hroch et al. (2025) provide additional evidence that technology-enhanced environments support learner-centered instruction, foster deeper engagement, and enable personalized pathways for language acquisition.

The interactive technology revolution affects not only the tools used in education but also students' perceptions and emotional engagement with the learning process. Most participants felt more connected to the material, more independent, and more enthusiastic about learning English. This transformation suggests that digital technology can create inclusive, adaptable learning environments that meet the needs of modern learners. Overall, students' learning experiences have evolved from static routines to active exploration, supporting more effective language development.

3.2.2. Learning Engagement in the Digital Era: Between Active Participation and Technology

Student engagement is a key indicator in evaluating the effectiveness of English language learning in the digital era (Teng & Wang, 2021). This study demonstrates that interactive technology has a significant positive impact on students' engagement across affective, cognitive, and behavioral dimensions. Many participants reported feeling more motivated when technology was used in the classroom, especially because the learning experience became more varied and less monotonous. Features such as interactive quizzes, online discussion rooms, and engaging visual content increased students' enthusiasm and reduced boredom, which was often associated with traditional learning methods.

Cognitively, technology helps improve students' focus and attention to the material (Bahari et al., 2023; Jamil et al., 2023). For instance, when lessons involve videos, animations, or app-based simulations, students tend to better understand the context and real-life applications. In line with this, our findings indicate that students are more actively engaged in processing information when the material is delivered through multimodal approaches available on digital learning platforms. This is supported by Capone & Lepore (2022) and Lackmann et al. (2021), who argue that engagement is not limited to physical presence but also involves mental participation and sustained attention to the learning content.

Behaviorally, interactive technology encourages more active student participation in a range of learning activities (Kerimbayev et al., 2023; Wekerle et al., 2022). Many respondents stated they felt more confident in expressing opinions, working collaboratively on assignments, and participating in online quizzes. Interactive features such as real-time polls, chat boxes, and breakout rooms fostered engagement, especially among students who were previously passive. Even students who identify as introverted or face communication barriers in face-to-face settings found digital platforms more comfortable for contributing to class discussions. This reflects the role of technology in creating a more inclusive learning environment.

The positive influence of interactive technology on student engagement is supported by Self-Determination Theory (Chiu, 2022). This theory explains that learners are more motivated and engaged when they experience a sense of autonomy, competence, and relatedness. Interactive learning tools such as gamified applications, collaborative forums, and multimedia resources help fulfill these needs by giving students control over their learning process, offering immediate feedback, and encouraging social interaction. Research by Venn et al. (2023), Tang & Hew (2022) and Teng & Wang (2021) supports this connection. Their studies found that students engaged in technology-rich learning environments tend to report higher emotional and cognitive engagement. Similarly, a study by (Chen, 2022) and Tao & Zou

(2023) revealed that platforms like Kahoot and Padlet can significantly increase learners' attention, enjoyment, and active participation. These findings highlight how technology can create meaningful learning engagement through diverse and interactive pathways, emphasizing that students today are not just passive recipients of information but active participants in constructing their own learning experiences.

In the context of the digital revolution, learning engagement is no longer solely the outcome of instructional strategies; it is also shaped by learning environments designed with interactive technology. Students are not merely recipients of content but active participants in shaping their own learning experiences. Our research findings confirm that technology does not replace the role of teachers or lecturers; rather, it broadens the avenues through which engagement can occur in modern classrooms. Technology facilitates more responsive, two-way instruction and supports learners in developing English language competence in a deeper and more sustainable way.

3.2.3. Students' Attitudes Toward the English Education Revolution

Students' attitudes toward the technological revolution in English education play a critical role in the successful implementation of digital learning. In this study, the majority of participants expressed a positive outlook on the ongoing transformation. They believed that the integration of interactive technology is not only inevitable but should be accelerated to meet the demands of contemporary education. According to Archambault et al. (2022), technology is no longer merely a supplementary tool, but has become a central pillar in creating learning experiences that are more engaging, efficient, and aligned with the needs of modern learners.

Although most participants expressed support, a small portion of respondents adopted a more cautious stance. They noted that while technology offers many conveniences, not all aspects of learning can be fully replaced by digital tools. Some emphasized the importance of direct interaction with lecturers and peers as a valuable social component that enriches the learning process. This view is supported by previous studies, which highlight that face-to-face interaction fosters emotional connection, immediate feedback, and collaborative learning dynamics that are difficult to replicate in fully online environments (Sjølie et al., 2022; Tan & Jung, 2024). This suggests that, despite the prevailing positive attitude, students still recognize the need for a balanced approach that integrates both digital and traditional learning methods.

Students' attitudes were also influenced by their own digital readiness, including technological literacy and access to adequate devices (Almulla, 2022; Kaushik & Agrawal, 2021). Those who felt confident using educational applications, engaging on digital platforms, and actively utilizing online content were more likely to support the educational revolution. In contrast, according to Toto & Limone (2021), students who faced technical limitations or lacked experience with online learning expressed higher levels of resistance. This highlights the importance of providing technological training for both students and educators as a critical step toward aligning attitudes and readiness in adopting digital transformation.

The role of students' attitudes in adopting educational technology is widely acknowledged in the Technology Acceptance Model (TAM) (Al-Adwan et al., 2023), which posits that perceived usefulness and ease of use significantly shape user acceptance of new technologies. In the context of English language education, students who view interactive tools as beneficial and accessible are more inclined to support and embrace digital innovations. This is supported by research from Sharif Nia et al. (2023), who found that positive student attitudes toward technology correlate strongly with higher levels of engagement, satisfaction, and academic achievement in online learning environments. Similarly, studies by Zhao et al. (2021) emphasize that student attitudes are not static but are shaped by digital competence and the degree of institutional support.

Overall, students' attitudes toward the revolution in English education through interactive technology reflect a generally positive and proactive mindset. They not only welcome the change but also expect the educational system to continuously adapt to technological developments. These findings are important for educational institutions and policymakers as they design technology implementation strategies that take into account learners' needs, expectations, and concerns.

3.2.4. The Relationship Between Interactive Technology and the Three Dimensions of Learning

The results of the multiple linear regression analysis in this study indicate a significant relationship between the use of interactive technology and the three core dimensions of learning: students' experience, engagement, and attitudes. Both learning experience and student engagement contribute positively and significantly to shaping students' attitudes toward the English education revolution. This finding is consistent with previous studies, which show that positive experiences with technology-enhanced learning environments increase students' motivation and satisfaction, ultimately influencing their attitudes toward learning innovations (Alyoussef & Omer, 2023; Dubey & Sahu, 2021). Furthermore, increased engagement through interactive media has been linked to deeper learning and more favorable perceptions of educational reform (Sugden et al., 2021; Wu, 2024). This suggests that the more positive students' experiences are with digital media, and the more engaged they are in the learning process, the more constructive their attitudes become toward educational innovation.

Statistically, the regression coefficients show that engagement (X_2) has the most dominant influence compared to experience (X_1), although both are significant. High levels of engagement through interactive technologies such as online discussions, educational games, and audiovisual media play a key role in fostering positive attitudes toward learning. Enjoyable and participatory learning experiences enhance students' perception that technological transformation is relevant and worth supporting.

The interaction among these three dimensions reveals that technology is not merely a supporting tool, but a driving force behind changes in learning attitudes and behaviors. When students feel emotionally and intellectually engaged in technology-based learning, they become more receptive to change. This relationship is dynamic and mutually reinforcing. Positive learning experiences lead to greater engagement, and stronger engagement fosters more supportive attitudes toward the use of technology.

These findings are consistent with the theoretical underpinnings of the Technology Acceptance Model (TAM) (Al-Adwan et al., 2023), which emphasizes that perceived usefulness and perceived ease of use significantly influence users' attitudes toward adopting technology. In the educational context, students perceive interactive technology as helpful and easy to use, they are more likely to have positive experiences, higher engagement, and favorable attitudes. Furthermore, research by Pandita & Kiran, (2023) and Teng & Wang (2021) supports this perspective, revealing that the integration of digital learning tools enhances cognitive engagement, increases learner motivation, and fosters more positive perceptions of language learning.

3.2.5. Causal Analysis: What Happens When Technology Improves?

Predictive analysis based on regression results indicates that improving the quality of technology-based learning experiences and increasing student engagement directly enhances students' positive attitudes toward the English education revolution. In other words, when interactive technology is continuously developed and effectively implemented, students are more likely to exhibit enthusiasm, openness to change, and greater confidence in the learning process.

According to Kordrostami & Seitz (2022) and Gameil & Al-Abdullatif (2023), when instructors become more proficient in using interactive digital platforms, students tend to feel more involved and actively participate. This gradually reinforces their perception of technology's benefits and shapes attitudes that support innovation. Yadav (2025) added that enhancements such as the integration of augmented reality, virtual classrooms, and adaptive learning systems have the potential to deliver more immersive and personalized learning experiences. The impact extends beyond academic performance to include students' readiness for global challenges that demand digital literacy and English communication skills.

This finding aligns with the principles of Constructivist Learning Theory (Msonde, 2023), which emphasizes the importance of learner-centered, active, and contextualized experiences in fostering meaningful knowledge construction. When interactive technology enhances the quality of instructional design, such as through virtual simulations, adaptive feedback, or gamified learning environments, it not only improves students' cognitive engagement but also shapes their emotional responses toward learning. Research by Christopoulos & Sprangers (2021) supports this by showing that well-integrated educational technology significantly boosts learner motivation and autonomy, especially when it allows for personalization and interactive participation. Additionally, Qaddumi (2021) said that improvements in technology use for English language instruction positively influence students' attitudes and contribute to stronger language retention.

These findings also carry important implications for education policy design. If institutions aim to promote broader acceptance of technology, they must prioritize student experience and engagement. Providing instructors with technology training, ensuring stable internet access, and developing curriculum content that adapts to learners' needs are essential steps. The more institutions support positive learning experiences, the greater the potential for a collective shift in students' attitudes toward technology-based education.

3.2.6. English Language Learning in the Post-Traditional Era: Toward a Digital Ecosystem

The rise of technological revolutions has shifted English language learning into a post-traditional era that demands a paradigm shift. Traditional methods such as lectures, drilling, and rote memorization are no longer sufficient. Learning is now evolving into an integrated digital ecosystem (Nguyen & Tuamsuk, 2022). In this new environment, the role of educators is transforming from being the sole providers of information to becoming facilitators who guide, curate, and personalize the learning process. Findings from our study indicate that students have begun to embrace this transition by actively integrating technology into their daily academic routines.

The emerging digital ecosystem includes the use of Learning Management Systems (LMS), video conferencing, podcasts, AI-powered learning applications, and online forums that enable real-time idea exchange. Students from Indonesia and Iraq in this study expressed enthusiasm in exploring these tools. They view technology not merely as an instrument, but as a dynamic social learning space that fosters cross-cultural and cross-regional collaboration. This perspective aligns with previous studies suggesting that digital platforms serve as hubs for intercultural communication and collaborative learning (Kolm et al.,

2022; Machwate et al., 2021). Such environments reposition English learning not only as a linguistic endeavor, but also as a gateway to global digital literacy and participation in transnational communities (Liu, 2025).

Within this ecosystem, learning autonomy becomes a defining characteristic. Students can choose when, how, and where they learn based on personal preferences. Education becomes more project-based, contextual, and collaborative, blurring the boundaries between formal and informal learning. They engage with content not only in classrooms, but also through YouTube, podcasts, and online communities. This represents a new form of language literacy in the digital age more independent, critical, and globally connected.

This shift toward a digital ecosystem in English language learning aligns with the principles of Connectivism (Mukhlisa et al., 2024), which suggests that knowledge is distributed across a network of connections, and learning consists of the ability to construct and navigate those networks. In a post-traditional setting, students are no longer passive recipients of information but active participants in a digitally mediated learning environment. Studies by Wei (2023) and Karakaya & Bozkurt (2022) confirm that mobile-assisted and AI-supported language learning promotes greater learner autonomy, adaptability, and motivation.

The future of English learning demands the development of a digital ecosystem that is inclusive, flexible, and sustainable. It is not enough to simply change the medium. A new learning culture must also be cultivated. This study highlights that students are ready and gradually adapting to these learning patterns. The challenge now lies in how educational institutions, instructors, and curricula can transform in parallel to support the formation of a truly holistic digital learning ecosystem.

3.2.7 Practical Implications of Integrating Interactive Technology in English Language Learning

The findings of this study offer several practical implications for the development of English language learning in the digital era. When educational institutions enhance the quality and frequency of technology use, such as by expanding the application of LMS platforms, interactive apps, or other digital tools, students tend to perceive the learning process as more modern, flexible, and meaningful. According to Essa et al. (2023), technology helps make learning feel more relevant to their daily lives while also providing a more adaptive and personalized environment.

Furthermore, when students are given access to various technology-based learning activities such as educational games, interactive quizzes, breakout rooms, and digital discussion forums, they are likely to become more active in class. Their engagement increases not only behaviorally, but also emotionally and cognitively. The presence of interactive technology fosters deeper involvement, transforming English classes from passive sessions into engaging and enjoyable learning experiences. In addition, when students feel comfortable and supported by the use of technology, they tend to develop a more positive attitude. They become more enthusiastic about learning, more confident in expressing themselves, and begin to see technology not merely as a supplement but as a necessary part of modern education. This suggests that the integration of interactive technology has strong potential to enhance students' learning experiences, engagement, and attitudes in English language education.

4. CONCLUSION

This study comprehensively explores the role of interactive technology in the transformation of English language education by examining three key dimensions of learning: student experience, engagement, and attitude. The results of multiple linear regression analysis indicate that both learning experience and engagement significantly influence students' attitudes toward technology-driven English education. Students from Iraq and Indonesia generally demonstrated a positive stance, reflecting their readiness to embrace a shift from traditional methods to a more digital, flexible, collaborative, and personalized approach to learning. High levels of engagement through interactive tools and digital platforms were found to promote more supportive attitudes toward this innovation. These findings strengthen the theoretical assumption that interactive technology is not merely a supplementary tool but a driving force in shaping a new and sustainable learning ecosystem.

However, this study has several limitations. The data were collected online and relied solely on quantitative methods, which may not fully capture the emotional, social, and cultural nuances of students' interactions with technology. The scope of variables was also limited and did not account for external factors such as institutional readiness, the role of instructors, or the availability of digital infrastructure, all of which could significantly influence students' experiences and attitudes. Future research should adopt a mixed-methods approach by incorporating interviews or direct participatory observations to gain deeper insights into the perceptions and challenges faced by students in technology-based learning environments. Longitudinal studies are also recommended to observe how student attitudes and engagement patterns evolve over time, particularly in light of the continuous advancement of educational technologies such as AI, virtual reality, and adaptive learning systems.

This study contributes to the fields of English language teaching and educational technology by highlighting the necessity of integrating digital strategies that not only improve instructional delivery but also enhance student experience, foster meaningful engagement, and cultivate positive learner attitudes. As education continues to evolve in response to rapid technological developments, institutions must design learning ecosystems that are not only digitally equipped but also pedagogically responsive. Aligning technological innovation with human-centered pedagogy will be essential to ensuring that digital transformation in education remains inclusive, relevant, and future-ready.

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