Article

EFL instructors' perceptions of integration digital transformation in EFL learning context in Higher Education

Saja Wardat[1,*], Mohammed Akour[2]

[1] Department of English Language and Literature, Irbid University College, Al-Balqa Applied University, Irbid 1293, Jordan
[2] College of Computer and Information Sciences, Prince Sultan University, Riyadh 11586, Saudi Arabia
* Corresponding author: Saja Wardat, saja.wardat@bau.edu.jo

Abstract: This paper explores the integration of digital technologies and tools in English as a Foreign Language (EFL) learning in Jordanian Higher Education through a qualitative open-ended online survey. It highlights the perceptions of 100 Jordanian EFL instructors, each with a minimum of five years of experience, on the digital transformation in the EFL learning process. The survey, consisting of ten open-ended questions, gathered in-depth insights on the benefits, challenges, and implications of this transformation. Thematic analysis was employed to analyze the qualitative data, revealing varied levels of experience, the use of diverse digital tools, and both technical and pedagogical challenges. Key findings include the positive impact of digital tools on teaching and learning experiences, enhanced student engagement, and opportunities for personalized learning and collaboration. The study concludes that leveraging digital resources can enhance EFL learner engagement and learning outcomes, inform future pedagogical practices, and shape the landscape of digital transformation in EFL Higher Education for years to come.

Keywords: digital transformation; EFL education; technology; TPACK theory; Higher Education

1. Introduction

The widespread usage of English as a global language can be determined by its importance in fields such as education, communication, commerce, and cultural exchange (Rao, 2019). English language proficiency has become important in nations where English is not the primary language. As a result, EFL programs are being developed to teach learners of other languages in their native countries (Aziz and Kashinathan, 2021; Baker and Ishikawa, 2021; Kumar, 2020). Previously, EFL education has been limited to school-based instruction, textbooks, and traditional academic methods (Alakrash et al., 2022; Saputra et al., 2022). The language learning process was typically rigid and straight and relied mainly on memorization. Moreover, geographical barriers made it difficult for learners to access instructional materials and interact with native English speakers (Alenezi et al., 2023). However, EFL learning has undergone considerable transformations as digital technology and the Internet have advanced.

In the recent era, technological diffusion and the digital revolution have transformed several facets of society and education (Alenezi et al., 2023; Mhlanga et al., 2022; Kozhukhova et al., 2021; Valdés et al., 2021). Digital transformation points to combining digital technologies, tools, and resources to boost learning skills and intellectual practices (Alenezi and Akour, 2023; Alenezi, 2021; Valdés et al., 2021). In the domain of EFL learning, digital transformation involves assessing the

requirements and expectations of stakeholders to deliver education and research services aligned with learners' knowledge necessities. Global educational institutions increasingly use this method to ensure that learners receive assistance from digital tools in their learning (Bailey and Lee, 2020; Eden et al., 2019; Saputra et al., 2022). By the same token, education, including language learning, has been greatly impacted by the massive digital revolution (Alenezi et al., 2023). There has been a significant transformation in EFL learning, largely due to the widespread use of digital technologies (Alakrash et al., 2022; Daraghmeh et al., 2021). This transformation has brought new opportunities for learners to engage with credible language resources and simply receive personalized instruction (Bailey and Lee, 2020). With the rise of the digital age, the way people connect, learn, and exchange information has been reformed.

Several key reasons have contributed to the rise of digital transformation in EFL learning (Mohamed Haggag and Bakr, 2022; Nguyen, 2022; Orellana et al., 2019). The internet's accessibility has made a variety of genuine English language resources freely accessible to learners all over the world. Learners can interact with authentic content ranging from news stories to multimedia assets via websites, online courses, and digital libraries (Alenezi et al., 2023; Bailey and Lee, 2020; Pratiwi and Waluyo, 2023). As a result, pupils become acquainted with the varied and ever-changing nature of the English language. Furthermore, interactive and appealing learning experiences are provided by interactivity and engagement via digital tools and platforms. Gamification, virtual reality, and language learning apps supply environments that improve learners to take an active role in their language learning process (Alenezi, 2021; Abdul Samea Qoura, 2020; Alenezi et al., 2023; Nugroho and Atmojo, 2022; Pratiwi and Waluyo, 2023).

Furthermore, adaptive educational technologies leverage data analytics to adjust learning experiences to the needs of individual learners (Abdul Samea Qoura, 2020; Bui, 2022; Mohamed Haggag and Bakr, 2022; Pratiwi and Waluyo, 2023). This personalization accelerates language learning and guarantees that learners concentrate on areas where they need to improve the most. Moreover, global connectivity via the internet allows EFL learners to communicate and collaborate in real time, linking them with peers and professionals from all linguistic origins (Alenezi et al., 2023; Bailey and Lee, 2020). Language exchange programs and online communities allow learners to practice English while also learning about other cultures without leaving their homes (Nguyen, 2022). Finally, pedagogical innovation is a factor that encourages educators who have adopted digital resources to reconsider old teaching techniques. Blended learning, flipped classrooms, and online assessments have improved instructional flexibility and efficacy in the EFL classroom (Abdul Samea Qoura, 2020; Alenezi et al., 2023; Asghar, 2022; Mohamed Haggag and Bakr, 2022; Orellana et al., 2019).

Although the digital transformation of EFL learning has created new opportunities, it has also created a new set of obstacles (Abdul Samea Qoura, 2020; Alenezi et al., 2023; Mohamed Haggag and Bakr, 2022; Saputra et al., 2022). These include assuring equal access to technology, protecting data privacy, and offering training and professional development to instructors. We can only fully harness the promise of digital technologies in EFL education if we address these concerns. In light

of these transformative developments, this study investigates how the digital era has impacted learning EFL. It explores many aspects of digital transformation, its profound effects, and how it could potentially improve language learning and teaching practices. To do so, we will investigate different aspects of digital transformation in EFL learning, including its benefits, challenges, and strategies for successful implementation. Lastly, we will sum up future recommendations for EFL educators.

Rationale of the study

The rationale for this paper on the digital transformation of EFL learning in higher education is rooted in the increasingly pervasive role of technology in modern education and the evolving landscape of language instruction in Jordanian Higher Education after the COVID 2019 pandemic (Akour et al., 2021; Al-Khasawneh and Obeidallah, 2019; Bailey and Lee, 2020; Miller, 2023). With the rapid advancement of digital tools and technologies, there is a growing imperative to examine their impact on pedagogy, learning outcomes, and educational practices in the EFL instruction domain. Moreover, the integration of digital tools holds the potential to revolutionize English language learning by providing access to reliable language materials, promoting interactive and appealing learning experiences, and facilitating personalized instruction customized to individual learner needs (Alenezi et al., 2023; Alghamdi and Alnajami, 2023).

However, amidst the opportunities afforded by digital transformation, there are also significant challenges to be addressed, including issues related to digital equity, pedagogical integrity, and technological proficiency (Alenezi et al., 2023; Alghamdi and Alnajami, 2023; Nguyen, 2022). The literature on digital transformation often emphasizes the integration of assessment practices that align with technological advancements. However, the specific nuances of digital literacy assessment in the context of Jordanian EFL education remain a research gap. Exploring how educators in Jordan assess digital literacy skills and integrate them into language proficiency evaluations can provide insights into the holistic development of students in a technology-infused learning environment.

By investigating the digital transformation of EFL learning in Jordanian Higher Education, this paper pursues to provide insights into effective strategies for leveraging technology to enhance language teaching and learning, identify barriers to digital integration, and inform the development of evidence-based practices and policies in the field of EFL learning. Through a comprehensive examination of current research, theoretical frameworks, and practical applications, this paper aims to contribute to the constant discussion surrounding the intersection of technology and English language instruction, offering guidance and recommendations for educators, policymakers, and stakeholders invested in the advancement of EFL learning in Jordanian higher education contexts.

2. Literature review

2.1. The digital transformation of EFL learning

Digital transformation in EFL learning is the combination of modern digital

technology, pedagogical advances, and developing teaching approaches to transform the total field of language learning (Alenezi et al., 2023; Mohamed Haggag and Bakr, 2022; Nugroho and Atmojo, 2022). It is a comprehensive and diverse progression that profoundly reforms the educational environment, reconsiders teaching approaches, and reconceptualizes learner experiences (Alenezi and Akour, 2023). It utilizes the power of advanced technologies, such as mobile devices, artificial intelligence, virtual and augmented reality, gamification, and interactive online platforms. These technologies act as stimuli that allow learners to participate in language learning in a contemporary and stimulating manner. Such an approach surpasses geographical boundaries and provides learners access to real-world language materials, realistic settings, and immediate feedback mechanisms (Nguyen, 2022). All of these are vital for comprehensive language expansion (Alenezi, 2021; Atmojo and Nugroho, 2020; Mohamed Haggag and Bakr, 2022).

Pedagogical evolution is also included in digital transformation. It requires a shift from traditional, teacher-centered teaching to learner-centric, collaborative, and adaptive techniques (Mohamed Haggag and Bakr, 2022; Nugroho and Atmojo, 2022; Nugroho and Mutiaraningrum, 2020; Tuzahra et al., 2021). The emphasis is on individualized learning methods, in which technology establishes instructional themes to individual learner requests, preferences, and progress (Alenezi and Akour, 2023). Gamified features are deliberately used to boost motivation, promoting learners to join and persist in their language learning attempts actively. Furthermore, digital transformation promotes collaborative learning practices, encouraging communication skills through virtual cooperation, peer interactions, and worldwide relations (Alenezi et al., 2023; Miller, 2023).

Furthermore, digital transformation has brought a significant change in the way EFL learning takes place (Alghamdi and Alnajami, 2023). It has highlighted the importance of data-driven decision-making. With the help of learning analytics and artificial intelligence algorithms, vast amounts of learner data can be analyzed to gain insights into individual and collective learning patterns. Educators can use these insights to improve instructional strategies, identify areas that need intervention, and customize learning experiences, ensuring that each learner receives the necessary support (Alenezi et al., 2023; Akour et al., 2021; Alenezi and Akour, 2023; Nguyen, 2022). Accordingly, this approach maximizes their language learning potential (Bui, 2022; Tuzahra et al., 2021).

To summarize, digital transformation in EFL learning is not a one-time occurrence but a continual and dynamic process. It involves the integration of technological innovations, pedagogical adaptations, and the development of teaching roles. This transformation provides learners with supreme access to English language materials and appealing skills, while also developing a community of digitally literate, inspired, and globally linked language learners. As technology continues to advance, the concept of digital transformation in EFL learning will continue to evolve, anticipating a future where language learning is simplified and transformed.

2.2. Benefits of digital transformation in EFL learning

2.2.1. Enhanced engagement, motivation, and diverse learning resources

Digital revolution revitalizes EFL classrooms by increasing learner engagement and motivation (Alghamdi and Alnajami, 2023; Akour et al., 2021; Nugroho and Mutiaraningrum, 2020). Interactive multimedia features, gamification, and appealing simulations capture learners' attention, which transforms monotonous teachings into dynamic, participatory experiences (Alenezi et al., 2023; Ahmed et al., 2021; Miller, 2023). Gamified challenges, rewards, and real-time feedback mechanisms increase intrinsic motivation, enabling learners to join in and persevere in their language learning progression enthusiastically (Abdul, 2020; Atmojo and Nugroho, 2020; Nugroho and Atmojo, 2022; Pratiwi and Waluyo, 2023).

The process of digital transformation eliminates geographical barriers, which in turn gives learners access to a wide range of authentic language resources (Alenezi et al., 2023; Alghamdi and Alnajami, 2023; Bui, 2022; Tuzahra et al., 2021). By utilizing online articles, podcasts, videos, and interactive applications, learners are exposed to real-life language usage, various accents, and cultural nuances. This exposure to authentic materials not only enhances vocabulary but also refines comprehension skills and promotes cultural awareness, thereby providing a comprehensive language learning experience (Bailey and Lee, 2020; Nugroho and Mutiaraningrum, 2020).

2.2.2. Personalized, adaptive, and multimodal learning opportunities

Individual learners' needs and preferences can be met through personalized learning experiences enabled by digital transformation (Alenezi and Akour, 2023). Adaptive learning platforms assess learners' strengths and weaknesses by analyzing their interactions (Nguyen, 2022; Padmadewi et al., 2022; Tanjung, 2020). With this data-driven approach, personalized learning pathways are created to address specific language proficiency gaps (Nugroho and Mutiaraningrum, 2020). Adaptive technologies allow each learner to proceed at their speed, encouraging proficiency and confidence in English. Any spelling, grammar, and punctuation errors have been corrected for clarity (Bailey and Lee, 2020; Pratiwi and Waluyo, 2023; Tuzahra et al., 2021).

Digital technologies provide collaborative learning settings that extend beyond classroom boundaries (Ahmed et al., 2021; Alenezi and Akour, 2023; Nguyen, 2022; Tanjung, 2020). Learners use online platforms and forums to participate in collaborative projects, conversations, and peer feedback exchanges (Alenezi et al., 2023; Atmojo and Nugroho, 2020). This cooperative experience improves communication skills, intercultural competency, and teamwork (Alghamdi and Alnajami, 2023; Bailey and Lee, 2020; Nugroho and Mutiaraningrum, 2020; Tuzahra et al., 2021). Furthermore, digital platforms connect learners all over the world, allowing them to contact English native speakers, participate in English language exchange programs, and widen their perspectives by interacting with people from a variety of linguistic and cultural backgrounds (Nguyen, 2022). Digital transformation has brought a wide range of learning styles (Alenezi et al., 2023; Asghar et al., 2022; Tanjung, 2020). Nowadays, learners are exposed to various forms of multimedia, including audio-visual content, interactive quizzes, podcasts, virtual field trips, and gamified challenges (Atmojo and Nugroho, 2020). These different modalities supply individual learning preferences, ensuring that visual, auditory, and kinesthetic learners have proper approaches to understand, practice, and internalize language skills (Bui,

2022; Bailey and Lee, 2020). Such diverse learning styles promote better comprehension and retention, as language ideas are strengthened through different sensory mechanisms (Tuzahra et al., 2021).

2.2.3. Collaborative learning, communication, and digital literacy skills

Digital platforms provide educators with rich data analytics, which can offer valuable insights into learners' progress and engagement patterns (Alenezi et al., 2023; Ahmed et al., 2021; Atmojo and Nugroho, 2020; Tanjung, 2020). Through these detailed reports, instructors can locate zones of mastery and enhancement in their learners' performance. This data helps teachers enrich their instructional tactics, execute targeted interferences, and offer further assistance where necessary (Bailey and Lee, 2020; Tuzahra et al., 2021). By using this continual feedback circle, educators can ensure that their teaching approach is graceful, adaptable, and learner-centered. Digital transformation is an essential factor that prepares learners with crucial digital literacy skills indispensable in the 21st century (Ahmed et al., 2021; Tuzahra et al., 2021; Tanjung, 2020). By mastering digital literacy skills, learners learn how to navigate online resources judgmentally, distinguish credible information from unreliable sources, and rehearse reliable online conduct (Alenezi et al., 2023; Bailey and Lee, 2020; Nugroho and Mutiaraningrum, 2020). These skills are available to language learning and transferable to other areas of life, preparing learners to meet the digital requirements of higher education and the qualified globe (Alenezi et al., 2023).

2.3. Challenges of digital transformation in EFL learning: A comprehensive examination

While the digital transformation of EFL learning holds immense promise, it is accompanied by a set of complex challenges that educators, institutions, and policymakers must navigate effectively. This comprehensive examination delves into the multifaceted challenges faced during the integration of digital technologies in EFL classrooms, shedding light on the intricacies of this transformative expedition.

2.3.1. Digital divide, access gaps, and screen time concerns

Technology and internet access are major challenges in digital transformation, leading to the digital divide (Alghamdi and Alnajami, 2023; Tuzahra et al., 2021). Learners from economically deprived circumstances may limit their access to computers, high-speed internet, or modern devices. This lack of access obstructs their ability to be fully involved with digital learning resources. As a result, an inequity gap is generated where some learners benefit broadly from digital tools, although others have restricted access, which in turn, hampers their learning chances (Alenezi et al., 2023; Atmojo and Nugroho, 2020; Al-Khasawneh and Obeidallah, 2019; Bui, 2022; Nugroho and Mutiaraningrum, 2020). Excessive use of screens, particularly during online learning, can lead to eye strain, shorter attention spans, and decreased ability to remember information (Alghamdi and Alnajami, 2023; Lukas and Yunus, 2021). It is important to balance the amount of time spent on digital and non-digital activities to avoid overwhelming the brain and to promote the overall well-being of learners. Instructors should plan lessons that integrate offline activities, boost physical movement, and enhance face-to-face dialogue to create a vigorous learning setting (Asghar et al., 2022; Nguyen, 2022).

2.3.2. Pedagogical adaptation, teacher training, and technological anxiety

Transitioning from traditional teaching approaches to efficient digital pedagogy needs a noteworthy adaptation in pedagogy (Al-Khasawneh and Obeidallah, 2019; Bui, 2022; Tuzahra et al., 2021). Educators must progress their digital literacy expertise, adapt their lesson plans, and flawlessly incorporate technology into their teaching practices. Continual professional expansion programs are crucial to ensure that teachers are equipped with the essential expertise to fully utilize digital devices (Ahmed et al., 2021). Inadequate training can lead to underutilization of technology or, on the other hand, incorrect integration that impedes the learning process (Bailey and Lee, 2020). Educators, learners, and parents who are resistant to change can impede the successful adoption of digital projects (Al-Khasawneh and Obeidallah, 2019; Ahmed et al., 2021). Technological anxiety, which is the fear of technology, can create barriers to learning, preventing effective engagement with digital tools (Alenezi et al., 2023; Bailey and Lee, 2020). To address these worries, it is necessary to establish a supportive and encouraging environment. This can be achieved by providing adequate training, guidance, and resources to help mitigate anxieties and gain confidence in using technology (Bui, 2022; Tuzahra et al., 2021).

To achieve successful digital transformation in EFL learning, a comprehensive, multifaceted approach is required. It involves making adequate investments in technology infrastructure, providing continuous professional development for educators, implementing robust data security measures, curating content meticulously, and integrating digital and non-digital activities in a balanced manner. Institutions may leverage the full potential of digital technology by recognizing and proactively resolving these obstacles, providing an inclusive, engaging, and successful learning experience for all educators.

2.3.3. Maintaining learner engagement, motivation, and content quality

Digital tools have the prospect of enhancing engagement (Alenezi et al., 2023; Alghamdi and Alnajami, 2023; Ahmed et al., 2021), but excessive reliance on technology can result in disengagement and reduced motivation. It is essential to strike a balance between the use of digital resources and interactive, hands-on activities. To maintain learners' interest, gamification, interactive quizzes, and multimedia content should be incorporated strategically (Atmojo and Nugroho, 2020). Educators must continuously modernize to retain the learning experience dynamic and stimulating, ensuring that engagement is continual (Al-Khasawneh and Obeidallah, 2019; Bailey and Lee, 2020; Tuzahra et al., 2021). With the vast number of resources available online, it can be challenging to reliably curate high-quality content (Alghamdi and Alnajami, 2023). Inaccurate or improper online materials might deceive learners and may not align with the curriculum. Educators must dedicate a noteworthy amount of time to evaluating digital resources, ensuring they are pedagogically sound, culturally appropriate, and linguistically precise. Furthermore, continual material upgrading and curation are required to stay up with changing educational requirements and linguistic trends (Alenezi et al., 2023; Alghamdi and Alnajami, 2023; Bailey and Lee, 2020).

2.4. Strategies for effective integration of digital technologies in EFL learning

To successfully integrate digital technologies into the EFL learning environment, a systematic approach that aligns technology with pedagogy addresses difficulties, and optimizes advantages for both instructors and learners. This comprehensive resource covers several precise ways to integrate digital technologies into EFL learning seamlessly and successfully.

2.4.1. Comprehensive needs assessment

Integrating digital technologies into EFL learning is a complex process that requires meticulous needs assessment and goal setting (Bui, 2022; Padmadewi et al., 2022). These two factors are the foundation of a successful educational transformation. A complete needs assessment includes numerous stakeholders, such as teachers, learners, parents, and administrators, to acquire distinctive perspectives on the existing situation. It is critical to assess the existing technical structure to identify possible restrictions and realms for progress. Understanding educators' skills in digital literacy is also critical for assuring that personalized practice programs match their demands (Tanjung, 2020; Nugroho and Mutiaraningrum, 2020). Furthermore, it is critical to recognize each learner's various learning styles and expertise levels (Asghar et al., 2022; Bui, 2022). It entails evaluating cultural backgrounds, linguistic difficulties, and personal learning favorites. Alongside this, it is critical to assess the alignment of digital technologies with existing curricula (Alenezi and Akour, 2023; Nugroho and Mutiaraningrum, 2020; Padmadewi et al., 2022).

After thoroughly assessing the needs, the next crucial step is to establish obvious and attainable objectives (Atmojo and Nugroho, 2020; Nugroho and Mutiaraningrum, 2020; Padmadewi et al., 2022). The objectives must be effective; therefore, they must be specific, measurable, attainable, relevant, and time-bound. Specificity guarantees that what has to be accomplished is apparent, such as improving speaking skill among intermediate-level EFL learners using digital speaking exercises. Measurability entails identifying criteria, such as higher exam scores or higher participation rates, to allow for objective evaluation. Achievability maintains that objectives are attainable within the constraints of available resources and timeframes, avoiding excessive burdens on educators and learners. Relevance connects objectives to learning outcomes and extensive educational objectives, stressing the connection of digital integration with the institution's purpose. Time-bound objectives provide firm deadlines, instilling a sense of urgency and offering a clear path to success. Adjustments can be made depending on changing needs and developing trends, encouraging adaptable goal-setting processes. Inclusivity confirms that objectives are set up for varied learners, taking into consideration different talents and backgrounds, and encouraging justice and accessibility.

By adopting an inclusive approach, educational institutes can establish a robust base for the incorporation of digital technologies in EFL learning (Tanjung, 2020). To achieve this, it is essential to comprehend the specific needs of all stakeholders and set accurate, adjustable, and comprehensive objectives (Padmadewi et al., 2022). This not only streamlines the integration process but also guarantees that digital transformation is determined, efficient, and receptive to the individual demands of both learners and

educators.

2.4.2. Professional development and training

In the field of digital transformation in EFL learning, professional expansion and practice for educators play fundamental bases. In the rapidly evolving technology era, it is imperative to authorize teachers with the compulsory skills and confidence to navigate the digital domain (Alenezi et al., 2023; Alghamdi and Alnajami, 2023; Ahmed et al., 2021; Alenezi and Akour, 2023; Bailey and Lee, 2020). Constant and designed professional development programs have a vital part in enhancing educators' digital literacy. These programs should entail a variety of topics, extending from fundamental computer skills to advanced integration of digital tools within the curriculum (Nugroho and Mutiaraningrum, 2020; Tanjung, 2020). Webinars, workshops, and peer cooperation potentials enable a supportive community of educators by facilitating the exchange of ideas and best practices. Training sessions should go beyond simply teaching technical skills, going into pedagogical practices for effective technology integration. Educators must learn to use digital tools to generate active, interactive, and individualized learning experiences that meet the different requirements of their learners.

Additionally, training programs should include ethical aspects such as digital citizenship, online safety, and responsible technology use (Nugroho and Mutiaraningrum, 2020; Tanjung, 2020). Technology integration in language instruction requires technical skill in addition to a thorough awareness of pedagogical nuances, confirming that technology helps rather than inhibits the learning process (Alghamdi and Alnajami, 2023; Ahmed et al., 2021). Institutions that invest in comprehensive and constant professional progress prepare their instructors to confidently embrace digital transformation, allowing them to build a new generation of digitally literate, engaged, and authorized EFL learners.

2.4.3. Establishing high-quality digital content

Establishing superior digital content is an essential and persistent technique in the digital transformation of EFL learning settings. In this era of data overburden, EFL teachers must navigate the huge digital system to find resources that efficiently relate to the curriculum, encourage meaningful learning, and successfully involve learners (Nugroho and Mutiaraningrum, 2020; Tanjung, 2020). The establishment process includes a careful examination of digital resources to verify that they are educationally sound, ethnically sensitive, and linguistically precise. It requires an intense comprehension of learners' several learning desires and competency levels to permit the selection of suitable information for different learning styles (Asghar et al., 2022; Alenezi and Akour, 2023). Collaborative language activities, authentic texts, multimedia lectures, language-focused games, and podcasts are high-quality digital content that affords an immense multimodal experience (Alenezi et al., 2023; Bailey and Lee, 2020; Nguyen, 2022; Nugroho and Mutiaraningrum, 2020).

Furthermore, the establishment process must be adjustable which authorizes differentiation to encounter both struggling and advanced learners' requirements (Nugroho and Mutiaraningrum, 2020; Tanjung, 2020). Constant evaluation is required to guarantee that the information stays current, relevant, and effective after selection. A well-established digital library saves educators time and involves learners with

instructional and inspiring materials, this will create a language study passion that lasts beyond the classroom. EFL educators improve the learning process by establishing high-quality digital materials. Also, they provide active and appealing educational knowledge that equips learners with language ability and 21st-century digital literacy.

2.4.4. Blended learning settings

Blended learning settings combine traditional face-to-face instruction with digital tools and online resources to create an effective and multipurpose educational platform in the digital era (Alenezi et al., 2023; Alghamdi and Alnajami, 2023; Ahmed et al., 2021; Asghar et al., 2022). This approach is particularly potent in EFL learning because it affords varied learning preferences and produces a multilayered educational process. In-person interactions and hands-on activities in a traditional classroom environment create a dynamic individual conversation, promote real-time connections and group dialogues, and encourage vital interpersonal and social abilities. Concurrently, digital platforms supply an abundance of resources such as collaborative language apps, multimedia lectures, and online language societies. These digital elements expand learning outside the classroom walls, facilitating independent study, immediate feedback, and individualized study patterns (Alenezi et al., 2023; Ahmed et al., 2021; Asghar et al., 2022; Atmojo and Nugroho, 2020).

Successful blended learning requires a planned integration of traditional and online scopes (Ahmed et al., 2021). In a flipped classroom paradigm, for example, pupils connect with internet-based materials such as educational videos or online assignments at home before joining in extensive debates, teamwork, and explanations in the classroom period. This strategy increases learners' involvement, enables instructors to concentrate on each learner's requirements, and provides a personalized and learner-centered learning skill (Alenezi and Akour, 2023; Tanjung, 2020). Moreover, blended learning settings accommodate various learning strategies by providing aural, visual, and kinesthetic learners with diverse methods. Adopting blended learning improves language fluency, digital literacy, logical thinking, and management of time abilities, all of which are crucial for today's century learners (Asghar et al., 2022). Blended learning settings combine traditional and innovative teaching methods to create a highly effective learning experience for learners (Ahmed et al., 2021; Asghar et al., 2022). These settings maintain the personal effect of traditional education while leveraging the power of digital technologies to create a more dynamic, flexible, and individualized EFL learning expertise (Alenezi and Akour, 2023). Instructors can form a setting where learners can succeed in English language skills and digital proficiency, which is essential in nowadays interrelated world, by integrating the superiority of both domains.

2.4.5. Individualized learning processes

Individualized learning processes in EFL education significantly proceed from the one-size-fits-all method. Therefore, this method acknowledges each learner's distinctive abilities, preferences, and challenges. To put it simply, it is an educational concept that modifies teaching techniques, activities, and subject matter to match the particular requirements of each learner (Alenezi et al., 2023; Ahmed et al., 2021; Nugroho and Mutiaraningrum, 2020; Tanjung, 2020). In the context of EFL learning, individualized ways regard various language backgrounds, learning styles, and levels

of expertise inside a classroom.

Data-driven adaptation is a fundamental component of individualized learning (Alenezi et al., 2023; Nugroho and Mutiaraningrum, 2020). Through learning analytics, performance evaluations, and continuous assessments, educators can gain essential information about a learner's advancement (Alenezi and Akour, 2023). This data can be used to generate individualized learning plans that supply the learner's strengths and weaknesses (Tanjung, 2020). For example, if an EFL learner endeavors from grammar but surpasses conversational abilities, the individualized technique could include focused grammar activities alongside conversational activities to strengthen as long as manipulating shortcomings. Furthermore, technology is critical in individualized learning. Algorithms are used in versatile educational platforms, intellectual teaching systems, and learning apps to tailor information transmission based on a learner's implementation (Alenezi et al., 2023; Tanjung, 2020). This guarantees that learners are excited by the information they have already learned, and satisfied by cutting-edge material. Individualization also includes learning interests; some learners may benefit from visual assistance, whereas others choose textual materials. Educators can fruitfully involve learners by responding to their interests, and by creating a dynamic and entertaining learning process (Alenezi and Akour, 2023).

Moreover, individualized learning also supports self-reliant learning (Alenezi and Akour, 2023; Nugroho and Mutiaraningrum, 2020). Learners are motivated and in charge of their learning process when they have an opinion on their learning preferences (Asghar et al., 2022). Educators' roles are mentors, who guide learners through these decisions and provide the required scaffolding (Nguyen, 2022). This mandate instills a sense of responsibility in pupils, motivating them to determine aims, run their time, and monitor their success. Lastly, this advances language skills and vital life competencies such as handling time, establishing targets, and self-restraint. Individualized learning processes, fundamentally, transform EFL instruction. They promote a learner-centered atmosphere where each learner's ability is fully realized (Nugroho and Mutiaraningrum, 2020). Educators construct an educational system. In such a system, each learner flourishes by accepting the learners' diversity and exploiting technology and information perceptions. In addition, this approach guarantees language learning and overall development that enables learners to a multifaceted, interrelated universal success.

2.4.6. Encourage collaboration and communication

In this digital era, it has become essential to nurture collaboration and communicative proficiencies in EFL learning (Nguyen, 2022; Nugroho and Mutiaraningrum, 2020). This is both a goal and a necessity. By promoting collaboration and communication, we can generate a reciprocal learning setting that reflects the universal and interrelated globe in which learners will be living and working. Incorporating online collaboration resources into EFL education is a crucial strategy. Google Workspace or Microsoft Teams are examples of digital online platforms that permit learners to share documents, work on projects together, and provide immediate feedback regardless of their locations (Atmojo and Nugroho, 2020; Nguyen, 2022). These technologies boost collaborative skills and introduce learners

to digital platforms that are frequently utilized in proficient contexts (Tanjung, 2020). Accordingly, the learners will be prepared for upcoming workplaces where distant teamwork is becoming more widespread (Atmojo and Nugroho, 2020; Alenezi and Akour, 2023).

Furthermore, global collaborations can significantly enhance the EFL learners' learning knowledge. By collaborating with institutes or language pupils from different countries, learners can be involved in cross-cultural conversations and be exposed to a variety of accents, idiomatic expressions, and cultural nuances (Atmojo and Nugroho, 2020; Alenezi and Akour, 2023; Nugroho and Mutiaraningrum, 2020). Such interactions help EFL learners improve their English language skills and their cultural awareness. Accordingly, collaborative projects that challenge learners to collaborate, solve problems, and present their results improve language competence and train important collaboration and leadership skills (Nguyen, 2022). Additionally, supporting communication involves English language practice and creating a safe area where EFL learners can confidently express their thoughts, ask questions, and participate in discussions. Online seminars and discussion boards provide an excellent platform for EFL learners. Asynchronous communication permits EFL learners to express themselves meaningfully. Fellow contact, both synchronous and asynchronous, encourages dynamic involvement and allows for collaborative problem-solving (Alenezi and Akour, 2023; Nguyen, 2022).

2.4.7. Gamification and interactive learning

Gamification and interactional mutual learning procedures are at the core of converting EFL learning (Zhang and Hasim, 2023). With gamification, the traditional classroom can become an active, appealing, and deeply engaging setting (Redjeki and Muhajir, 2021). This technique integrates game aspects such as challenges, awards, and tournaments into the learning process, to inspire and engage learners. Gamification adds a sense of enthusiasm to EFL study and converts language learning into an exciting experience. Gamification in EFL learning has the central advantage of increasing motivation (Hashim et al., 2019; Huseinović, 2023; Rahmani, 2020). Learners are typically encouraged to get involved effectively when aspects such as scores, badges, and rankings are inserted. Accomplishments and awards function as strong motivators for learners to complete tasks, interact with instructional resources, and flourish in language practices. This intrinsic motivation increases involvement and develops an awareness of accomplishment, increasing self-confidence and self-worth in linguistic abilities (Nguyen, 2022; Rahmani, 2020; Zhang and Hasim, 2023).

In addition, gamification can be an effective way to make learning more engaging and entertaining (Hashim et al., 2019; Huseinović, 2023; Redjeki and Muhajir, 2021; Rahmani, 2020). Language immersion puzzles, games, and tasks enable learners to utilize their language skills in actual life situations. Learners are forced to think logically and resolve issues within a language setting, which strengthens grammar, vocabulary, and ability to communicate (Hashim et al., 2019; Huseinović, 2023; Redjeki and Muhajir, 2021). Gamified exercises offer comprehensive language experiences by including story elements. These experiences make the learning procedure remarkable and pleasant. Accordingly, complicated language concepts become more accessible and comprehensible, and they improve retention as well as

comprehension.

Gamification and interactional mutual learning have a profound impact beyond the classroom. It develops important life skills such as problem-solving, group work, strategic thinking, and persistence (Hashim et al., 2019; Huseinović, 2023; Rahmani, 2020). By facing challenges and completing quests, learners learn the importance of determination and perseverance, skills that are valuable in both academic and practical situations. Additionally, these strategies build digital literacy, which is crucial for equipping learners for a technology-driven future where navigating digital interfaces is an essential ability. Through utilizing these methods, educational institutions can construct a system in which digital technologies merge smoothly with EFL instruction, creating interesting, individualized, and effective educational opportunities for all learners. Efficient integration provides learners with language skills and improves their digital literacy and critical thinking abilities, preparing them for success in the multifaceted, technologically driven world of future generations.

2.5. Theoretical framework

The theoretical framework of this study is based on two theoretical views, Constructivism and Technological Pedagogical Content Knowledge (TPACK) theories, that afford a comprehensive lens for comprehending the complexity and dynamics connected with the digital transformation in EFL learning in the higher education context in Jordan.

2.5.1. Constructivism theory

Constructivism (**Figure 1**) is a theory of learning that highlights the active participation of learners in constructing their comprehension of the world through experiences and reflections. According to John Dewey's constructivism, learning is an active process of knowledge construction in which learners construct their knowledge through interactions with their environment (Baldacchino, 2020; Bulle, 2021; Hickman et al., 2020; Umida et al., 2022; Vanderstraeten and Biesta, 1998). It also emphasizes the learner's engagement in the learning process, implying that new information is actively constructed onto existing mental structures rather than passively absorbed. In the domain of digital transformation in EFL learning for higher education, constructivism offers a strong framework for developing instructional approaches that are consistent with the essence of learning as an effective, collaborative, and meaning-making process, and provides a framework to comprehend how learners interact with and derive meaning from digital tools.

Constructivism claims that individuals continually expand their comprehension and knowledge of the globe through personal encounters (Baldacchino, 2020; Bulle, 2021; Umida et al., 2022). It indicates an individual's involvement in the educational process. It also implies that new information is actively built into pre-existing mental structures instead of simply assimilated. In the context of education, particularly in the digital transformation of EFL learning in higher education, constructivism provides an effective foundation for developing pedagogical approaches that are consistent with the essence of learning as an active, collaborative, meaning-making process.
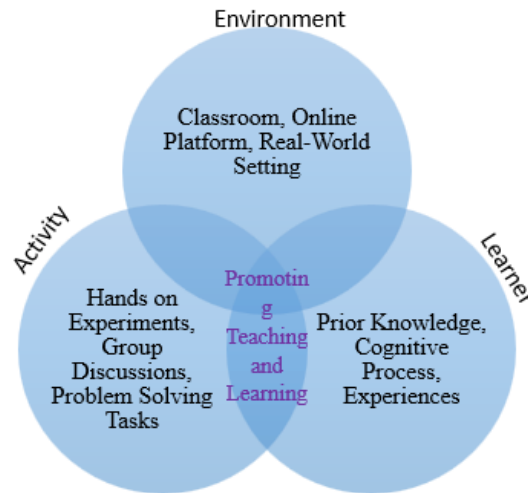
Figure 1. Constructivism in EFL education.

According to constructivism, learning is most effective when learners are actively involved in the process (Bulle, 2021). This extends beyond passive information reception; instead, learners are encouraged to interactively investigate, question, and engage with the learning resources (Vanderstraeten and Biesta, 1998; Zajda, 2021). Activities such as interactive simulations, language learning apps with gamified components, and virtual language labs allow learners to participate in the information actively and boost their comprehension of the English language. In addition, constructivism enables learners to contemplate their learning experiences and enhance their metacognitive skills (Umida et al., 2022).

A major premise of constructivism is social interaction (Baldacchino, 2020; Bulle, 2021; Hickman et al., 2020; Umida et al., 2022). Learning is viewed as a social activity in which learners profit from exchanging concepts, cooperating with classmates, and taking part in conversations (Fatimah et al., 2022; Vanderstraeten and Biesta, 1998; Zajda, 2021). Digital tools that facilitate online cooperation, such as discussion boards and virtual group projects, enhance social connection. This simulates real-life language use settings and supports the development of English conversational skills. Consequently, real-world relevance is a key idea of constructivism. It indicates that learning is optimal when it occurs in realistic, relevant circumstances that reflect the multifaceted nature of everyday situations.

In addition, collaborative learning is a fundamental component of the constructivist framework. It exemplifies the notion that knowledge is actively generated through social interactions (Baldacchino, 2020; Fatimah et al., 2022; Hickman et al., 2020; Umida et al., 2022). This pedagogical approach enables learners to collaborate in the advancement of knowledge in the field of EFL learning, creating a collaborative and dynamic learning environment. Digital tools create an ideal setting for collaborative learning experiences by enabling learners to engage synchronously or asynchronously, share thoughts, and work together to figure out language-related issues (Nguyen, 2022). Therefore, learners improve their language abilities and establish vital socio-linguistic skills through group tasks, online chats, and shared documents. The value of collaborative learning stays in its ability to replicate real-life language use settings in which communication entails meaning negotiation, collaborative problem-solving, and the intersection of multiple linguistic views. By

adopting collaborative learning in a digital context, educators may generate a dynamic and engaging setting in which learners are actively involved in the collaboration of language competency (Asghar et al., 2022; Nguyen, 2022).

Moreover, constructivism promotes the emergence of new knowledge by constructing current mental structures (Baldacchino, 2020; Bulle, 2021; Fatimah et al., 2022; Hickman et al., 2020). Learners apply previous experiences and knowledge to new learning contexts. Digital tools can be established to scaffold learning by allowing learners to relate new material to what they already know (Nguyen, 2022). For example, adjustable learning platforms can regulate information following individual learners' previous knowledge and performance. In addition, constructivism acknowledges learner variability and highlights the importance of individualized and diverse methods. Digital tools can enable different channels and styles of involvement. For example, personalized learning platforms modify material depending on individual learning methods and interests.

2.5.2. Technological pedagogical content knowledge (TPACK) theory

The Technological Pedagogical Content Knowledge (TPACK) theory (**Figure 2**) is a conceptual framework for understanding the efficient relationship of technology, pedagogy, and subject knowledge in educational contexts (Koehler and Mishra, 2016; Koh et al., 2015; Koehler et al., 2014; Mishra and Koehler, 2006). Mishra and Koehler introduced TPACK, which recognizes that efficient teaching necessitates a complex integration of each domain. In the EFL learning context, TPACK helps instructors strategically incorporate digital technologies into their teaching approaches. This theory highlights understanding the technology tools available and how to utilize them in ways that improve instructional techniques while also correlating with the complication of linguistic content delivery (Koehler and Mishra, 2016; Koh et al., 2015; Koehler et al., 2014; Mishra and Koehler, 2006). TPACK also affirms the significance of a sophisticated, interdisciplinary knowledge foundation that enables educators to cope with the complexity of technology integration in language instruction, maintaining a comprehensive and productive education for EFL learners.
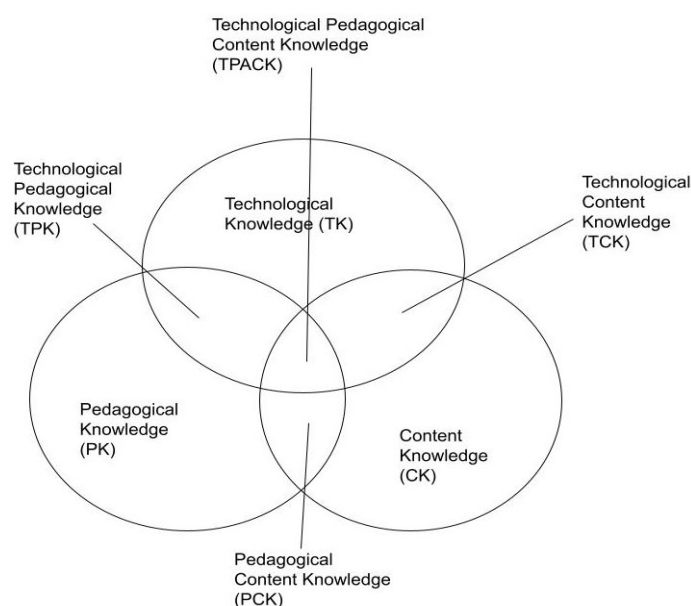

Figure 2. TPACK theory.

From the lens of TPACK, Technological Knowledge (TK) refers to an instructor's awareness of the instruments and technology accessible for instruction. Pedagogical knowledge (PK) refers to the strategies, methods, and instructional approaches employed in teaching. Content Knowledge (CK) represents the deep comprehension of the subject matter being taught. While Technological Content Knowledge (TCK) is the intersection of technology and content knowledge, it involves knowing how technology can be applied to teach specific content. Pedagogical Content Knowledge (PCK) is the combination of pedagogical and content knowledge. It focuses on how to teach specific content. Technological Pedagogical Knowledge (TPK) is a combination of technological and pedagogical knowledge. It focuses on how technology can be utilized productively in educational settings (Koehler and Mishra, 2016; Koh et al., 2015; Koehler et al., 2014; Mishra and Koehler, 2006).

Accordingly, Technological Pedagogical Content Knowledge (TPACK) is the summit that combines technological, pedagogical, and content knowledge (Koehler and Mishra, 2016; Koh et al., 2015; Koehler et al., 2014; Mishra and Koehler, 2006). In the digital transformation of EFL learning, TPACK necessitates an extensive knowledge of how technology, pedagogy, and material interact. Educators must thoughtfully choose and apply digital technologies to enhance language learning, taking into account the constant interaction between technology, teaching techniques, and language subject matter.

2.6. Qualitative research questions

This study aims to investigate the EFL instructors' perceptions of integrating digital tools and technologies in English language teaching in Higher Education. Therefore, this study was aimed to answer the following research questions:

How do EFL instructors perceive the integration of digital tools and technologies in English language teaching in Higher Education?

What are the experiences of EFL instructors with integrating digital tools and technologies in English language teaching in Higher Education?

3. Methodology

This qualitative study was designed to answer the above-mentioned research questions. This study utilized an online open-ended survey approach that was chosen to gather in-depth and subtle insights from EFL instructors in Jordanian Higher Education. In addition, this approach was mainly appropriate for exploring the varied and developed environment of digital transformation in Jordanian Higher Education institutions (Denscombe, 2007; Drobot, 2012; Schmidt et al., 2020; Wallace et al., 2018).

This study was participant-centric, acknowledging the diverse experiences and perspectives of 100 EFL instructors in Jordanian Higher Education institutions with a minimum of five years of experience. The participants teach English language courses for EFL learners in Jordanian universities and colleges. By providing an open platform for participants to share their narratives, the study aimed to gain the richness of their experiences, including successful strategies, innovative practices, and the impact of digital tools on EFL teaching (Denscombe, 2007; Drobot, 2012; Schmidt et al., 2020;

Wallace et al., 2018).

The online survey instrument was designed with ten open-ended questions to obtain detailed and context-rich responses from participants (Denscombe, 2007; Drobot, 2012; Schmidt et al., 2020; Wallace et al., 2018). These questions were strategically created to explore various angles, including the types of digital tools used, perceived impacts on teaching and learning, encountered challenges, identified opportunities, and instructors' perspectives on successful implementation related to the integration of digital tools in EFL teaching. Consequently, the thematic analysis was chosen as the primary method for analyzing the qualitative data collected through the open-ended survey. Coding participants' responses involved identifying, analyzing, and reporting themes within the dataset. This process allowed for the systematic exploration of patterns and recurrent issues across participants' responses (Castleberry and Nolen, 2018; Clarke and Braun, 2016; Guest et al., 2011; Kiger and Varpio, 2020).

The research design incorporated flexibility to accommodate the evolving nature of digital transformations in Higher Education. The open-ended questions were intentionally broad and allowed unexpected themes or issues to emerge. Thus, this flexibility ensured that the study could adapt to the dynamic and rapidly changing environment of technology in education (Denscombe, 2007; Drobot, 2012; Schmidt et al., 2020; Wallace et al., 2018). The online survey was sent five times via Microsoft Forms over eight months to gain a rich, contextual understanding from a large number of participants until reaching data saturation. Furthermore, ethical considerations included ensuring participants' confidentiality and anonymity without bias. The online survey introduction communicated the purpose of the study, the voluntary nature of participation, and the safeguards in place to protect participants' identities. Moreover, triangulation and peer review were considered to enhance the credibility and trustworthiness of the findings (Denscombe, 2007; Drobot, 2012; Schmidt et al., 2020; Wallace et al., 2018).

4. Findings

This section analyzes the findings (**Table 1**) from the online survey questions that explored EFL instructors' perceptions and experiences regarding integrating digital tools and technologies in English language teaching in higher education. It reveals a wealth of insights and reflections from the participants.

Table 1. Key findings summary.

Aspect	Key findings
Experience	Varied levels of experience, ranging from proficiency to ongoing adaptation challenges.
	Seasoned instructors demonstrate confidence in navigating digital pedagogies.
	Some instructors express hesitancy or struggle with technical complexities.
Specific Tools	Integration of diverse digital tools, including language learning apps, online communication platforms, virtual labs, multimedia content, and interactive whiteboards.
	Positive impact on enhancing teaching and learning experiences observed.

Table 1. (*Continued*).

Aspect	Key findings
Challenges	Technical difficulties such as connectivity issues and compatibility problems.
	Inadequate access to technology infrastructure and resources.
	Resistance from students or colleagues.
	Concerns about maintaining pedagogical integrity and ensuring equitable access to digital resources.
Opportunities	Increased flexibility in lesson delivery and access to authentic language materials.
	Opportunities for personalized learning and enhanced collaboration among students.
	Positive impact on student engagement and motivation noted.
Impact on Student Engagement	Digital tools enhance active participation and interest through interactive content and collaborative activities.
	Flexibility and accessibility promote self-directed learning and autonomy.
	Enhanced communication and collaboration among students observed.
Strategies for Integration	Clear instructions and scaffolding support facilitate effective utilization of digital tools.
	Incorporation of hands-on activities and real-world tasks promotes active learning.
	building a culture of experimentation and innovation encourages student creativity and ownership.
Innovative Approaches	Integration of emerging technologies such as VR, AR, and digital storytelling platforms.
	Use of gamified learning platforms and collaborative projects to enhance engagement and learning outcomes.
	Emphasis on creativity, critical thinking, and authentic language use.
Assessment of Effectiveness	Use of traditional assessments alongside alternative methods such as digital portfolios and formative assessments.
	Emphasis on capturing the multifaceted nature of digital learning experiences.
	Promotion of reflection and metacognition through ongoing feedback and self-assessment.
Role of Digital Literacy	Importance of explicitly teaching and scaffolding digital literacy skills.
	Integration of digital literacy instruction into language learning activities.
	Development of critical thinking, communication, and ethical digital practices emphasized.
Future Outlook	Cautious optimism regarding continued innovation and adaptation in digital transformation.
	Anticipation of emerging technologies shaping language education.
	Need for ongoing investment in technology infrastructure and professional development for instructors.
	Emphasis on maintaining a human-centered approach to digital integration.

Table 2 reveals a few samples of participants' answers to the open-ended questions. Presenting these sample responses from participants provides a richer context for understanding EFL instructors' perceptions and experiences with digital tool integration. It supports the qualitative analysis by illustrating the depth and diversity of insights gathered through the study.

Table 2. Samples of participants' answers.

Aspect	Experience with digital tools integration
Experience with Digital Tools Integration	"I have been using various digital tools for over five years now, and it has significantly enhanced my teaching methods. Tools like Duolingo and Kahoot have made lessons more engaging for my students." "Initially, I found it challenging to integrate digital tools due to a lack of proper training. However, with continuous professional development, I am now more confident in using these tools."

Table 2. (*Continued*).

Aspect	Experience with digital tools integration
Specific Digital Tools Integration	"Using Zoom for virtual classes has been a game-changer. It allows me to interact with my students in real-time, which is crucial for language learning." "Language learning apps like Babbel provide students with additional practice outside the classroom, which has improved their language skills significantly."
Encountered Challenges	"One of the biggest challenges is the inconsistent internet connectivity, which disrupts the flow of online classes." "We often face compatibility issues with different software, which can be frustrating and time-consuming to resolve."
Identified Opportunities	"Digital tools offer the flexibility to tailor lessons to individual students' needs, which has been very beneficial for their learning." "Access to a wide range of authentic materials online has enriched my students' learning experience by exposing them to real-life language use."
Impact on Learner Engagement	"Interactive tools like Kahoot make learning fun and engaging, which has significantly increased student participation." "Gamified platforms provide an element of competition and reward that keeps students motivated to learn."
Strategies for Effective Integration	"Providing clear instructions and step-by-step guides helps students to understand and use new digital tools effectively." "Incorporating hands-on activities with digital tools has made learning more interactive and engaging for my students."
Innovative Approaches	"Using VR to create virtual tours of English-speaking countries has been a fantastic way to immerse students in the language and culture." "Digital storytelling platforms have allowed students to create and share their own stories, which has been a great way to practice language skills creatively."
Assessment of Effectiveness	"Digital portfolios have been an excellent way to track student progress and provide continuous feedback." "Formative assessments using online quizzes and interactive activities have helped in assessing students' understanding in real-time."
Role of Digital Literacy Skills	"Teaching digital literacy skills is essential to ensure students can navigate online resources and use them effectively." "Integrating digital literacy into language lessons helps students to critically evaluate information and develop essential skills for the digital age."

4.1. Experience with digital tools integration

The majority of participants highlighted their varied experiences with integrating digital tools and technologies into their EFL teaching practices. Responses indicated that a spectrum of familiarity levels was evident, and demonstrated diverse experiences ranging from knowledgeable proficiency to continued adaptation challenges. Experienced EFL instructors showed competence and confidence in using digital pedagogies, frequently pointing out years of experimentation, professional development, and successful implementation.

Conversely, some participants expressed initial hesitancy or continued struggles in effectively incorporating digital tools, noting a learning curve caused by technological complexities and shifting educational settings. Among this diversity, a common theme emerged: the transformative potential of digital tools to supplement traditional pedagogies, enhance learner engagement, and improve advanced EFL learning environments. These experiences underscore the active interplay between technological affordances, pedagogical practices, and instructional contexts,

highlighting the distinctive and multifaceted nature of digital tool integration in the field of EFL teaching in higher education.

4.2. Specific digital tools integration

Participants mentioned a diverse range of digital tools and technologies that they have successfully integrated into their EFL teaching. English Language learning apps emerged as a popular choice, with EFL instructors leveraging platforms such as Duolingo, Babbel, and Rosetta Stone to supplement EFL classroom instruction and provide EFL learners with personalized language practice opportunities. Online communication platforms, including forums, chats, and video conferencing tools like Zoom and Microsoft Teams, were frequently cited as instrumental in facilitating actual interaction and collaboration among EFL learners and instructors, particularly in distance learning settings.

Virtual language labs have also received attention for their ability to imitate appealing English language learning settings and provide learners with reliable English language practice opportunities. Multimedia content, such as videos, podcasts, and interactive e-books, emerged as multilateral tools for presenting authentic English language materials, building multimodal literacy skills, and serving diverse learning preferences. Furthermore, interactive whiteboards, digital storytelling platforms, and gamified English learning applications exemplified the creative integration of technology to engage learners and enhance English language learning experiences. Across these diverse tools and technologies, participants highlighted the transformative impact of digital integration in expanding access to authentic English language resources, promoting active learner engagement, and developing interactive learning settings in the higher education EFL context.

4.3. Encountered challenges

Challenges in integrating digital tools were a recurrent theme among the participants. A range of obstacles were indicated, affirming the complex nature of digital integration in educational settings. Technical difficulties stood out as a prevalent challenge, encompassing issues such as unreliable internet connectivity, compatibility issues with software or hardware, and troubleshooting technical glitches during instructional delivery. Additionally, participants highlighted the persistent challenge of inadequate access to sufficient technology infrastructure and resources, particularly in resource-constrained environments or in institutions with limited funding for educational technology initiatives.

Resistance from learners or colleagues also surfaced as a significant barrier, with some instructors grappling with skepticism, apprehension, or reluctance to embrace digital tools and pedagogies. Moreover, concerns about maintaining pedagogical integrity and ensuring equitable access to digital resources for all EFL learners were highlighted as crucial considerations in navigating the complexities of digital integration. Collectively, these challenges underlined the multifaceted nature of digital transformation in EFL teaching and emphasized the need for targeted support, resources, and professional development to address these barriers effectively.

4.4. Identified opportunities

Despite the challenges, participants identified numerous opportunities and benefits associated with the integration of digital tools in EFL teaching. A majority summed up the diverse benefits resulting from digital integration. A major opportunity was the increased flexibility afforded by digital tools, allowing instructors to expand their instructional approaches, customize learning experiences to individual learners' needs, and facilitate blended learning modalities that combine face-to-face instruction with online resources. Participants also emphasized the expansive access to authentic English language materials and resources facilitated by digital platforms, enabling EFL learners to engage with diverse cultural English content, multimedia resources, and actual English language contexts beyond the limits of traditional classroom settings.

Additionally, the integration of digital tools was seen as an opportunity for building collaborative learning environments, promoting peer interaction, and facilitating communication and collaboration among learners from diverse linguistic and cultural backgrounds. Moreover, participants pointed out the potential for digital tools to enhance learner motivation and engagement through interactive and appealing learning experiences, gamified activities, and multimedia-rich content delivery. Collectively, these identified opportunities demonstrated the transformative potential of digital integration in improving dynamic, inclusive, and learner-centered EFL teaching practices.

4.5. Impact on learner engagement

The impact of digital tools and technologies on learner engagement in EFL classes within higher education emerged as a significant theme. Digital integration was consistently commended for its positive influence on EFL learner engagement and motivation. Many EFL instructors reported that interactive multimedia English content, gamified English learning platforms, and online collaboration tools were particularly effective in attracting EFL learners' interest and enhancing active participation in the English learning process. These digital tools were distinguished for their ability to serve diverse learning preferences, providing interactive and appealing learning experiences that resonated with learners from different backgrounds and skill levels.

Furthermore, the flexibility and accessibility afforded by digital platforms allowed EFL learners to engage with English course materials at their own pace and convenience, promoting self-directed learning and autonomy. Moreover, participants observed that digital tools facilitated greater interaction and communication among EFL learners, enabling collaborative learning experiences and peer-to-peer support networks. By leveraging digital technologies to create dynamic and interactive learning environments, instructors were able to enhance learner engagement, build a sense of self-agency in their learning process, and promote an exciting and participatory classroom setting in the EFL context.

4.6. Strategies for effective integration

Instructors shared various strategies they employed to ensure effective

integration and utilization of digital tools in their English language teaching. Several key strategies were emphasized as essential for successful implementation. Firstly, participants highlighted the importance of providing clear instructions and scaffolding support for learners, particularly when introducing new digital tools or technologies. Clear guidance and step-by-step tutorials were crucial in helping learners navigate unfamiliar platforms and tasks effectively. Secondly, many instructors recommended incorporating hands-on activities and real-world tasks that leverage digital tools to promote active learning and application of English language skills in reliable contexts. By integrating digital projects, simulations, and collaborative tasks, EFL instructors were able to boost profound engagement and meaningful learning experiences among EFL learners.

Additionally, participants highlighted the significance of promoting a culture of innovation in the classroom, where learners are encouraged to explore digital tools creatively. By promoting a growth attitude and adopting a trial-and-error approach, EFL instructors authorized learners to take responsibility for their learning and develop digital literacy skills spontaneously. Moreover, participants emphasized the importance of continued professional development and peer collaboration in supporting the effective integration of digital tools. By building communities of practice and providing opportunities for peer learning and knowledge sharing, institutions can authorize EFL instructors to stay up to date on emerging technologies and best practices in digital pedagogy. Collectively, these strategies emphasized the importance of pedagogical innovation, learner-centered approaches, and collaborative professional development programs in enhancing teaching in the EFL context.

4.7. Innovative approaches

Several participants revealed innovative and creative approaches they had used to integrate digital tools into their EFL teaching practices. From leveraging emerging technologies to enhancing appealing learning experiences, instructors demonstrated a diverse discipline of innovative approaches that aimed at enhancing learner engagement and improving language learning. Virtual reality (VR) and augmented reality (AR) applications appeared as particularly innovative tools for creating appealing language learning environments. They allow learners to explore cultural contexts, interact with reliable English language materials, and engage in virtual simulations of real-world situations.

Digital storytelling platforms offer another way for creativity. These platforms enable EFL learners to develop narrative English skills, express themselves creatively, and engage with the English language in meaningful contexts. Gamified learning platforms, such as English learning apps and online quizzes, were also highlighted for their ability to motivate learners through interactive challenges, rewards, and progress-tracking mechanisms. Moreover, project-based learning programs and collaborative online projects provided learners with opportunities to work collaboratively, solve actual problems, and apply English language skills in reliable contexts. By adopting these innovative approaches, EFL instructors could exceed traditional boundaries of English language learning, develop creativity and critical thinking skills, and cultivate dynamic and engaging learning environments in the EFL context.

4.8. Assessment of effectiveness

Assessing the effectiveness of digital tools, instructors employed a variety of qualitative and quantitative measures to attain the impact of digital integration on EFL learner learning outcomes. Traditional assessments such as quizzes, tests, and exams remained widespread and provided instructors with valuable insights into learners' mastery of English skills and content knowledge. However, many participants also used different assessment methods to represent the multiple aspects of digital learning experiences. Digital portfolios have become a popular assessment tool that allows learners to display their work, track progress over time, and reflect on their learning process.

Online projects, collaborative assignments, and peer evaluations provided additional aspects for assessing learner learning in reliable contexts and promoting many skills such as collaboration, communication, and creativity. Moreover, formative assessment strategies, such as real-time feedback and self-assessment, were highlighted for their ability to support continued learning and facilitate learner reflection and metacognition. By adopting a balanced approach to assessment that combines traditional methods with innovative digital tools, instructors were able to gain a comprehensive understanding of learner learning outcomes, adapt instruction to meet individual learner needs, and developing a culture of continuous improvement in the EFL context.

4.9. Role of digital literacy skills

The role of digital literacy skills in the successful integration of digital tools and technologies in EFL teaching emerged as a crucial consideration. Digital literacy skills included information literacy, media literacy, technological proficiency, critical thinking, and digital citizenship. Participants emphasized the significance of evident teaching and scaffolding these skills to empower learners to utilize digital tools effectively, ethically, and responsibly. Instructors emphasized the need to provide explicit instruction on digital literacy concepts, such as evaluating the credibility of online sources, distinguishing between reliable and unreliable information, and protecting personal privacy and security online. Moreover, participants highlighted the importance of integrating digital literacy instruction seamlessly into EFL learning activities and assignments, resulting in promoting the development of digital skills in reliable contexts.

By promoting digital literacy skills, EFL instructors aim to provide EFL learners with the necessary skills to critically engage with digital resources, communicate successfully in online environments, and navigate the difficulties of the digital age. Furthermore, participants recognized digital literacy as a prerequisite for successful EFL learning in the digital era, enabling learners to harness the full potential of digital tools and technologies to enhance their English language proficiency, expand their cultural awareness, and participate meaningfully in a globalized society. Thus, digital literacy skills were considered critical to enabling EFL learners as permanent and active participants in the digital world in the higher education EFL context.

4.10. Future outlook

Participants expressed cautious optimism about the future of digital transformation in EFL education. As technology advances quickly, instructors see a dynamic setting distinguished by constant creativity, adaptability, and experimentation. Many participants indicated optimism in the capacity of digital tools and technology to continue transforming the EFL classroom, bringing up new opportunities for interactive EFL learning experiences, customized instruction, and global cooperation. Furthermore, participants believe that developing technologies such as artificial intelligence, virtual reality, and adaptive learning platforms will play a more significant role in EFL education, providing new opportunities for English language practice, cultural immersion, and linguistic analysis.

However, participants identified several challenges and considerations that warrant attention in the future. These include the need for continued investment in technology structure, continued professional development for EFL instructors, and careful consideration of privacy implications associated with the use of digital tools in educational settings. Additionally, participants emphasized the importance of maintaining a learner-centered approach to digital integration, ensuring that technology serves as a facilitator rather than a replacement for meaningful teacher-learner interactions and pedagogical engagement. By adopting an innovative perspective, remaining adaptable to new developments and technologies, and prioritizing learner needs, EFL instructors can overcome the challenges of digital transformation and establish a future in which digital tools enhance, enrich, and transform the EFL experience.

5. Implications

The digital transformation of EFL education has significant implications for educators. It mandates a fundamental change in classroom teaching approaches, competencies, and roles. To begin with, educators must have a dynamic perspective, constantly upgrading their digital literacy abilities and remaining up-to-date on the latest educational resources. Expertise in a wide range of digital technologies improves teaching proficiency, serves as a blueprint for learners, and prepares them into responsible digital citizens. In this digital era, educators play a significant role in shaping personalized learning experiences rather than just delivering information. The focus has shifted from memorization to developing critical thinking, ingenuity, and problem-solving abilities. Educators act as knowledge organizers, determining, customizing, and generating digital information that is adapted to various learning styles and language proficiency. This carefully selected information adds value to traditional textbooks by including multimedia features, interactive activities, and practical applications, leading to an active, dynamic educational setting.

Moreover, EFL educators are critical in cultivating a positive attitude towards technology. In their lectures, they must focus on security online, digital ethics, as well as accountable communication, in addition to educating learners on the ethical difficulties of the digital world. Additionally, educators assist learners to become discriminating users of online data by educating them to distinguish between trustworthy resources and misinformation. This will enhance learners' information

literacy skills. In the digital age, collaboration emerges as a critical pedagogical strategy. EFL educators work not just with their peers, but also with educators all over the world, allowing learners to participate in cross-cultural exchanges and joint projects. Learners benefit from these collaborations by being exposed to a variety of linguistic accents, communication styles, and cultural viewpoints, which improves their language learning knowledge and promotes intercultural competency. In addition, the digital transformation calls for a reconsideration of assessment techniques. Instructors use a range of digital assessment tools in addition to traditional exams, such as interactive tests, online conversations, multimedia presentations, and cooperative projects. These examinations measure language competency and evaluate digital literacy skills, confirming that learners are prepared with the necessary competencies to thrive in the digital age. Continuous professional development is crucial for EFL educators, as it helps them stay updated on developing educational technologies, exchange thoughts, and share efficient procedures. Workshops, webinars, and cooperative learning communities offer ample opportunities for educators to engage in lifelong learning, flexibility, and invention. Therefore, educators must actively participate in these forums to enhance a culture of learning and growth.

6. Conclusion and future work

The findings from the survey regarding EFL instructors' perceptions and experiences with the integration of digital tools and technologies in English language teaching within higher education can be interpreted through the lens of constructivism theory and the Technological Pedagogical Content Knowledge (TPACK) framework. Constructivism posits that learning is an active, social process whereby learners construct knowledge through interaction with their environment and peers. The survey findings resonate with this theory as they underscore the importance of learner engagement, collaboration, and authentic learning experiences facilitated by digital tools (Baldacchino, 2020; Bulle, 2021; Hickman et al., 2020; Umida et al., 2022; Vanderstraeten and Biesta, 1998; Zajda, 2021). The diverse range of digital tools integrated into EFL instruction reflects the constructivist principle of providing multiple representations and varied experiences to support learning. Moreover, the emphasis on innovative approaches, such as digital storytelling and collaborative projects, aligns with constructivist pedagogy by promoting active learning, critical thinking, and knowledge construction among learners.

Similarly, the TPACK framework offers a lens through which to examine the intersection of technological, pedagogical, and content knowledge in the context of digital integration in EFL teaching. The findings regarding instructors' strategies for effective integration highlight the importance of balancing technological proficiency with pedagogical strategies and content knowledge. Therefore, TK in EFL learning entails becoming familiar with language learning apps, virtual language laboratories, online communication resources, and other internet-based tools. As a result, educators must understand how to use these resources and how they might improve language instruction (Koehler and Mishra, 2016; Koh et al., 2015; Koehler et al., 2014; Mishra and Koehler, 2006).

Moreover, PK in EFL entails knowing language teaching approaches, techniques

for classroom management, and fruitful strategies for involving learners. When incorporating technology, educators must connect digital tools with pedagogical concepts so that they complement rather than displace successful instructional approaches. For EFL educators, CK involves a profound understanding of language Learning theories, linguistic structures, and cultural distinctions. TPACK emphasizes that the integration of technology should augment content delivery and provide innovative ways for learners to engage with language content. TCK in EFL implies understanding how digital tools can facilitate language learning. For instance, using online language games to reinforce vocabulary or utilizing multimedia content for cultural understanding.

Furthermore, PCK in EFL involves employing effective teaching strategies suitable for language learning. Integrating technology requires understanding how digital tools can be used to scaffold language skills, accommodate diverse learning styles, and build language proficiency. Similarly, TPK in EFL includes comprehending how to simply integrate technology into language instruction. Educators must utilize technological resources for instructional goals, promoting learners' engagement, and serving EFL learners' particular requirements. Educators draw upon their understanding of language learning principles, instructional strategies, and digital tools to design meaningful learning experiences that scaffold learner education and promote language learning. The assessment of effectiveness and emphasis on digital literacy skills assert the integration of technological, pedagogical, and content knowledge domains within EFL instruction (Koehler and Mishra, 2016; Mishra and Koehler, 2006; Koh et al., 2015; Koehler et al., 2014). By leveraging their TPACK, EFL instructors can effectively navigate the difficulties of digital integration, customize instruction to meet learner needs, and build transformative learning experiences within the higher education EFL context. Thus, the findings from the survey align with both constructivism and the TPACK framework, they emphasize the interconnectivity of theory and practice in establishing effective digital pedagogy.

After surveying EFL instructors' experiences and perceptions of digital integration in higher education, several recommendations for future studies can be proposed. First, educators may conduct longitudinal studies to track the long-term impact of digital integration on learner learning outcomes, engagement, and language proficiency over time. Second, educators may compare the effectiveness of different digital tools and pedagogical approaches in EFL instruction to identify best practices and strategies for effective integration. Third, educators may explore how cultural factors influence the adoption and implementation of digital tools in EFL teaching across different contexts and cultural settings. Lastly, educators may include learner perspectives in future studies to gain insights into their experiences, preferences, and perceptions regarding digital integration in EFL instruction.

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