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Technology Integration in EFL Teaching and Learning in the Kingdom of Saudi Arabia: Current Practices, Benefits, Challenges, and Future Directions

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Abstract. Technology integration has heightened attention in the teaching and learning of a foreign language. Teachers are expected to utilize technological tools effectively to improve language learning. Therefore, this study aimed to identify the current practices of EFL teachers and their perceived benefits, expected challenges, and future directions for technology integration in teaching and learning in the Kingdom of Saudi Arabia. In addition, this study examined the relationship between the EFL teachers' responses and their socio-demographic characteristics (gender, age, teaching experience, and academic qualification). The study applied a descriptive-analytical approach, and data were collected through a researcher-developed questionnaire from 224 EFL teachers at three universities during the academic year 2024. The data analysis was performed using descriptive and inferential statistical methods. The key findings reflected high levels of technology integration among EFL teachers' practices, perceived benefits, and future directions. Furthermore, the results showed low levels of challenges in teaching and learning. Moreover, teaching experience was the most consistently significant characteristic, being associated with current practices, perceived challenges, and support for future directions. Gender and academic qualification were associated with perceived benefits, while age group was associated with support for future directions. The study deepens current knowledge regarding variations in teachers' perceptions across socio-demographic groups and yields insights concerning educational policy, teacher development, and future research.

Keywords: educational technology; Saudi EFL context; higher education; opportunities; challenges

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1. Introduction

The English language is central in many educational systems. Therefore, technology integration has become increasingly important for guaranteeing the effectiveness of teaching methods and high-quality learning experiences (Rintaningrum, 2023). In the past decade, digitalization has driven significant global shifts in education. Researchers, practitioners, and decision-makers have been increasingly drawn to technology integration and have recognized its importance in fostering diverse learning styles and tailoring adaptive instruction (Qureshi et al., 2021; Shahid et al., 2023).

Technology integration is the incorporation of various technological tools and methods to sustain students' motivation and achieve meaningful learning (Gherdan, 2022). Over the years, the concept of technology has witnessed rapid changes in response to language teaching and learning needs. Initially, the concept of technology integration emerged as Computer-Assisted Language Learning (CALL) and subsequently evolved to include new approaches such as Internet-based Language Learning (IBLL), Intelligent CALL (ICALL), and Robot-Assisted Language Learning (RALL) (Aljameel, 2022). Notably, the changes that the concept has undergone mark technology integration as a criterion for the success of language teaching and learning (Syathroh et al., 2021), and the reason for this is that technological means and resources provide more personalized content and a gradual learning pace (Kustini, 2023). For example, virtual reality (VR) and augmented reality (AR) activities provide authentic engagement that addresses many challenges associated with conventional strategies (Khafaga & Al-Johani, 2024).

The incorporation of technological devices within EFL classrooms in the Kingdom of Saudi Arabia (KSA) also witnessed developments. Teachers began using advanced tools such as interactive whiteboards, digital media, and educational applications in their lessons (Aljameel, 2022). This shift has multifaceted positive effects, including enhancing student learning and providing teachers with innovative strategies to increase motivation and engagement (Tubagus et al., 2023). Notably, adaptive learning platforms using artificial intelligence (AI) to personalize learning are becoming pivotal since the use of AI technology in the English as a foreign language (EFL) context enhances the language learning process and helps both teachers and students to keep informed about the latest technological advancements (Bhiwaniwala et al., 2023). Furthermore, Metwally and Bin-Hady (2025) reported that EFL educators' integration of AI into their teaching practices boosts students' learning flexibility, long-term potential, and needs. Additionally, it allows educators to become aware of their ethical and professional responsibilities.

In addition, exploratory investigations demonstrated that all digital devices, including AI-powered devices, can assist teaching and learning (AbdAlgane & Othman, 2023). Alshehri (2024) pointed out that self-directed learning and interactions with colleagues help most EFL teachers in gaining the technological experience and skills required in facilitating teaching, yet they confront challenges in integrating technology at their universities. Many research studies conducted

in the KSA context have investigated the effects of integrating technology on English language acquisition (Almarshad & Alghammas, 2025; Alqarni, 2024; Khafaga & Al-Johani, 2024). In contrast, other studies have examined the attitudes or perceptions of both teachers and students regarding the use of technology integration (Al-Alami & Alhamami, 2024; Alhammad & Aloniz, 2025; Alhumsi, 2025; Almziad, 2025).

In line with the goals and requirements of Vision 2030, understanding the optimal ways to integrate technology into EFL classrooms is important for achieving effective teaching practices (Al Fraidan & Alaliwi, 2024). The study at hand aims to provide a comprehensive overview of current practices, perceived benefits, challenges, and future goals of integration in relation to the characteristics of EFL teachers, which remain unexplored in the EFL literature in the context of KSA.

The study is important, as it can identify effective technology integration strategies by providing insights into the benefits and challenges, hence improving teaching quality and learning outcomes. Moreover, the findings can improve policymakers' decisions regarding technology integration through recommendations to support EFL teaching and learning. This study contributes to a broader and better understanding of technology's role in EFL globally.

The research aimed to achieve the following objectives:

1) Investigate the current EFL technology practices in KSA classrooms.
2) Identify the association between the characteristics of EFL teachers (gender, age, teaching experience, academic qualification) and their perceptions of the current practices of EFL teaching and learning technology.
3) Evaluate the benefits of technology integration in EFL education in KSA.
4) Identify the association between the characteristics of EFL teachers and their perception of the perceived benefits of technology integration in EFL.
5) Evaluate the challenges of integrating technology into EFL education in KSA.
6) Identify the association between the characteristics of EFL teachers and their perceptions of the challenges of technology integration in EFL.
7) Recommend future strategies to enhance effective technology use in KSA EFL.
8) Identify the association between the characteristics of EFL teachers and their support for the future directions for technology integration in EFL.

Accordingly, this study attempted to answer the following questions:

1) How do EFL teachers practice technology integration in their classrooms in KSA?
2) What is the association between the characteristics of EFL teachers (gender, age, teaching experience, academic qualification) and their perceptions of the current practices of technology integration in EFL teaching and learning?
3) What are the benefits of technology integration in EFL teaching and learning in KSA?
4) What is the association between the characteristics of EFL teachers and their perceptions of the benefits of technology integration in EFL teaching and learning?

5) What are the challenges of technology integration in EFL teaching and learning in KSA?
6) What is the association between the characteristics of EFL teachers and their perceptions of the challenges of technology integration in EFL teaching and learning?
7) What future directions should be pursued to enhance technology integration in EFL teaching and learning in KSA?
8) What is the association between the characteristics of EFL teachers and their support for the future directions of technology integration in EFL?

2. Literature Review

2.1 Recent Trends in Competencies for Effective Technology Integration

It is increasingly expected that EFL teachers will make effective use of technological tools and resources to deliver engaging, successful instruction. For this purpose, various models and literacies have been developed to highlight the necessary competencies. One of the prominent models of teacher competencies is the Technological Pedagogical Content Knowledge (TPACK) model developed by Mishra and Koehler (2006). According to the model, teachers need to possess and integrate three components: knowledge of technology associated with using different technological means and resources; pedagogical knowledge related to instructional approaches and methods; and content knowledge concerned with knowledge of the study or learning materials.

Similarly, Falloon (2020) stated that teachers need to be adept at planning and organizing, teaching digital literacy, integrating technological tools, and evaluating them accordingly. Theories and models of technology integration may vary, yet the competencies of EFL teachers need to align with the demands and predicaments of the 21st century such as critical thinking and creativity. Therefore, competencies must include technical skills, pedagogical knowledge, reflective practice, and student-centered learning (Nurhidayat et al., 2023). Most importantly, EFL teachers need not only to understand how to use and apply technology but also to be aware of the benefits and costs of integrating it (Elmahdi et al., 2023).

2.2 Types of Technology Integration and Tools Used in the Saudi EFL Context

Technology integration can vary depending on its purpose and implementation. Moore (2009) mentioned three general types of technology integration:

1) *On-site uses:* This type of integration describes the simultaneous learning that happens in a classroom while the teacher is leading a whole group of students at once (e.g., CALL, which is an approach to language learning using the computer to present content and support learning) (Zhang, 2021).
2) *Blended uses:* In this type of integration, technology serves as a supplement to the curriculum and is used both inside and outside the classroom (e.g., web-based games and WebQuests).
3) *Online learning:* This type of integration is fundamentally internet based, and the content is presented online without teachers and students meeting on site (e.g., English for All).

In the Saudi EFL context, numerous technological tools are used to support language teaching and learning. These tools include e-learning platforms such as Blackboard (El Deen & Mahmoud, 2025), AI tools (Selim, 2024), interactive games, and multimedia apps (Ahmed, 2022; Yassin, 2024). Alzahrani and Saleh (2025) provided an overview of the various technological tools investigated in the Saudi EFL research field, categorized by use and popularity. Mobile applications, digital games, and Web 2.0 applications such as Google Docs were among the commonly investigated tools. However, AR, VR, transcription and translation software, and chatbots received less research attention. The various technological tools used clearly point out the importance of creating an enriched, interactive, and effective language-learning experience.

2.3 Benefits of Technology Integration in EFL

Integrating technological tools can enhance both teaching and learning experiences and help overcome many hurdles found in traditional instruction. Wardat and Akour (2024) found that technological tools provide personalized learning opportunities and access to a variety of authentic materials that meet students' needs. Moreover, integrating technology helps teachers to design and implement enjoyable classroom activities that foster students' engagement and motivation to learn (Panagiotidis et al., 2023). Moreover, integrating technology encourages students to become more autonomous and active in their learning (Mai, 2020). In addition, technological resources assist teachers in delivering effective and constructive feedback, which is reflected in improved students' language skills (Asadi et al., 2025; Asratie et al., 2023; Suharti et al., 2022). In sum, technology integration is pivotal, serving as a catalyst for effective language teaching and learning (Al-Dosakee & Ozdamli, 2021).

2.4 Professional Development for Technology Integration in the Saudi EFL Context

Over the years, Saudi Arabia has placed substantial emphasis on adopting technology in EFL education in accordance with Vision 2030. Consistent with the standards and goals of the Ministry of Education, it is vital for EFL teachers to engage in professional development in technology integration. Although Saudi EFL teachers showed positive attitudes toward technology integration, recent studies have reported the need for professional development in this area. For instance, the study by Alshehri (2024) showed that some Saudi EFL teachers have a positive attitude toward the effectiveness of technology integration on language learning, while others believe that current professional development programs are not designed to meet their needs.

Furthermore, Al-Seghayer's (2022) study indicated that professional development is still needed since Saudi EFL teachers encountered multiple challenges involving low self-efficacy in technological knowledge and skills. Furthermore, Hameed's (2024) study revealed that Saudi EFL teachers have shown positive attitudes toward using advanced technological tools but are skeptical about their ability to use them effectively. These studies suggest that examining EFL teachers' current practices, perceived benefits, and challenges could help in designing professional development programs that correspond with teachers' actual needs.

2.5 Related Studies

Goswami and Dutta (2015) examined the existing literature on technology usage from a gender perspective. The review concluded that gender plays an important role in determining acceptance of new technology in a few contexts, while there are cases where gender differences cannot be discerned.

Tahir et al. (2018) explored the difficulties encountered by early-career teachers during their career entry stage in Pakistan. Using a mixed-method approach with surveys and interviews, the study found that novice teachers experienced difficulties in classroom management, teaching practices, and ICT integration. The researchers pointed out the importance of mentoring and professional development to strengthen teachers' pedagogical and technological skills.

Almalki (2020) examined variables influencing technology adoption in EFL classes using a 21-item questionnaire on a sample of 38 Saudi EFL teachers. The study considered multiple variables, including age, technological competence rate, and attitudes. The results indicated the absence of a significant link between age and technology use. However, there was a strong correlational relationship between classroom integration, teachers' perception, and skills.

Smith et al. (2020) conducted a systematic literature review to examine technology integration in professional education. The study was based on the argument that educators should not assume that learners are naturally proficient with digital technologies. The study's findings showed that meaningful technology integration necessitates intentional instructional design, digital competence and skill development, and adequate support for both teachers and students.

Mishra et al. (2022) investigated the incorporation of the TPACK framework from the teachers' perspectives. The study found that teachers acknowledged the importance of combining pedagogical strategies and technological and content knowledge to improve classroom instruction. However, effective implementation demanded engagement in ongoing professional development and institutional support to strengthen teachers' confidence and competence in integrating technology.

Jamshed et al. (2024) investigated the perceptions, perspectives, and prospects regarding AI-assisted learning and teaching of Saudi EFL students at the University of Prince Sattam bin Abdulaziz. The study used a questionnaire and was distributed to 258 EFL students across the undergraduate levels. The results showed that students had highly positive perceptions of the integration of AI tools. It was also revealed that the Saudi higher education system has the needed potential for effective AI integration.

Hameed (2024) conducted a study aimed at identifying the contribution of digital solutions in the context of Saudi Arabia by examining the perceptions of teachers and students regarding the efficacy of these solutions in English language teaching and learning. The study used questionnaires and interviews with a sample of 417 students and 10 teachers. The results indicated that both teachers

and students had positive attitudes toward technology integration. However, they were skeptical about their present technological understanding, some financial implications, and the sustained effectiveness of technological measures and solutions.

The study by Metwally and Bin-Hady (2025) examined the training levels needed for Saudi EFL teachers to integrate AI tools into their instruction and explored their perspectives on such training. The study used a questionnaire to collect both qualitative and quantitative data from 42 instructors at King Khalid University. Surprisingly, the findings showed that their level of training needs was critical, which could potentially affect their successful integration of AI tools.

Previous studies have engaged with parts of technology integration. Almalki (2020) focused on the age and attitudes of a specific population of teachers, and Jamshed et al. (2024) and Hameed (2024) found positive attitudes toward integration among the students who were studied. Metwally and Bin-Hady (2025) studied AI tools and related training of a limited sample of teachers. This research focused on a large sample of Saudi EFL university teachers, examining their practices, perceived benefits, challenges, and future directions in association with their socio-demographics, which is rarely addressed in research studies. This presented a more detailed contribution and filled a clear gap in literature.

3. Methodology

3.1 Study Design

This study employed a quantitative cross-sectional survey design to examine technology integration in EFL teaching and learning among university teachers in the KSA. Data were collected using a structured web-based questionnaire that captured teachers' demographic characteristics, current technology-integration practices, perceived benefits, perceived challenges, and future directions. The data were analyzed using descriptive and inferential statistical methods in line with the study objectives.

3.2 Population and Sample

The study population comprised EFL teachers working in three public universities in the western region of the KSA during the 2024 academic year. A stratified random sampling technique was employed to ensure proportional representation of key demographic subgroups within the population. The final sample consisted of 224 EFL teachers, comprising 122 females and 102 males.

3.3 Study Instrument

Data were collected using a structured, researcher-developed questionnaire based on a comprehensive review and synthesis of relevant literature on technology integration in EFL contexts. The questionnaire items were developed through a systematic review of previous empirical studies on technology integration in EFL education. Items were adapted and modified from established instruments in the literature to ensure content relevance and contextual suitability for the Saudi EFL environment. This process involved rephrasing and refining existing items rather

than using them verbatim, ensuring alignment with the study objectives and constructs.

The questionnaire consisted of five sections, with a total of 20 items across the four perception-based dimensions plus the section regarding the demographic variables. The first section collected respondents' demographic information, including gender, age, teaching experience, and academic qualification, using closed-ended categorical response options. The second section measured current technology-integration practices using four Likert-scale items. The third section assessed perceived benefits of technology integration using four Likert-scale items, while the fourth section examined perceived challenges using four Likert-scale items. The fifth section focused on future directions for enhancing technology integration in EFL teaching and learning, also consisting of four Likert-scale items. All perception-based items in sections 2–5 were measured on a five-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5).

The questionnaire was developed in an online format and distributed electronically to EFL teachers at the selected universities. The link to the questionnaire was shared through institutional emails and official departmental communication channels with the assistance of relevant coordinators. Participation was voluntary, and respondents were informed about the purpose of the study and assured of confidentiality and anonymity prior to completing the survey. Data collection was conducted during the 2024 academic year, and all responses were automatically recorded in a secure database for subsequent analysis.

3.4 Construct Validity and Reliability of the Designed Questionnaire

Prior to the main study, the questionnaire was pilot tested with 30 respondents and assessed for construct validity, internal consistency reliability, and test-retest reliability. The instrument was reviewed by five experts in EFL education and technology integration to establish content and face validity. Construct validity was evaluated through Exploratory Factor Analysis (EFA). Kaiser-Meyer-Olkin (KMO), the sampling adequacy indicator, was 0.75, which showed a moderate level of factorability, and Bartlett's Test of Sphericity verified the data suitability for factor analysis with a significant *p*-value of less than 0.001. In addition, Cronbach's alpha was used to assess internal consistency, which displayed a value of 0.89, revealing good internal consistency among the items. Test-retest reliability was also examined using the Intraclass Correlation Coefficient (ICC), which was 0.87, indicating high stability over time.

3.5 Data Analysis

Statistical analysis was performed using SPSS version 25. Respondents' socio-demographic characteristics were summarized using frequencies and percentages. Similarly, responses to items measuring current practices, perceived benefits, perceived challenges, and future directions of technology integration in EFL teaching and learning were also summarized using frequencies and percentages. Composite scores were computed for each domain (current practices, perceived benefits, perceived challenges, and future directions) by summing responses across the relevant Likert-scale items (1 = Strongly Disagree

to 5 = Strongly Agree). The normality of the composite scores was assessed using the Shapiro-Wilk test. The results indicated that the data were not normally distributed; therefore, the composite scores were categorized into two groups (low and high) based on median cut-off values (DeCoster et al., 2011). This categorization was adopted to facilitate the interpretation of the findings, to enable comparison across demographic groups, and to support clearer presentation of results using tables and bar charts. Chi-square tests of association were used to examine the relationship between respondents' socio-demographic characteristics (gender, age, teaching experience, and academic qualification) and their categorized perceptions across the four domains. Statistical significance was set at $p \leq 0.05$.

3.6 Socio-Demographic Information

A total of 224 respondents were recruited for the study, of whom 102 (45.5%) were male and 122 (54.5%) were female. The majority of respondents (36.2%) were aged 45–54 years, followed by those aged 35–44 years, while the smallest proportion was in the 25–34 years age group. The highest percentage (43.3%) of respondents had teaching experience of more than 10 years, while 39.7% had been in the teaching profession for about 5–10 years. The majority of respondents (124; 55.4%) held a master's educational qualification, while 82 (36.6%) held a PhD degree. A very small percentage (18; 8.0%) held a bachelor's educational qualification (Table 1).

The socio-demographic profile indicates that the sample is slightly female-dominated and largely composed of mid- to senior-level EFL teachers with substantial teaching experience. The predominance of respondents in the 35−54 years age range and those with more than five years of teaching experience suggests that the findings primarily reflect the views of experienced educators. In addition, the relatively high proportion of postgraduate degree holders indicates a highly qualified sample, which may enhance the credibility of the findings but should be considered when generalizing results to less-experienced or less-qualified EFL teachers.

Table 1: Respondents' socio-demographic characteristics

Variable	Frequency	Percentage
Gender		
Male	102	45.5
Female	122	54.5
Age group		
25–34 years	35	15.6
35–44 years	67	29.9
45–54 years	81	36.2
55 years and above	41	18.3
Teaching experience		
Less than 5 years	38	17.0
5–10 years	89	39.7
Greater than 10 years	97	43.3

Variable	Frequency	Percentage
Degree qualification		
Bachelor's	18	8.0
Master's	124	55.4
Doctorate	82	36.6

4. Results and Findings

4.1 How do EFL Teachers Practice Technology Integration in Their Classrooms in KSA?

Table 2 presents respondents' responses regarding their current technology integration practices in EFL teaching and learning. Most respondents strongly agreed (37.9%) and agreed (33.0%) that they regularly integrate technology into their EFL classes. Almost half (41.1%) of the respondents strongly agreed that the main technologies they use are presentations, platforms, and audiovisual resources and that their colleagues have sufficient technological resources (43.3%). An equal percentage (38.8%) of respondents strongly agreed and agreed that most other teachers at their institutions also integrate technology in EFL teaching and learning. Of the four items, the highest percentage of strong disagreement (10.3%) was recorded for the statement about using presentations, platforms, and audiovisual resources as the main technologies.

These findings indicate a high level of technology integration among EFL teachers in the participating universities. The high proportion of respondents reporting regular use of technology together with the perceived availability of institutional technological resources suggests that digital technologies have become an established component of EFL instruction in the selected institutions. The high level of agreement regarding colleagues' technology use indicates that technology integration is widely adopted within the participating universities.

Table 2: Respondents' responses to the items measuring current practices of EFL teaching and learning technology

Question	SA *n* (row %)	A *n* (row %)	N *n* (row %)	D *n* (row %)	SD *n* (row %)
1. I regularly integrate technology into my EFL classes.	85 (37.9)	74 (33.0)	30 (13.4)	27 (12.1)	8 (3.6)
2. The main technologies I use are presentations, platforms, and audiovisual resources.	92 (41.1)	63 (28.1)	10 (4.5)	36 (16.1)	23 (10.3)
3. Most teachers at my institution integrate technology regularly.	87 (38.8)	87 (38.8)	17 (7.6)	16 (7.1)	17 (7.6)
4. There are sufficient technological resources at my college.	97 (43.3)	67 (29.9)	33 (14.7)	11 (4.9)	7.1)

SA = Strongly Agree; A = Agree; N = Neutral; D = Disagree; SD = Strongly Disagree

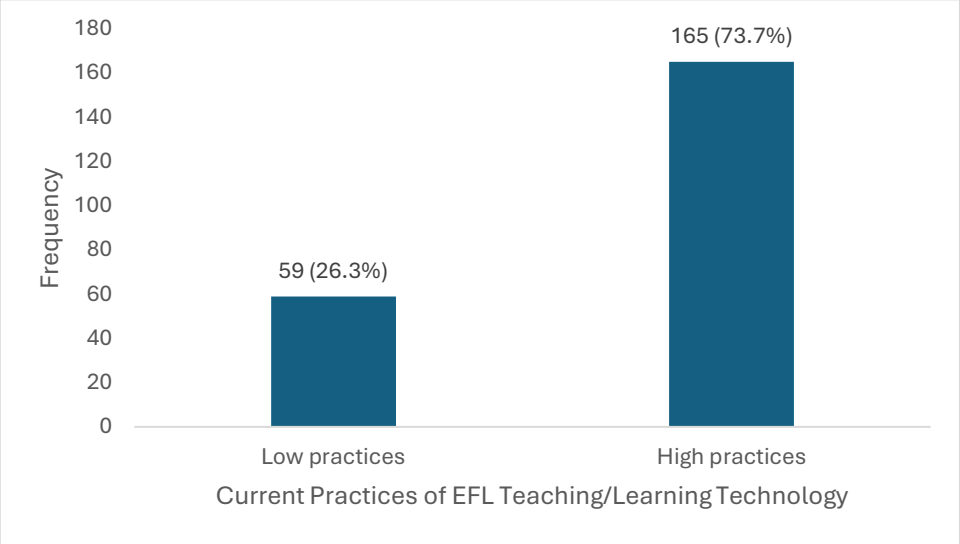

Figure 1: Respondents' perception of the current practices of EFL teaching and learning

Of the total respondents, 165 (73.7%) perceived the practice of using technology in EFL teaching and learning to be high, while 59 (26.3%) perceived it to be low (Figure 1). These findings suggest that the majority of EFL teachers perceive technology integration as a common component of their instructional practice, although approximately one-quarter of respondents reported relatively low levels of technology use, indicating scope for further improvement.

4.2 What is the Association Between EFL Teachers' Characteristics (Gender, Age, Teaching Experience, Academic Qualification) and Their Perception of the Current Practices of Technology Integration in EFL Teaching and Learning?

Table 3 presents the association between respondents' socio-demographic characteristics and their perceptions of current technology integration practices in EFL teaching and learning. Among the respondents with a high perception of technology use, 53.9% were female and 46.1% were male. The highest proportion of respondents with a high perception was observed among those aged 45−54 years (36.4%), followed by those aged 35–44 years (30.3%). Respondents with more than 10 years of teaching experience constituted the largest proportion (46.1%) of those perceiving a high level of technology integration, and most respondents with a high perception held a master's degree (57.0%).

Inferential analysis using the Chi-square test showed that teaching experience was significantly associated with respondents' perception of current technology integration practices (p = 0.005). However, no statistically significant associations were observed for gender (p = 0.792), age group (p = 0.833), or academic qualification (p = 0.647). These findings suggest that teaching experience is an important factor associated with EFL teachers' perceptions of technology integration, with more experienced teachers tending to report higher levels of technology integration. In contrast, perceptions of technology integration appear to be comparable across gender, age groups, and academic qualification levels.

Table 3: Association between the respondents' characteristics and their perception of the current practices of EFL teaching and learning technology

Variables	Current Practices of EFL Teaching and Learning Technology		*p*-value
	Low practice *n* (col %)	High practice *n* (col %)	
Gender			0.792
Male	26 (44.1)	76 (46.1)	
Female	33 (55.9)	89 (53.9)	
Age group			0.833
25–34 years	8 (13.6)	27 (16.4)	
35–44 years	17 (28.8)	50 (30.3)	
45-54 years	21 (35.6)	60 (36.4)	
55 years and above	13 (22.0)	28 (17.0)	
Teaching experience			**0.005**
Less than 5 years	18 (30.5)	20 (12.1)	
5-10 years	20 (33.9)	69 (41.8)	
Greater than 10 years	21 (35.6)	76 (46.1)	
Degree Qualification			0.647
Bachelor's	6 (10.2)	12 (7.3)	
Master's	30 (50.8)	94 (57.0)	
Doctorate	23 (39.0)	59 (35.8)	

4.3 What are the Benefits of Technology Integration in EFL Teaching and Learning in KSA?

The perceived benefits of technology integration in EFL teaching and learning were assessed across four domains: student motivation and engagement, development of 21st-century digital skills, communication and collaboration, and flexibility of learning. Overall, responses indicated a consistently high level of agreement across all items, suggesting a strong positive perception of technology-enhanced instruction among respondents.

The highest proportion of respondents (197; 38.4%) strongly agreed or agreed (49.6%) that technology integration allows for more flexible, accessible, and personalized learning. A total of 193 respondents (strongly agree = 43.8%, agree = 42.4%) believed that technology facilitates communication, collaboration, and content creation. Furthermore, 190 respondents believed that technology improves student motivation, engagement, and outcomes, and enhances 21st-century digital skills for students' futures. These findings suggest that EFL teachers in the sampled university's view technology integration not merely as a supplementary classroom tool but as a pedagogical enabler that supports student-centered, collaborative, and skill-oriented learning. The consistency of responses across all items further indicates that these perceived benefits are broadly shared rather than isolated to specific aspects of technology use.

Table 4: Respondents' responses to the items measuring the benefits of technology integration in EFL

Questions	SA *n* (row %)	A *n* (row %)	N *n* (row %)	D *n* (row %)	SD *n* (row %)
1. Technology improves student motivation, engagement, and outcomes.	90 (40.2)	100 (44.6)	13 (5.8)	10 (4.5)	11 (4.9)
2. Technology enhances 21st-century digital skills for students' futures.	103 (46.0)	87 (38.8)	7 (3.1)	14 (6.3)	13 (5.8)
3. Technology facilitates communication, collaboration, and content creation.	98 (43.8)	95 (42.4)	9 (4.0)	10 (4.5)	12 (5.4)
4. Technology allows more flexible, accessible, and personalized learning.	86 (38.4)	111 (49.6)	12 (5.4)	7 (3.1)	8 (3.6)

SA = Strongly Agree; A = Agree; N = Neutral; D = Disagree; SD = Strongly Disagree

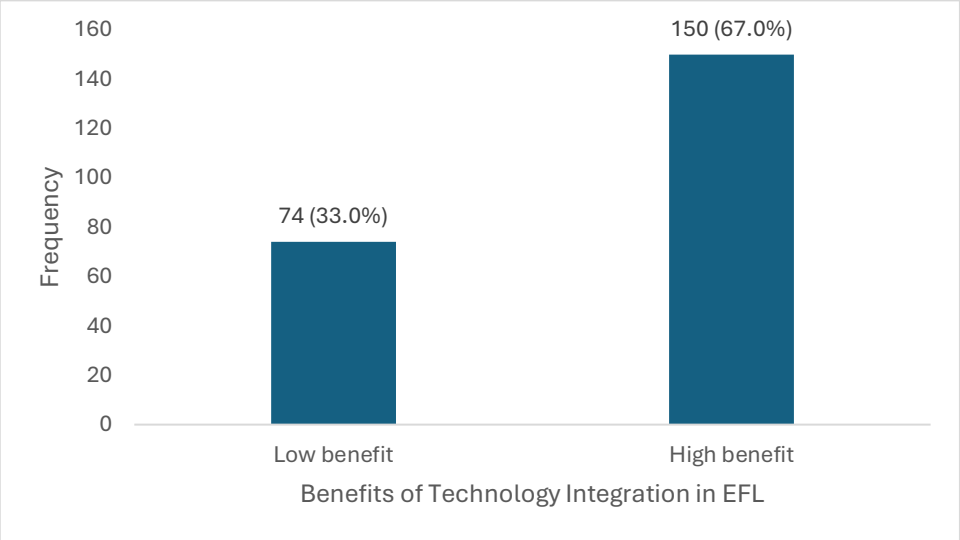

Figure 2: Respondents' perception of the perceived benefits of technology integration in EFL

Most respondents, 150 (67.0%), reported high perceived benefits of technology integration in EFL teaching and learning, while 74 (33.0%) reported low perceived benefits (Figure 2). This indicates that the majority of EFL teachers hold a positive overall perception of the benefits of technology integration, suggesting that technology is widely viewed as a supportive tool for enhancing teaching effectiveness, student engagement, and learning outcomes in the sampled universities. However, the presence of a substantial proportion of respondents reporting low perceived benefits also suggests variability in experience or access, indicating that the perceived value of technology integration is not uniform across all teachers.

4.4 What is the Association Between EFL Teachers' Characteristics and Their Perception of the Benefits of Technology Integration in EFL Teaching and Learning?

Among the respondents with a high-benefit perception of technology integration, the proportion of females (51.3%) was slightly larger than the proportion of males (48.7%). Chi-square analysis revealed a statistically significant association between gender and perceived benefits of technology integration ($p = 0.018$). This suggests that gender may be associated with differences in how EFL teachers perceive the benefits of technology integration in teaching and learning.

A statistically significant association was also observed between educational qualification and perceived benefits ($p = 0.031$). Teachers with a master's degree accounted for the largest proportion of those reporting high perceived benefits (57.3%), followed by those with a PhD (38.0%) and holders of a bachelor's degree (4.7%) (Table 5). This pattern suggests that teachers with postgraduate qualifications may be more likely to recognize or report the benefits of technology integration, possibly due to greater exposure to pedagogical training or digital teaching tools.

In contrast, no statistically significant association was found between perceived benefits and age group ($p = 0.610$) or teaching experience ($p = 0.339$). However, descriptively, teachers with 5–10 years of teaching experience showed a higher proportion of high perceived benefits than other experience groups, indicating a potential trend that was not statistically supported in this sample. Overall, the findings indicate that perceived benefits of technology integration vary significantly by gender and educational qualification, while age and teaching experience do not show statistically significant associations.

Table 5: Association between the respondents' characteristics and their perception of the perceived benefits of technology integration in EFL

Variables	**Benefits of Technology Integration in EFL**		***p*-value**
	Low benefit *n* (col %)	**High benefit *n* (col %)**	
Gender			**0.018**
Male	29 (39.2)	73 (48.7)	
Female	45 (60.8)	77 (51.3)	
Age group			0.610
25–34 years	12 (16.2)	23 (15.3)	
35–44 years	20 (27.0)	47 (31.3)	
45–54 years	25 (33.8)	56 (37.3)	
55 years and above	17 (23.0)	24 (16.0)	
Teaching experience			0.339
Less than 5 years	12 (16.2)	26 (17.3)	
5–10 years	25 (33.8)	64 (42.7)	
Greater than 10 years	37 (50.0)	60 (40.0)	
Degree			**0.031**

Variables	Benefits of Technology Integration in EFL		*p*-value
	Low benefit *n* (col %)	High benefit *n* (col %)	
Bachelor's	11 (14.9)	7 (4.7)	
Master's	38 (51.4)	86 (57.3)	
Doctorate	25 (33.8)	57 (38.0)	

4.5 What are the Challenges of Technology Integration in EFL Teaching and Learning in KSA?

The challenges faced by respondents in integrating technology into EFL teaching and learning were measured using four key dimensions identified from the literature. These items were designed to capture the most commonly reported barriers to technology integration in EFL contexts rather than provide an exhaustive list of all possible challenges.

The most pressing challenge, based on strong agreement, was inadequate devices, with 34.8% of respondents strongly agreeing. This was followed by lack of internet access or reliable infrastructure (34.4%) and insufficient training and support for teachers (33.5%). The least strongly agreed-upon challenge was resistance to technological change (29.0%). However, when looking at the 'agree' responses, most respondents (36.2%) considered insufficient training and support for teachers as the most important challenge, followed by resistance to technological change (42.4%), inadequate devices (29.0%), and lack of internet access or reliable infrastructure (28.6%) (Table 6).

These findings suggest that the challenges of technology integration in EFL classrooms in KSA are primarily structural and capacity related rather than attitudinal. In particular, limited training and institutional support alongside inadequate technological resources appear to be the most consistent barriers affecting effective implementation. This indicates that improving teacher professional development and strengthening institutional infrastructure may be more critical than addressing resistance alone in enhancing technology integration practices.

Table 6: Respondents' responses to the items measuring the challenges of technology integration in EFL

Questions	SA *n* (row %)	A *n* (row %)	N *n* (row %)	D *n* (row %)	SD *n* (row %)
1. Lack of internet access or reliable infrastructure.	77 (34.4)	64 (28.6)	35 (15.6)	21 (9.4)	27 (12.1)
2. Inadequate devices.	78 (34.8)	65 (29.0)	26 (11.6)	31 (13.8)	24 (10.7)
3. Insufficient training and support for teachers.	75 (33.5)	81 (36.2)	18 (8.0)	19 (8.5)	31 (13.8)
4. Resistance to technological change.	65 (29.0)	95 (42.4)	25 (11.2)	17 (7.6)	22 (9.8)

SA = Strongly Agree; A = Agree; N = Neutral; D = Disagree; SD = Strongly Disagree

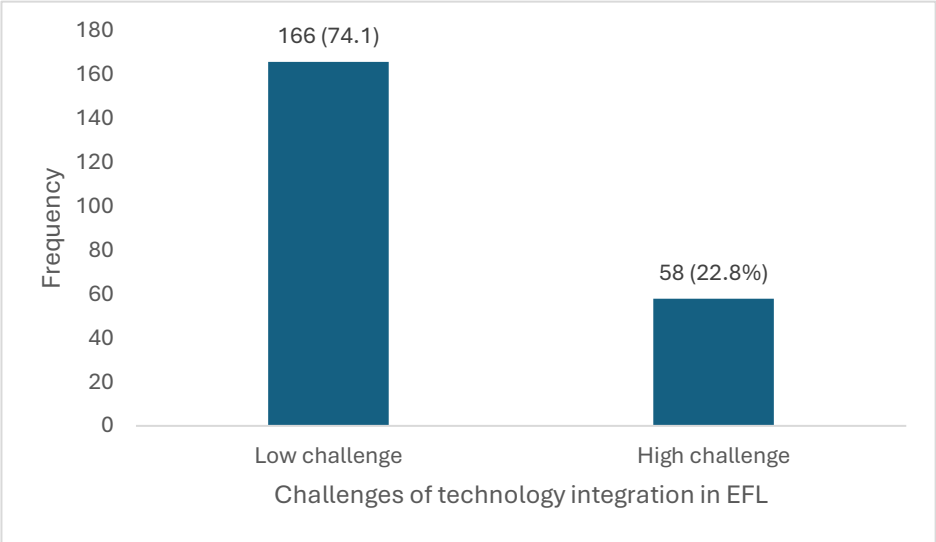

Figure 3: Respondents' perception of the perceived challenges of technology integration in EFL

In general, almost three-quarters (74.1%) of the respondents reported low perceived challenges in integrating technology in EFL teaching and learning, while approximately 22.8% reported high perceived challenges (Figure 3). This suggests that for the majority of EFL teachers in the sample, technology integration is not associated with major perceived barriers. However, the presence of a considerable proportion of respondents reporting high challenges indicates that some teachers still experience notable difficulties, pointing to variability in how technology integration is experienced across the sampled institutions.

4.6 What is the Association Between EFL Teachers' Characteristics and Their Perception of the Challenges of Technology Integration in EFL Teaching and Learning?

High perceived challenges were observed across all teaching experience groups, with the highest proportion found among teachers with more than 10 years of experience, followed by those with 5–10 years of experience. In addition, Chi-square analysis indicated a statistically significant association between teaching experience and perceived challenges (p = 0.014), suggesting that differences in perceived challenges across experience levels are unlikely to be due to chance. In contrast, no statistically significant associations were observed for gender (p = 0.460), age group (p = 0.943), or educational qualification (p = 0.922), indicating that perceived challenges were generally comparable across these demographic categories (Table 7).

Table 7: Association between the respondents' characteristics and their perception of the perceived challenges of technology integration in EFL

Variable	Challenges of Technology Integration in EFL		*p*-value
	Low challenges *n* **(col %)**	**High challenges** *n* **(col %)**	
Gender			0.460
Male	78 (47.0)	24 (41.4)	
Female	88 (53.0)	34 (58.6)	
Age group			0.943
25–34 years	25 (15.1)	10 (17.2)	
35–44 years	51 (30.7)	16 (27.6)	
45–54 years	59 (35.5)	22 (37.9)	
55 and above years	31 (18.7)	10 (17.2)	
Teaching experience			**0.014**
Less than 5 years	33 (19.9)	5 (8.6)	
5–10 years	63 (38.0)	26 (44.8)	
Greater than 10 years	70 (42.2)	27 (46.6)	
Degree Qualification			0.922
Bachelor's	14 (8.4)	4 (6.9)	
Master's	91 (54.8)	33 (56.9)	
Doctorate	61 (36.7)	21 (36.2)	

4.7 What Future Directions Should be Pursued to Enhance Technology Integration in EFL Teaching and Learning in KSA?

Respondents' perceptions of future directions for technology integration in EFL teaching and learning were assessed using four key dimensions derived from the literature: increased use of emerging technologies (AI, VR, AR, and gamification); adoption of online, blended, and flipped learning models; greater emphasis on self-directed and lifelong learning; and stronger collaboration between educators and technology specialists.

Overall, responses showed generally positive attitudes toward all proposed future directions, with very low levels of disagreement across all items. For emerging technologies, 26 respondents expressed disagreement. For online, blended, and flipped learning models, 24 respondents expressed disagreement. For self-directed, personalized, and lifelong learning, 21 respondents expressed disagreement. The lowest level of disagreement was observed for stronger partnerships between educators and technology specialists, with only 17 respondents expressing disagreement.

These findings suggest that EFL teachers in the sampled universities generally support future-oriented approaches to technology integration, particularly those involving collaboration and professional support structures. The relatively lower resistance across all items indicates openness toward further digital

transformation in EFL teaching, although the level of support varies slightly across different dimensions.

Table 8: Respondents' responses to the items measuring the future directions for technology integration in EFL

Question	SA *n* (row %)	A *n* (row %)	N *n* (row %)	D *n* (row %)	SD *n* (row %)
1. Increased focus on emerging technologies such as AI, VR, AR, and gamification.	102 (45.5)	86 (38.4)	10 (4.5)	14 (6.3)	12 (5.4)
2. Shift toward more online, blended, and flipped learning models.	99 (44.2)	87 (38.8)	14 (6.3)	13 (5.8)	11 (4.9)
3. Greater emphasis on self-directed, personalized, and lifelong learning.	101 (45.1)	91 (40.6)	11 (4.9)	12 (5.4)	9 (4.0)
4. Stronger partnerships between educators and technology specialists.	103 (46.0)	97 (43.3)	7 (3.1)	8 (3.6)	9 (4.0)

SA = Strongly Agree; A = Agree; N = Neutral; D = Disagree; SD = Strongly Disagree

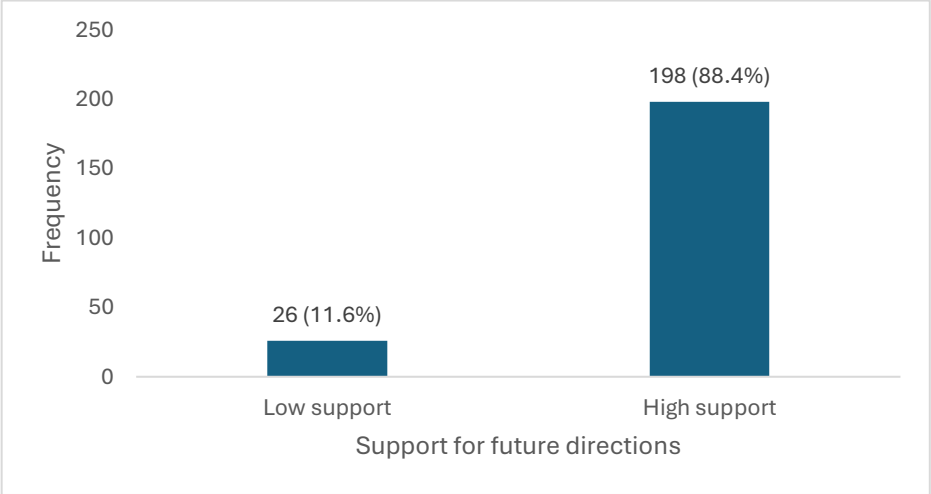

Figure 4: Respondents' support for the future directions for technology integration in EFL

In general, approximately 8 in every 10 respondents showed high support for future directions in EFL technology integration, while only 11.6% demonstrated low support (Figure 4). This indicates a strong overall readiness among EFL teachers to embrace future-oriented developments in technology integration, particularly those related to emerging technologies, learner-centered approaches, and collaborative professional support. However, the presence of a small proportion of respondents with low support suggests that differences in readiness still exist and may reflect variations in experience, access, or exposure to technological innovations.

4.8 What is the Association Between EFL Teachers' Characteristics and Their Support for the Future Directions of Technology Integration in EFL?

Chi-square analysis indicated that teaching experience was significantly associated with respondents' support for future directions in EFL technology integration (p = 0.028). Specifically, higher levels of support were more common among teachers with more than 10 years of experience and those with 5–10 years of experience than those with less than 5 years of teaching experience (Table 9). This suggests that teaching experience may play a role in shaping teachers' willingness to support future-oriented developments in technology integration.

Age group was also significantly associated with support for future directions (p = 0.036), indicating variation in levels of support across different age categories. However, no statistically significant associations were found between support for future directions and gender (p = 0.441) or educational qualification (p = 0.211), suggesting that these characteristics do not influence teachers' support for future directions of technology integration in this sample.

Table 9: Association between respondents' characteristics and their support for the future directions for technology integration in EFL

Variables	Future Directions for Technology Integration in EFL		*p*-value
	High support ***n*** **(col %)**	**Low support** ***n*** **(col %)**	
Gender			0.441
Male	92 (46.5)	10 (38.5)	
Female	106 (53.5)	16 (61.5)	
Age group			**0.036**
25–34 years	32 (16.2)	3 (11.5)	
35–44 years	58 (29.3)	9 (34.6)	
45–54 years	69 (34.8)	12 (46.2)	
55 and above years	39 (19.7)	2 (7.7)	
Teaching experience			**0.028**
Less than 5 years	35 (17.7)	3 (11.5)	
5–10 years	75 (37.9)	14 (53.8)	
Greater than 10 years	88 (44.4)	9 (34.6)	
Degree qualification			0.211
Bachelor's	18 (9.1)	0	
Master's	110 (55.6)	14 (53.8)	
Doctorate	70 (35.4)	12 (46.2)	

5. Discussion

This study examined the current practices, perceived benefits, perceived challenges, and future directions of technology integration in EFL teaching and learning in KSA and determined whether these perceptions were associated with teachers' gender, age, teaching experience, and academic qualification.

The findings showed that technology integration is already a well-established feature of EFL instruction in the participating institutions, with almost three-quarters of teachers (73.7%) reporting a high level of current practice. Most respondents agreed that they regularly integrate technology into their classes, that

presentations, platforms, and audiovisual resources are their main tools, and that their colleagues do the same. This pattern of widespread, self-reported adoption is consistent with Almalki's (2020) finding of a strong correlation between EFL teachers' perceptions of technology and their actual classroom adoption of it and suggests that in the sampled universities, technology use has moved from an optional add-on to a normalized part of instructional routine. At the same time, approximately a quarter of the teachers reported comparatively low practice, and audiovisual/presentation tools attracted the highest rate of strong disagreement of the four items. This indicated that adoption is not uniform and that a meaningful subgroup of teachers may still rely on more traditional methods or lack easy access to a wider range of digital tools.

Of the four demographic characteristics, only teaching experience was significantly associated with perceived current practice. Gender, age, and academic qualifications showed no significant association. Notably, the direction of the experience effect contrasts with the common belief that younger and presumably more digital-native teachers integrate technology more readily (Smith et al., 2020). Teachers with more than 10 years of experience reported high practice, while teachers with less than five years of experience reported high practice the least. A plausible explanation is that longer institutional tenure gives teachers more cumulative exposure to their university's technology infrastructure, more opportunities to participate in professional development initiatives, and greater instructional confidence to embed digital tools into established routines.

In contrast, early-career teachers may still be consolidating basic classroom management and pedagogical skills before including technology use. This finding is consistent with the observation of Tahir et al. (2018) that rather than it being assumed that early-career teachers arrive already proficient in technology use, they often require dedicated professional development to integrate technology effectively. The absence of a significant age effect mirrors Almalki's (2020) finding of no significant relationship between age and technology integration, suggesting that, at least in Saudi EFL contexts, chronological age is a weaker predictor of practice than years of professional experience.

The teachers in the current study perceived technology integration as beneficial, with two-thirds (67.0%) reporting an overall high-benefit perception. Agreement was consistently strong across all four benefit dimensions: enhancement of 21st-century digital skills, facilitation of communication and collaboration, improved motivation and engagement, and greater flexibility, accessibility, and personalization of learning, with the latter attracting the single highest combined agreement of the four items. Rather than benefits being concentrated in one narrow area, the convergence across dimensions suggests that EFL teachers view technology as a broad pedagogical enabler rather than a supplementary add-on. This is in line with Hameed's (2024) finding that EFL instructors generally hold positive attitudes toward technology as a means of advancing language teaching and learning. The consistency of these results across dimensions also indicates that the perceived value of technology is evenly distributed rather than

concentrated in a specific use case, which is encouraging for efforts to promote further integration.

Perceived benefits were significantly associated with gender and academic qualification but not with age group or teaching experience. Male teachers made up the majority of the high-benefit group, whereas female teachers were more heavily represented by those reporting low perceived benefits. This contrasts with the findings of Goswami and Dutta (2015), which point to the mixed and context-dependent nature of gender effects on technology perceptions. The reasons behind this pattern in the present sample warrant further, ideally qualitative, investigation. Teachers holding a master's degree formed the majority of those who reported high-benefit, followed by doctorate holders, while holders of a bachelor's degree were markedly underrepresented among high-benefit teachers. This trend is consistent with the view that graduate-level training strengthens teachers' technological, pedagogical, and content knowledge, enabling them to recognize and articulate the value of digital tools more readily (Mishra et al., 2022).

Most teachers reported low overall perceived challenges while approximately one-quarter reported high challenges. The challenges rated as most pressing in terms of strong agreement were structural and resource-based (inadequate devices), unreliable internet/infrastructure, and insufficient training and institutional support rather than teachers' own resistance to change, which received the lowest rate of strong agreement. These findings indicate that the barriers to technology integration in Saudi EFL contexts are predominantly capacity and infrastructure related rather than attitudinal. This is a favorable sign for the long-term trajectory of technology integration since infrastructural and training gaps are, in principle, more directly addressable through institutional investment than deep-seated attitudinal resistance.

Teaching experience was the only characteristic significantly associated with perceived challenges; teachers with more than 10 years of experience, followed by those with 5–10 years reported high perceived challenges. This finding, taken together with the earlier findings that more experienced teachers report the highest current practice, suggests a somewhat paradoxical but coherent pattern. Teachers who use technology the most are also the ones most attuned to its practical limitations; this is likely because greater hands-on use exposes them more directly to infrastructure gaps, device shortages, and the ongoing need to adapt to continuously evolving tools. This interpretation aligns with Metwally and Bin-Hady's (2025) observation that adequate and continuous training is critical for teachers integrating newer technologies such as AI-based tools and suggests that experienced teachers may be encountering a continually changing state in which earlier training no longer fully covers the tools that are now available.

Teachers expressed strong, broad-based support for future-oriented developments in technology integration, with about nine in ten respondents classified as showing high support across all four proposed directions: greater use

of emerging technologies such as AI, VR, AR, and gamification; expansion of online, blended, and flipped learning models; a greater emphasis on self-directed and lifelong learning; and stronger partnerships between educators and technology specialists. These findings support the observation of Jamshed et al. (2024) that the Saudi higher education system has considerable potential for adopting more advanced and innovative technological tools and indicate that teachers themselves are ready to be partners in rather than obstacles to this next phase of digital transformation in EFL education.

Support for future directions was significantly associated with teaching experience and age group. The most experienced teachers (more than 10 years) were, in relative terms, the most supportive of future directions compared with teachers who had fewer years of teaching experience. The age pattern was not a simple linear relationship. Teachers aged 55 years and above together with the youngest group (25–34 years) were relatively more supportive than the group aged 45–54 years. One interpretation is that the oldest teachers, having witnessed the limitations of traditional methods over a long career, and the youngest teachers, who bring stronger digital fluency and fewer entrenched habits, may both be more open to change than mid-career teachers who may already feel reasonably settled in a workable blend of practices and, therefore, see comparatively less urgency for further transformation.

This nuance qualifies the more straightforward narrative that support for change simply increases with age or seniority and points to a need for future qualitative work to unpack why mid-career teachers specifically appear less enthusiastic about further change. Regardless of these demographic patterns, the overall findings indicate that meaningful progress will still depend on strengthened teacher development, adequate infrastructure, and enabling institutional policy since positive attitudes alone are unlikely to translate into sustained practice without these supporting conditions.

This study is not without limitations. The cross-sectional, self-report design captures teachers' perceptions at a single point in time and cannot establish causal relationships between teacher characteristics and technology-related perceptions. The sample was drawn from only three universities in KSA, which may limit the generalizability of the findings to other institutions, school levels, or regions. Future research would benefit from longitudinal designs capable of tracking how practices and perceptions evolve as teachers gain experience or receive targeted training. Qualitative approaches that can probe the reasons behind unexpected patterns such as the comparatively lower enthusiasm of mid-career teachers for future directions are also recommended.

In addition, studies that extend beyond higher education to school-level EFL contexts across a broader range of Saudi institutions are proposed. As interest in this area continues to grow, closer attention to how socio-demographic characteristics shape teachers' responses will be valuable for designing more targeted and effective policies and professional development programs to support technology integration in EFL teaching and learning in KSA.

6. Conclusion

This study aimed to examine EFL teachers' current practices together with their perceived benefits and challenges and their support for future directions regarding technology integration in KSA. In addition, the study sought to determine whether these perceptions varied according to teachers' gender, age, teaching experience, and academic qualification. The findings show a generally encouraging picture. Technology integration is already widely practiced, is perceived to offer substantial and broadly shared benefits, is associated with comparatively low levels of perceived challenges, and enjoys strong support for further-oriented development.

At the same time, the study demonstrated that these perceptions are not uniform across the teaching population. Teaching experience emerged as the most consistently influential characteristic, being significantly associated with current practice, perceived challenges, and support for future directions. Moreover, gender and academic qualification were associated specifically with perceived benefits, and age group was associated with support for future directions. No single demographic variable predicted perceptions across all four domains, underscoring that technology integration in EFL teaching is a multidimensional phenomenon that is shaped by different factors depending on which aspect (practice, benefit, challenge, or future orientation) is considered.

7. Recommendations

Based on the results, the study offers several recommendations. First, EFL teachers' development programs should be based on their current technological needs. Second, technological tools and strategies should be aligned with curriculum objectives to encourage teachers to apply them in their classes. Third, current development programs need to be evaluated to ensure effective integration of newer technologies and to address any difficulties that are encountered. This study concentrated solely on the perspectives and experiences of English language teachers at three universities in KSA. Further replication studies could be conducted on a larger sample to validate the current findings. Additionally, qualitative and quantitative studies could include a sample of EFL teachers in schools.

8. Respondents' Consent

The researcher obtained written consent from the study respondents before conducting the study. They were thoroughly informed about the purpose and the objectives of the study. Furthermore, they were reassured about the confidentiality of their identities and responses.

Conflict of Interest

The author declares no conflict of interest.

9. Acknowledgments

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Appendix 1

Dimension 1: Demographic information

- **Gender**
  Male ☐
  Female ☐
- **Age group**
  25–34 years ☐
  35–44 years ☐
  45–54 years ☐
  55 years and above ☐
- **Teaching experience**
  Less than 5 years ☐
  5–10 years ☐
  Greater than 10 years ☐
- **Degree qualification**
  Bachelor's ☐
  Master's ☐
  Doctorate ☐

Dimension 2: Items measuring current practices of EFL teaching and learning technology

	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	I regularly integrate technology into my EFL classes.					
2	The main technologies I use are presentations, platforms, and audiovisual resources.					
3	Most teachers at my institution integrate technology regularly.					
4	There are sufficient technological resources at my college.					

Dimension 3: Items measuring the benefits of technology integration in EFL

	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	Technology improves student motivation, engagement, and outcomes.					
2	Technology enhances 21st-century digital skills for students' futures.					
3	Technology facilitates communication, collaboration, and content creation.					
4	Technology allows for more flexible, accessible, and					

	personalized learning.					
Dimension 4: Items measuring the challenges of technology integration in EFL						
	Statement	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
1	Lack of internet access or reliable infrastructure.					
2	Inadequate devices.					
3	Insufficient training and support for teachers.					
4	Resistance to technological change.					
Dimension 5: Items measuring the future directions for technology integration in EFL						
	Statement	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
1	Increased focus on emerging technologies such as AI, VR, AR, and gamification.					
2	Shift toward more online, blended, and flipped learning models.					
3	Greater emphasis on self-directed, personalized, and lifelong learning.					
4	Stronger partnerships between educators and technology specialists.					