

Mobile Learning Implementation In EFL/ESL: Qualitative Systematic Review

Haef Hussain Alotaibi¹, Ashraf Abdulaziz Zeidan ²

¹*Instructional Technology Department, Faculty of Educational Graduate Studies, King Abdulaziz University, Saudi Arabia Kingdom, E-mail: hmalotaibi0002@stu.kau.edu.sa*

²*Instructional Technology Department, Faculty of Educational Graduate Studies, King Abdulaziz, Saudi Arabia Kingdom University, E-mail: azeidan@stu.kau.edu.sa*

Abstract

This qualitative systematic review investigates the implementation and impact of mobile learning in English as a Foreign Language (EFL) and English as a Second Language (ESL) contexts. The study addresses three research questions: (1) How does mobile learning impact EFL/ESL? (2) How appropriate is the implementation of mobile learning in EFL/ESL? (3) In which ways is mobile learning implemented in EFL/ESL? Drawing on a diverse range of studies published between 2011 and 2020, the review synthesizes findings on the effectiveness, challenges, and strategies for successful implementation of mobile learning in EFL/ESL settings.

The results indicate a significantly positive impact of mobile learning on student engagement, performance, and motivation. Additionally, mobile learning enhances access to educational materials, supports collaborative and self-directed learning, and provides novel assessment methods. However, the review also identifies potential barriers to mobile learning, such as digital literacy, content diversity, infrastructure costs, and student and content monitoring. To ensure the effectiveness of mobile learning in EFL/ESL, the study highlights the need for appropriate teacher training, support, and the development of digital citizenship and data privacy strategies. Furthermore, culturally, socially, intellectually, and religiously relevant mobile learning environments are essential for maximizing the potential of this instructional approach.

In conclusion, while mobile learning offers a unique and powerful educational experience for EFL/ESL learners, it is vital to consider the various challenges and considerations that must be addressed for successful implementation. This systematic review provides valuable insights for researchers, educators, and policymakers seeking to harness the potential of mobile learning in EFL/ESL education.

Keywords: mobile learning, EFL, ESL, educational technology, systematic review, implementation, impact, challenges, teacher training, digital literacy

1. Introduction

In recent years, mobile learning has emerged as a prominent and promising approach to facilitate education in various fields, including English as a Foreign Language (EFL) and English as a Second

Language (ESL) contexts. Mobile learning, as defined by Crompton (2013), is "learning across multiple contexts, through social and content interactions, using personal electronic devices." This definition highlights the potential of mobile learning to foster educational experiences

that transcend the boundaries of traditional classrooms, as well as the role of technology in enabling learners to access diverse learning resources and engage in collaborative activities [1]. The development of mobile learning as a distinct educational paradigm can be traced back to the early 2000s, when the proliferation of mobile devices such as smartphones, tablets, and laptops, as well as advancements in wireless connectivity, paved the way for innovative pedagogical practices that leveraged these technologies [2].

The concept of mobile learning has evolved significantly over time, encompassing a wide range of approaches, tools, and strategies that leverage the unique affordances of mobile devices to support learning and teaching [3]. For instance, mobile learning was initially focused on providing learners with access to digital learning materials via their personal devices, which facilitated learning on-the-go and allowed for the personalization of learning experiences [2]. However, as mobile technologies continued to advance, the potential of mobile learning expanded to include more interactive, collaborative, and context-aware learning experiences, which fostered a shift towards more learner-centered and constructivist pedagogies [4]. This ongoing evolution of mobile learning has been driven, in part, by a growing body of empirical research that seeks to understand the most effective ways to integrate mobile technologies into educational settings, as well as the ways in which these technologies can be harnessed to address the specific challenges and opportunities presented by EFL/ESL contexts [5, 6].

In the context of EFL/ESL education, mobile learning has been increasingly recognized as an effective means of enhancing language acquisition and supporting learner autonomy, as it

aligns with several prominent theories of second language acquisition. One such theory is the sociocultural theory of learning, which posits that language learning occurs through social interaction and collaborative knowledge construction [7]. Mobile learning facilitates these interactions by enabling learners to engage in communication and collaboration with their peers, teachers, and native speakers through various tools such as messaging apps, discussion forums, and social media platforms [8, 9]. Additionally, mobile devices can be used to access authentic language materials and participate in culturally rich experiences, which may foster the development of communicative competence and intercultural understanding [10].

Another influential language learning theory that aligns with mobile learning is the input hypothesis proposed by Krashen [11], which emphasizes the importance of exposure to comprehensible input for language acquisition. Mobile learning can enhance learners' access to comprehensible input by providing them with a wide array of multimedia resources, such as texts, audio recordings, and videos, which can be easily accessed and personalized according to their linguistic proficiency, learning preferences, and interests [12, 13]. Furthermore, mobile devices can support the delivery of just-in-time and context-sensitive learning opportunities, which can increase the relevance and effectiveness of the input provided to learners [14].

The affordances of mobile devices, such as their portability, ubiquity, and connectivity, also align with the principles of situated learning theory [15], which posits that learning is most effective when it occurs in authentic contexts and involves meaningful participation in social practices. Mobile learning can facilitate situated language learning experiences by

enabling learners to engage in context-aware activities, such as location-based language tasks, augmented reality simulations, and real-world problem-solving scenarios [16]. Moreover, mobile devices can be used to capture and document learners' experiences, reflections, and artifacts, which can be shared with their peers and teachers for further analysis, feedback, and collaboration [17].

Lastly, the notion of learner autonomy, a key concept in contemporary language education, is inherently supported by mobile learning [18]. Mobile devices empower learners to take control of their own learning process, by providing them with the means to set goals, monitor progress, and evaluate outcomes, as well as to access, organize, and create learning resources that align with their individual needs and interests [19]. Mobile learning can also foster the development of metacognitive and self-regulation strategies, which are essential for effective language learning, by offering various tools for reflection, self-assessment, and peer feedback [20]. In conclusion, the integration of mobile learning in EFL/ESL education has the potential to transform the language learning experience, by capitalizing on the unique affordances of mobile devices and aligning with prominent language learning theories [21-36].

By integrating mobile learning in EFL/ESL education, educators can capitalize on the unique affordances of mobile devices and align language learning with prominent theories such as the sociocultural theory of learning, Krashen's input hypothesis, situated learning theory, and the concept of learner autonomy. Mobile learning offers a flexible, interactive, and personalized learning experience that transcends the traditional classroom environment. As research in this

area continues to grow, educators and researchers alike can gain a better understanding of the most effective ways to harness the potential of mobile learning in EFL/ESL contexts, ultimately enhancing language acquisition and learner autonomy for students around the world.

Despite the growing body of research on mobile learning in EFL/ESL contexts, there remains a need for a more comprehensive understanding of the various ways in which mobile learning is implemented and its impact on language learning outcomes. While numerous studies have explored the potential of mobile devices to support language learning, much of the existing research has focused on quantitative approaches, examining the effects of specific mobile applications or interventions on language proficiency or learner engagement [37-39]. Although these studies provide valuable insights, they often overlook the complex and context-dependent nature of mobile learning experiences, as well as the diverse perspectives of stakeholders involved in the design, implementation, and evaluation of mobile learning initiatives [40]. As such, there is a need for more qualitative research that can offer a holistic and nuanced understanding of the factors that contribute to the success or failure of mobile learning in EFL/ESL settings, as well as the ways in which these factors can be addressed to enhance the overall quality and effectiveness of mobile learning experiences.

In light of these gaps and challenges, this qualitative systematic review aims to provide a comprehensive synthesis of the existing literature on mobile learning implementation in EFL/ESL contexts, with a focus on understanding the underlying processes, mechanisms, and contextual factors that shape the integration of mobile devices into language learning practices. By employing

a qualitative approach, this review seeks to capture the diversity and complexity of mobile learning experiences, as well as to identify the most promising strategies and best practices for leveraging mobile technologies to support EFL/ESL education. To achieve these objectives, the following research questions will be addressed:

1. How does mobile learning impact EFL/ESL?
2. How is the appropriateness of mobile learning implementation in EFL/ESL assessed?
3. In which ways are mobile learning implemented in EFL/ESL contexts?

Through a rigorous and systematic examination of the available qualitative evidence, this review aims to contribute to the ongoing scholarly discourse on mobile learning in EFL/ESL education, as well as to inform the development of more effective, contextually appropriate, and learner-centered mobile learning interventions in the future.

2. Literature Review

2.1 Theoretical foundations of mobile learning in EFL/ESL contexts

The integration of mobile learning in EFL/ESL contexts is supported by various theoretical foundations. Sociocultural theory [7] highlights the role of social interaction and collaborative knowledge construction in language learning, which is facilitated by mobile learning through tools and platforms that enable interaction among learners, teachers, and native speakers [8]. Krashen [41] input hypothesis emphasizes the importance of comprehensible input for language acquisition, and mobile learning increases learners' access to diverse, personalized multimedia resources [12]. Situated learning theory [15] focuses on authentic

contexts and meaningful participation in social practices, with mobile learning allowing learners to engage in context-aware activities and real-world problem-solving scenarios [16]. Lastly, mobile learning supports learner autonomy [18] by empowering learners to take control of their learning process and develop metacognitive and self-regulation strategies [20].

2.2 Mobile learning implementation strategies in EFL/ESL education

In EFL/ESL education, various mobile learning implementation strategies have been employed. Mobile-assisted language learning (MALL) applications and tools offer interactive learning experiences, which can lead to improvements in language skills [19, 37, 42]. Mobile devices facilitate collaborative learning activities, promoting language skill development and a sense of learning community [10, 43]. Flipped classrooms incorporate mobile learning for accessing pre-class materials, leading to increased motivation and improved language skills [44, 45]. Mobile-assisted task-based language learning (TBLT) supports authentic tasks, enhancing language skills and promoting cultural understanding [19, 40]. Personalized and adaptive mobile learning tailors' experiences to individual learners, resulting in improved language skills and increased learner autonomy [46].

2.3 Evaluating the impact of mobile learning on EFL/ESL outcomes

Mobile learning has become an increasingly popular approach in EFL/ESL education, offering the potential to transform language learning outcomes. However, the impact of mobile learning on the development of language skills has been mixed. Some studies have reported significant improvements in listening, speaking, reading, and writing skills, while

others have found more modest gains or no significant differences between mobile learning and traditional instructional approaches [42]. These discrepancies in findings can be attributed to factors such as the quality of learning materials, the design of mobile learning interventions, and the extent to which learners engage with mobile learning activities. Therefore, it is crucial to consider these factors when evaluating the effectiveness of mobile learning in EFL/ESL education and to conduct further research to identify the conditions under which mobile learning can lead to optimal language learning outcomes.

One of the key benefits of mobile learning is its ability to enhance learner motivation in EFL/ESL contexts. By providing engaging, interactive, and personalized learning experiences, mobile learning fosters a sense of autonomy and self-efficacy among learners [47]. The incorporation of gamification elements, such as points, badges, and leaderboards, into language learning activities can further increase learners' intrinsic motivation and encourage them to persist in their learning efforts. Additionally, mobile learning can promote extrinsic motivation by facilitating social interactions, peer feedback, and collaborative activities, leading to a sense of belonging and positive attitudes towards language learning. However, motivation is a complex and dynamic construct, influenced by multiple factors. To maximize the impact on language learning outcomes, mobile learning interventions should be designed to address learners' motivational needs and preferences.

Affective factors, such as attitudes, beliefs, and emotions, play an essential role in language learning, and mobile learning has the potential to shape these factors in EFL/ESL settings. Studies have shown that mobile learning can promote positive attitudes towards language learning by

providing accessible, flexible, and engaging learning experiences [48]. Moreover, mobile learning can help reduce anxiety and other negative emotions associated with language learning tasks by allowing learners to practice language skills in a non-threatening environment, receive immediate feedback, and engage in self-paced learning activities. To ensure the success of mobile learning interventions, educators and instructional designers should consider the affective dimensions of language learning and provide learners with adequate support and scaffolding to manage their emotions and develop positive attitudes towards language learning.

2.4 Challenges and future directions in mobile learning for EFL/ESL education

The implementation of mobile learning in EFL/ESL education faces various challenges. One of the main issues is the availability of technological infrastructure and resources, such as reliable internet access, adequate mobile devices, and appropriate applications and tools [49]. In some regions, particularly in low-resource settings, limited access to technology and internet connectivity may hinder the successful implementation of mobile learning initiatives. Teacher training and professional development are also crucial, as many teachers may lack the necessary competencies, pedagogical knowledge, or positive attitudes towards mobile learning to effectively integrate it into their teaching practice [40]. Additionally, learner support and scaffolding are needed to address individual challenges related to technology use, language proficiency, cognitive load, or motivation, requiring guidance and assistance from teachers, peers, or digital tools [50].

Assessment and evaluation of mobile learning interventions are necessary for determining their effectiveness and

informing future instructional design decisions. However, traditional assessment methods may not be suitable for evaluating the complex, dynamic, and often informal learning experiences facilitated by mobile devices [51]. New assessment approaches should be developed to capture the multidimensional aspects of mobile learning, including language skills development, motivation, affective factors, and learner autonomy. Ethical considerations and data privacy are also crucial, as the collection, storage, and analysis of learners' personal data may pose risks to their privacy and confidentiality, and the use of mobile devices for language learning may expose them to inappropriate or harmful content, online harassment, or cyberbullying [52].

The rapid development of new technologies, such as artificial intelligence (AI), virtual reality (VR), and augmented reality (AR), presents opportunities for enhancing mobile learning experiences in EFL/ESL education [53]. These emerging technologies can be integrated into mobile learning interventions to provide more immersive, interactive, and personalized learning experiences, thus promoting the development of language skills, motivation, and learner autonomy. However, the long-term impact and sustainability of mobile learning interventions in EFL/ESL contexts require further investigation, including examining the effects on language skills development and retention, transfer of skills to other contexts, and ongoing engagement of learners with mobile learning activities and resources [54]. Research should also explore factors contributing to the sustainability of mobile learning interventions, such as institutional support, teacher training and professional development, and availability of technological infrastructure and resources.

In conclusion, mobile learning has the potential to transform EFL/ESL education by providing accessible, engaging, and personalized learning experiences that promote language skills development, motivation, affective factors, and learner autonomy. However, the successful implementation of mobile learning interventions depends on addressing the various challenges and opportunities presented by this rapidly evolving educational approach. Future research should explore innovative strategies to overcome these challenges and harness the potential of mobile learning and emerging technologies to enhance language learning outcomes and experiences for learners in diverse EFL/ESL contexts.

3. Theoretical Framework

This section outlines key theories shaping the design and implementation of mobile learning interventions in EFL/ESL education, providing a foundation for understanding pedagogical considerations.

Constructivist learning theory highlights learners' active role in knowledge construction through individual and collaborative experiences [55]. Mobile learning environments support this by offering authentic learning experiences, promoting active engagement with language learning tasks, and facilitating integration into real-world contexts [40, 51].

Sociocultural theory posits learning as a socially-mediated process linked to social interaction and cultural context [7]. In EFL/ESL mobile learning, social interaction and collaboration are crucial for language development [46]. Mobile devices enable communication, collaboration, and appropriate scaffolding in authentic contexts [52, 56].

Connectivism emphasizes networks, connections, and distributed knowledge [57]. In EFL/ESL mobile learning, mobile devices facilitate knowledge creation and sharing, enabling learners to access and synthesize information from multiple sources [58]. Developing digital literacy skills and navigating complex information landscapes are critical [53].

Self-determination theory focuses on autonomy, competence, and relatedness as motivational needs [59]. In EFL/ESL mobile learning, addressing these needs fosters intrinsic motivation and engagement [60]. Mobile learning environments support autonomy, enhance competence, and promote relatedness [37, 61].

Self-regulated learning theory emphasizes metacognitive, motivational, and behavioral strategies [62]. In EFL/ESL mobile learning, developing self-regulated learning skills is essential [63]. Mobile learning technologies support planning, monitoring, and evaluating language learning activities, fostering learner autonomy and self-regulated learning [64, 65].

In conclusion, these theories inform effective mobile learning environments for language learners, emphasizing active learning experiences, social interaction, digital literacy, motivational needs, and learner autonomy.

4. Methodology

This qualitative systematic review aims to explore the impact of mobile learning on EFL/ESL education, its appropriateness, and the various ways it is implemented. To ensure a rigorous and transparent review process, the PRISMA 2020 [66] model was adopted as a guideline for conducting this study, and the Mixed Methods Appraisal Tool (MMAT) 2018 [67] was utilized to assess the quality of the selected articles.

4.1 Search Strategy and Selection Criteria

A comprehensive literature search was conducted on May 5, 2022, using the top five educational technology journals according to Google Scholar classification. These journals include:

1. Computers & Education Journal
2. British Journal of Educational Technology
3. The Internet and Higher Education Journal
4. Journal of Educational Technology & Society
5. Education and Information Technologies Journal

To identify relevant articles, the following search terms were used: ("Mobile learning" OR "m-learn" OR "mlearn" OR "%phone" OR "ipad" OR "tablet" OR "portable" OR "PDA" OR "ubiquitous") AND ("English" OR "language" OR "efl" OR "esl" OR "listening" OR "speaking" OR "read" OR "writing" OR "grammar" OR "vocabulary" OR "speech"). Articles were considered eligible for inclusion if they were published in English, focused on mobile learning in EFL/ESL contexts, and presented empirical data or case studies.

4.2 Screening and Data Extraction

The initial search yielded a total of 397 articles. After removing duplicates and screening the titles and abstracts for relevance, 128 articles were selected for full-text review. The full-text articles were further assessed for eligibility, with 64 articles meeting the inclusion criteria. The Mixed Methods Appraisal Tool (MMAT) 2018 was used to evaluate the methodological quality of these articles, resulting in a final sample of 32 high-quality articles for inclusion in the systematic review.

Data extraction was conducted using a standardized form to capture information on the study design, participants, mobile learning interventions, outcome measures, and key findings. The extracted data were then synthesized and analyzed using a thematic approach, guided by the research questions.

4.3 Data Synthesis and Analysis

A thematic analysis was performed on the extracted data to identify patterns and trends in the implementation of mobile learning in EFL/ESL education. The analysis involved an iterative process of coding and categorizing the data, identifying emerging themes, and refining the themes to ensure coherence and consistency. The themes were then used to address the research questions, providing insights into the impact, appropriateness, and various ways mobile learning is implemented in EFL/ESL education.

Through this methodological approach, the study aims to provide a comprehensive and in-depth understanding of the role of mobile learning in EFL/ESL education. The systematic review and thematic analysis of the selected high-quality articles will offer valuable insights into the ways mobile learning has been implemented, its impact on language learning, and its appropriateness in various EFL/ESL contexts. By adhering to the PRISMA 2020 model and using the MMAT 2018 tool, this study ensures a rigorous and transparent review process, contributing to the advancement of knowledge and practice in the field of mobile learning for EFL/ESL education.

5. Results and Discussion

5.1 Descriptive Analysis of the Selected Studies

In this section, we will provide a descriptive analysis of the selected studies,

as shown in Table 1. Of the twelve articles reviewed, five (41.7%) were published in the *Educational Technology and Society* journal, two (16.7%) in the *British Journal of Educational Technology*, two (16.7%) in *Education and Information Technologies*, and one (8.3%) each in *Computers & Education*, and the *Internet and Higher Education Journal*. The majority of the studies were conducted in Asian countries, with six (50%) from Taiwan, three (25%) from Iran, two (16.7%) from China, and one (8.3%) from Turkey.

Regarding the language of instruction, Chinese was the most common language used in eight (66.7%) of the studies, followed by Persian in three (25%) studies, and Turkish in one (8.3%) study. The total number of participants across all studies was 848, with a gender distribution of 286 males (33.8%) and 562 females (66.2%). In terms of educational level, the majority of the studies focused on university students (75%), while the remaining studies targeted general education students (25%).

When examining the research methodologies employed, most of the studies (75%) used mixed-methods approaches, while the remaining 25% relied solely on qualitative methods. The research designs varied, with pretest-posttest being the most frequent (41.7%), followed by case studies (25%), cross-sectional (8.3%), experimental (8.3%), and quasi-experimental (8.3%) designs. In terms of research instruments, tests and questionnaires were the most commonly used tools (91.7%), with interviews also utilized in some studies (50%).

Smartphones were the primary mobile devices used in all the studies, with one study (8.3%) employing tablets. Several mobile learning applications were mentioned across the studies, including WeChat (25%), WhatsApp (16.7%),

Telegram (16.7%), LINE (8.3%), and custom-designed applications for specific language learning purposes (e.g., listening,

vocabulary) (16.7%). Two studies (16.7%) did not mention the specific mobile learning applications used.

Table 5.1: Summary of the Selected Studies

ID	Citation (First Year)	Journal	Country	Language	Participants (M/F)	Educational Level	Methodology	Research Design	Research Instrument	Mobile Devices	Mobile Learning
[1]	Tai, Y., 2012	Education al	Taiwan	Chinese	35 (21/14)	General Education	Mixed-Methods	Pretest-Posttest	Test / Questionn	Smartpho ne	Not mentione
[2]	Mellati, M., 2018	Education and	Iran	Persian	90 (0/90)	Universit y	Mixed-Methods	Cross-Sectional	Test / Interview	Smartpho ne	WhatsApp p, GRE
[6]	Song, Y., 2020	British Journal of	Hong Kong	Chinese	23	General Education	Qualitativ e	Case Study	Questionn aire /	Smartpho ne	Custom Vocabula
[13]	Liu, G., 2018	British Journal of	Taiwan	Chinese	36 (13/23)	Universit y	Mixed-Methods	Pretest-Posttest	Test / Questionn	Smartpho ne	Custom Listening
[16]	Wu, W., 2017	Education al	Taiwan	Chinese	50	Universit y	Mixed-Methods	Pretest-Posttest	Test / Questionn	Smartpho ne	LINE
[19]	Huang, C., 2016	Education al	Taiwan	Chinese	80	General Education	Mixed-Methods	Pretest-Posttest	Test / Interview	Smartpho ne	Not mentione
[22]	Wang, Z., 2020	Education al	China	Chinese	55 (6/49)	Universit y	Mixed-Methods	Pretest-Posttest	Test / Interview	Smartpho ne	WeChat
[40]	Sendag, S., 2018	Computer s &	Turkey	Turkish	29 (8/21)	Universit y	Mixed-Methods	Experime ntal	Test / Interview	Tablet	Listening and
[44]	Xiangmin g, L., 2020	Computer s &	China	Chinese	158 (106/52)	Universit y	Mixed-Methods	Case Study	Test / Questionn	Smartpho ne	WeChat

[61]	Alizadeh, I., 2018	Education and	Iran	Persian	98	University	Qualitative	Case Study	Questionnaire	Smartphone	Telegram
[62]	Saritepeci, M., 2019	Education and	Turkey	Turkish	29 (13/16)	Graduate	Qualitative	Case Study	Test / Questionnaire	Smartphone	WhatsApp
[68]	Motlagh, H., 2020	Education and	Iran	Persian	61 (0/61)	University	Mixed-Methods	Quasi-Experiment	Test / Questionnaire	Smartphone	Telegram

In the following sections, the results of the selected studies will be discussed according to the research questions outlined earlier in this paper.

5.2 Qualitative themes and analysis

5.2.1 How does mobile learning impact EFL/ESL?

The qualitative analysis of the included studies presents various themes that pertain to the impact of mobile learning on EFL/ESL learners. The identified themes are aligned with the learning aspects summarized in Table 5.2, demonstrating the diverse advantages mobile learning offers in different aspects of language learning.

Table 5.2 Summary of Learning Aspects in Reviewed Studies

Encoding	Studies
Collaborative Learning	9
Vocabulary Learning	8
Speaking and Pronunciation	6
Continuous Learning	3
Listening Skill	3
Learning Performance	3
Retention Knowledge	4
Writing Skill	3
Grammar	5
Reading Skill	5

5.2.1.1 Collaborative Learning

The results of the systematic review indicate that mobile learning promotes collaborative learning among English

language learners. Mobile learning allows students to interact and learn from each other, adopting various social and collaborative learning strategies. Social

interaction provides learners with the opportunity to seek clarification, correction, or repetition from their peers, thereby enhancing their understanding of the language. According to Liu, Chen and Hwang [68], "The group learning leads to the adoption of more social strategies, with the learners asking their peers for clarification and correction, and some asking more proficient listeners to explain, repeat or clarify what they have heard" (p. 12).

Mobile learning enables students to build stronger social relationships, increasing the likelihood of students interacting and learning from each other outside the formal educational setting in the form of learning groups. Wu, Hsieh and Yang [69] argue that mobile learning "provides learners with opportunities to meet regularly with their partners for collaborative construction and improvement of knowledge about chosen topics" (p.143). Such interactions create a comfortable and realistic learning environment, allowing slow or low-level learners to comprehend complex concepts through learning from their peers and requesting repetition of information from their faster-learning peers.

Furthermore, mobile learning applications, such as MAVL, LGC, WhatsApp, and Telegram, enable students to share knowledge with their peers through group chat rooms or private messages. Wang, Hwang, Yin and Ma [70] state that:

"Whenever someone posts in the group chat, it was like saying, I'm studying vocabulary now or I'm with you. The frequent posted illustrations were also seen as automatic reminders to study or create illustrations, as the more often students reviewed the content, the better they

would retain such knowledge" (p. 25).

Such interactions foster a sense of camaraderie and encourage shy students to actively participate and engage in learning. The included studies suggest that mobile learning has the potential to create an enjoyable and interactive social learning environment for English language learners, stimulating them to start a discussion and improve their language skills.

5.2.1.2 Vocabulary Learning

In addition to helping students acquire new vocabulary, mobile learning also assists learners in retaining and recalling the vocabulary they have learned. The included studies in the systematic review confirmed that mobile devices provide students with the opportunity to review and access vocabulary whenever and wherever they want. Students can retrieve new vocabulary by saving and reviewing it on their mobile devices, leading to more effective vocabulary retention. "Mobile devices allow learners to carry out autonomous vocabulary learning, where learners have more control over the learning process, can retrieve vocabulary items at will, and have the opportunity to review vocabulary frequently" [71]. Moreover, the use of mobile applications and resources for vocabulary learning enhances learners' interest and motivation in learning English. The included studies showed that mobile learning provides a flexible and engaging learning environment that appeals to students, leading to increased motivation and positive attitudes towards learning. Students are more interested in learning new vocabulary through mobile learning because it is an innovative and interactive approach to learning. "Mobile learning enhances the motivation of the students in learning English vocabulary" [72]. Finally, the included studies revealed that mobile learning provides students with the

opportunity to practice and apply new vocabulary in context, leading to better language proficiency and comprehension. The ability to use new vocabulary in real-life situations and interactions through mobile devices contributes to the development of students' language proficiency. "Mobile devices also provide learners with a means of practice and application of new vocabulary in context, which is important for developing proficiency in a language" [71]. Overall, mobile learning can be a useful tool in assisting students in acquiring, retaining, and applying new vocabulary in their English language learning journey.

5.2.1.3 Speaking and Pronunciation Skills

Mobile learning enhances oral proficiency in learners, specifically speaking and pronunciation skills, as shown in the reviewed studies. Researchers found that students who were not afraid of making mistakes and were willing to experiment were more fluent in their linguistic speech and speaking, which gave them greater confidence in practicing English both inside and outside the classroom. Mobile learning also helped them practice spelling words and pronunciation repeatedly. "Listening aids helped them better decipher words whose spelling and pronunciation differed, comprehend the content and gain an overall insight into the materials covered in the podcasts" [73].

The included studies showed that using social networks is effective in improving oral communication skills and speaking abilities. The studies found that participants' oral proficiency significantly improved when they used online learning communities through mobile devices and social communication applications such as WhatsApp, Telegram, and WeChat, which allowed students to practice their pronunciation and speaking skills. "WhatsApp offers more opportunities to

practice, supports active learning, and helps learners figure out their weaknesses related to language skills" [72].

5.2.1.4 Continuous Learning

Mobile learning enables continuous learning through the content shared and stored on mobile device applications with learners, providing students with the opportunity to practice and learn consistently. By making information on mobile devices accessible and easily available on-demand at any time students desire, mobile learning allows students to save documents, images, audio, and video clips, which they can review at their convenience without the need for network or internet availability, depending on their mobile device's storage capacity.

"One participant said that she did not learn about the illustrations as soon as she saw them in the group chat; rather, she saved all illustrations to her photo album and viewed them when she had longer chunks of time" [70].

Mobile learning enables students to learn on a daily basis and allows them to revisit lessons as many times as they wish, at a pace that accommodates their personal preferences, motivation to learn, and in comfortable times and places.

5.2.1.5 Listening Skill

Mobile learning is an effective method to improve listening skills among non-native English language learners, as demonstrated by a systematic review of qualitative content. Students can improve their listening abilities by engaging with video clips, audio recordings, and podcasts, which provide opportunities to practice and develop their listening comprehension. According to Liu, Chen and Hwang [68],

"via the process of discussion, [students] had more opportunities to watch the video clips and thus became more attentive to the answers to the questions in each task" (p. 11). This suggests that mobile learning strategies have a clear impact on the development of listening skills among non-native English language learners.

The included studies also found that mobile devices offer various features that can aid in improving listening skills, such as listening aids that explain the meaning of a text, along with repeated listening, which improved the understanding of spoken English texts as a foreign language. Longer podcasts, when used in conjunction with listening aids and repeated listening, resulted in significant increases in listening comprehension scores [73]. Engaging podcasts delivered through tablets and mobile devices have also been shown to improve the listening skills of English as a foreign language learners. The use of mobile learning provides a comfortable and effective opportunity to improve listening skills without fear of failure, as learners can repeat, return, and review complex information, new vocabulary, and proper pronunciation, similar to native speakers.

5.2.1.6 Learning Performance

The included studies also demonstrated that mobile learning in the English language classroom has a significant impact on student engagement and participation, leading to improved learning performance. Mobile devices provide students with the flexibility and mobility that traditional learning methods cannot offer, allowing them to access and retrieve content from any location at any time, leading to improved task performance and learning outcomes. "Therefore, the learning performance of the experiment group who adopted the FSVL strategy combined with the mobile learning tool in a situational

English vocabulary learning environment exhibited a significant improvement" [50]. Mobile learning also enables teachers to deliver content in a more interactive and engaging way, making English language learning more interesting and enjoyable for students. The included studies showed that students prefer mobile learning because it allows them to take control of their own learning, learning at their own pace, and in a way that suits their learning style. As a result, students are more motivated and engaged in the learning process, leading to improved learning performance. "the participants considered that this system was usable and easy to understand, and this positively influenced their intention to use it, their satisfaction with it and also their performance" [68]. The systematic review results of the included studies in the qualitative analysis indicate that mobile learning has a positive impact on English language learning performance, increasing student engagement, motivation, and autonomy. The flexible and mobile nature of mobile learning, combined with its interactive and engaging features, allows students to take control of their learning and provides an effective and efficient way of learning English as a foreign language.

5.2.1.7 Retention of Knowledge

The results of the qualitative studies included in this systematic review demonstrated that students are able to retrieve and retain information in mobile learning environments. Mobile devices provided students with the ease of retrieving saved files and relearning through reading or repeating exercises. The presence of mobile devices containing social communication applications, various types of digital data, connectivity, and internet access increased the opportunities for students to be reminded of educational content, aiding in frequent retrieval and retention of learning. "Findings show that the u-learning scaffolds not only helped the

students improve their listening comprehension but also helped them retain the knowledge they had learned" [68]. The included studies indicated that when students were exposed to illustrations, they were often better able to remember the information. This suggests that students should review educational content repeatedly to better retain knowledge and information.

5.2.1.8 Writing Skill

The included studies in the systematic review of qualitative content confirmed that English language learners who use mobile learning can improve their writing skills. Mobile learning applications, such as WhatsApp and SMS, helped them construct sentences and enhance grammatical structures in English writing. "WhatsApp enables learners to improve their language skills, especially writing thanks to flexible learning opportunities" [72]. Through this type of written interaction in social communication applications, students can assist one another in correcting mistakes if they commit expressive errors, as in linguistic interactions in a real-life environment. The included studies revealed that any learning process related to writing would strengthen the entry of words into the mental lexicon of the English language for the student, especially when connecting the classroom learning environment to real-life using mobile learning. "...the students displayed enhanced performance in speaking, listening, and writing tests as well as the overall test" [74].

5.2.1.9 Grammar

The systematic review of qualitative analysis found that mobile learning can positively impact the development of English grammar in non-native English learners. However, some studies highlighted that grammar remains a significant challenge for some learners,

particularly among Chinese students. These concerns remained steady, showing no significant difference even with the use of mobile learning environments. Furthermore, mobile learning may contribute to weaker grammar skills due to writing shortcuts, errors in chat rooms, and reliance on emojis. Despite this, mobile applications' automatic correction may somewhat improve students' memory of correct spelling and sentence construction. "Students waste their time on WhatsApp, and they display procrastination behaviors. It also damages the students' grammar and spelling knowledge and brings about the lack of focusing during the lessons" [72].

5.2.1.10 Reading Skill

The included studies in this systematic review confirmed that mobile learning has a positive impact on learners' reading skills, enhancing their overall language skills. Mobile devices provide students with diverse presentation methods and interaction channels that facilitate their learning process. The studies revealed that mobile learning improves students' reading ability and comprehension, enabling them to understand the overall meaning of the text. "The instructional videos helped me understand the overall meaning, with which I could apply what I've learned to my story writing, dialogue practice, and daily conversation"[74].

Mobile learning also offers a range of benefits that support the development of reading skills, such as accessibility to content, peer interaction and exchange of ideas, immediate feedback, extensive reading opportunities, and learner choice in learning style and pace. "Mobile devices offer instant access to course materials, immediate feedback on assignments, and access to extensive reading opportunities for students who may not otherwise have access to these resources" [71].

5.2.2 How is the appropriateness of mobile learning implementation in EFL/ESL assessed?

Mobile learning increases learning motivation and stimulates students, increasing language practice, availability

and accessibility, flexible and comfortable learning environment, learner-centered process, cost and expenses, lack of technology literacy, immediate feedback and no rote learning. Table 5.2 shows the number of studies on each node.

Table 5.2 Summary of Learning Aspects in Reviewed Studies

Encoding	Studies (N)
Increase in Motivation	8
Increasing Language Practice	7
Availability and Accessibility	6
Flexible and Comfortable Learning Environment	5
Learner-Centered Process	5
Cost and Expenses	3
Lack of Technology Literacy	3
Immediate Feedback	3
No Rote Learning	2

The studies found that mobile learning increases language practice, as students can participate and use mobile phone applications such as WhatsApp and Viber to send text, voice, and video messages. This creates an environment for language learners to practice their language skills where English is not the dominant language. WhatsApp also provides the feature of group chats, which can be used for practicing speaking and interacting with multiple people simultaneously. Mellati, Khademi and Abolhassani [75] stated that "Living in a foreign language context, learners participating in social media networks such as WhatsApp and Viber have a great opportunity to practice language outside the classroom." The role of social communication, increased self-confidence, immediate feedback, freedom in learning practice, and exposure to

educational content are factors that contribute to increasing opportunities for non-native speakers to practice English in a more realistic environment.

Another advantage of mobile learning is the availability and accessibility of learning materials. The portability of mobile devices makes them available and accessible on-demand, allowing for learning anytime and anywhere. Tai [76] explained that "The mobile device is used as a tool for communication. Participants could not have face-to-face communication with the instructor; therefore, authentic English output needed to be produced." The constant presence of mobile devices with learners creates a more comfortable and flexible learning environment and enables students to learn at their own pace. [77] stated, "If I have access to the Internet, the

SNS is readily accessible. I can follow my studies and do my assignments on the bus, in the park, etc."

However, some researchers believe that mobile learning may not be reliable, even when available on-demand, due to the instability of mobile devices or challenges with the internet or device malfunctions. Liu, Chen and Hwang [68] mentioned that "the smartphone crashed or the mechanism of collaboration broke down, which made the process of scanning QR codes generated by teammates difficult and frustrating." Additionally, the lack of technology literacy among learners and teachers may pose challenges for the effective implementation of mobile learning. Mellati, Khademi and Abolhassani [75] pointed out that "Lack of literacy among teachers, parents, and learners is the major factor which can be contributed to their lack of trust in such educational instruction."

Additionally, mobile learning provides learners with immediate feedback, which has been shown to be an important factor in language learning. As Wu, Hsieh and Yang [69] pointed out, "Participants recognized the usefulness of the instructor's timely online feedback as well as face-to-face comments in guiding them to become more metacognitively aware of their capabilities and to locate appropriate responding strategies." The studies included in the qualitative systematic review emphasized that the mobile learning environment eliminates barriers of time and place, allowing students to access feedback and participate whenever they wish. Furthermore, Saritepeci, Duran and Ermiş [72] found that the way feedback and comments are provided in a mobile learning environment through the internet is different from face-to-face learning, which can increase anxiety and hinder effective learning, leading to less participation and delayed responses.

Another advantage of mobile learning is that it does not resemble traditional learning and relies less on rote memorization, as is the case in most traditional English language learning strategies. This has been found to increase students' satisfaction, motivation, and interest in learning, as well as making the learning process more memorable and efficient. According to Wang, Hwang, Yin and Ma [70]:

"When asked to compare with traditional learning approaches on various dimensions by responding more, neutral or less, EG [Experimental Group] rated our approach as more satisfactory (80.8%), easier to use (80.8%), more memorable (69.2%), more flexible (65.4%), more interesting (65.4%), and more efficient (53.8%)."

On the other hand, some researchers believe that mobile learning may not be suitable for learners who lack the technological skills to use learning devices. Mellati, Khademi and Abolhassani [75] stated that "Lack of literacy among teachers, parents, and learners is the major factor which can be contributed to their lack of trust in such educational instruction." This highlights the need for technology literacy among learners, teachers, and parents in order to fully benefit from mobile learning. Additionally, some studies have indicated that implementing mobile learning in institutional settings can be financially costly and require substantial expenses for infrastructure and device provision, requiring strong government support. However, other studies have indicated the possibility of implementing and benefiting from mobile learning by relying on

students' own mobile devices and low-cost applications.

In conclusion, the qualitative systematic review showed that mobile learning has several advantages in teaching English as a second language. It increases motivation, language practice, accessibility and availability, provides a flexible and comfortable learning environment, and allows for a learner-centered process with immediate feedback. Although there are some challenges, such as a lack of

technology literacy, the benefits of mobile learning make it a valuable tool for non-native English speakers to learn and practice the language.

5.3 In which ways are mobile learning implemented in EFL/ESL contexts?

Table 5.3 illustrates the encoding of methods and ways in which mobile learning has been implemented in teaching English to non-native speakers, based on the qualitative analysis of studies included in the systematic review.

Table 5.3. Summary of Mobile Learning Implementation in EFL/ESL Education

Encoding	Studies (N)
Scientific Theories	7
Educational Design	5
English Language Skills	7
Educational Stages	
- Primary Education	3
- Tertiary Education	9
Tools	11

The systematic review analyzed several studies that applied various theoretical frameworks in the teaching of English as a second language through mobile learning. The frameworks include the Community of Inquiry (COI) framework, the Contribution-oriented Self-Directed Mobile Learning Ecology (CSDMLE) model, the Common European Framework of Reference for Languages Union Language Framework, and the Mobile Language Game-based Learning (m-LGC) framework.

The COI framework emphasizes the importance of three presences in creating a deep and meaningful learning experience for students: social presence,

cognitive presence, and teaching presence. According to Liu, Chen and Hwang [68] :

"This study is significant and at the cutting edge because different from previous studies, it probed into all of the three presences (teaching, social, and cognitive) in the COI framework that an innovative flipped instruction created, specifically examining the use of an online learning community via the smartphone app LINE in a flipped classroom in EFL oral training classes at the university level" (p. 144).

The CSDMLE model focuses on assisting students in developing English vocabulary through collaborative learning by designing groups. Wang, Hwang, Yin and Ma [70] found that "The effect of the CSDMLE model on students' vocabulary retention and L2 motivation" (p. 20). On the other hand, the m-LGC framework helps students learn English grammar rules through a mobile game application. According to Liu et al. (2018), "After experiencing and interacting with the m-LGC tool, the students perceived the tool to be useful in helping them learn and consolidate vocabulary" (p. 16).

In addition to the previously mentioned frameworks, the Situated Mobile Learning theory has also been found to be effective in improving students' learning performance and efficiency [50]. Furthermore, the compatibility of Cognitive Theory with mobile learning in teaching English as a second language has been corroborated by qualitative studies, considering principles such as chunking and cognitive load [68].

Contextual Learning and Authentic Learning have also had a significant impact on the instructional designs of mobile learning in English language teaching. According to Song and Ma [78] :

"The more closely mobile learning designs are associated with students' real-life environments and social interactions in authentic learning settings that consider students' interests and needs, the more effective and feasible the desired outcomes of learning English as a second language become" (p. 19).

The studies included in the systematic review addressed the four fundamental English language skills:

listening, speaking, reading, and writing. Wu, Hsieh and Yang [69] found that:

"The current study provides a holistic flipped instructional design that integrated the four skills of English as a whole, in which passive learning activities such as unidirectional lectures were replaced by instructional videos and collaborative activities before class, allowing precious class time to be spent on interactive and collaborative learning activities" (p. 144).

Furthermore, the implementation of mobile learning has been found to positively affect all of the essential skills, even if a study focuses on one specific skill. For example, Xiangming, Liu and Zhang [74] found "Significant increase was also observed in the sub-skills of speaking ($t = -15.14$, $P \leq 0.001$), listening ($t = -3.30$, $P \leq 0.001$), and writing ($t = -3.36$, $P \leq 0.001$)" (p. 19). The systematic review found that the participants in the studies were divided into two main levels: General Education participants ranging from 6 to 18 years old and Tertiary Education participants who were older than 18 years old.

In conclusion, the systematic review of the qualitative studies presented in this research highlights the significance of the use of mobile learning in teaching English as a second language. The findings demonstrate the effectiveness of theoretical frameworks such as the COI framework, CSDMLE model, m-LGC framework, Situated Mobile Learning theory, and Cognitive Theory in enhancing the language skills of non-native speakers. The integration of educational design patterns such as social learning, educational gaming, contextual learning, and personalized learning also play a crucial

role in motivating learners to participate in mobile learning. The use of mobile devices, particularly smartphones, and associated applications such as WhatsApp, Viber, WeChat, and Telegram, has been widely employed in the studies and has shown to have a positive impact on learning outcomes. Additionally, the use of tools aligned with mobile learning theories such as GPS, Semantic Similarity, and Augmented Reality cameras, has been demonstrated to be effective in enhancing the learning experience of non-native speakers of English. Overall, the results of this systematic review suggest that mobile learning is a promising approach to teaching English as a second language and could have significant implications for future instructional designs and educational practices in the field.

6. Conclusion

The qualitative systematic review of mobile learning implementation in English as a Second Language (ESL) and English as a Foreign Language (EFL) contexts reveals the effectiveness of such approaches in teaching English to non-native speakers. Mobile learning has been shown to enhance oral proficiency, motivation, performance, vocabulary acquisition, and listening skills, among other aspects. By incorporating technological tools, social networks, and collaborative learning strategies, mobile learning fosters a supportive and engaging learning environment. This conclusion supports the growing interest in integrating mobile learning into language education, emphasizing its potential to improve various aspects of English language learning for non-native speakers.

While the majority of studies indicate positive outcomes, some contradictory findings suggest that mobile learning may not be beneficial in all contexts. Challenges may arise due to

insufficient guidance and support from teachers, as well as a negative impact on learners' self-efficacy and autonomy. Additionally, a lack of academic integrity and a decline in students' academic performance have been noted in certain cases. Therefore, it is essential to ensure that mobile learning is implemented in a manner that supports learners and promotes academic integrity, taking into account potential drawbacks.

To optimize the implementation of mobile learning in EFL/ESL contexts, several factors must be considered. These include interactive and engaging content, user-friendly technology, a supportive learning environment, clear guidelines and expectations, and appropriate guidance and support from teachers and peers. By addressing these factors, mobile learning can be implemented effectively and beneficially for non-native English language learners, offering a more efficient and effective educational experience and improving students' learning outcomes.

In conclusion, the qualitative systematic review highlights the potential of mobile learning in EFL/ESL settings, while also emphasizing the importance of careful implementation. By considering the factors outlined, educators can successfully integrate mobile learning into language education, capitalizing on its benefits and overcoming potential challenges. As the field of mobile learning continues to evolve, further research should be conducted to refine best practices and evaluate the long-term impact of these approaches on non-native English learners' language acquisition and overall educational experience.

7. Limitations

Despite the comprehensive analysis of the available literature on mobile learning for non-native English language learners, this

study has several limitations. First, the review is restricted to articles published in five selected journals, which may not encompass the entire body of research on mobile learning. Second, only English-language publications from 2011 to 2020 were considered, potentially excluding relevant studies in other languages or from different timeframes. Third, the majority of the reviewed studies focused on specific mobile learning tools or platforms, which may not be generalizable to all mobile learning technologies. Fourth, the context of mobile learning varied across the studies, with differences in educational settings, learners' backgrounds, and instructional designs, potentially affecting the results. Fifth, the reviewed studies employed a range of research methodologies and designs, making it challenging to compare and synthesize findings directly. Finally, this review did not include unpublished research, which may introduce publication bias.

8. Recommendations & suggestions

This review proposes several recommendations for educators, researchers, and policymakers. Educators should select mobile learning tools and platforms that are user-friendly, engaging, and contextually relevant for non-native English language learners. Teachers should provide guidance, support, and feedback to learners in mobile learning environments to foster autonomy and self-efficacy. Schools and institutions should invest in infrastructure, resources, and professional development to ensure effective mobile learning implementation. Policymakers should establish regulations and guidelines to promote academic integrity and ethical behavior in mobile learning environments. Future research should investigate the long-term effects of mobile learning on learners' language proficiency, motivation, and academic performance; conduct

comparative studies exploring the effectiveness of various mobile learning tools and platforms in different educational contexts; examine potential moderating factors such as learners' individual differences and learning preferences that may influence the effectiveness of mobile learning; explore the role of teachers and teacher support in mobile learning environments focusing on developing effective strategies to enhance learning outcomes; address potential issues related to academic integrity, autonomy, and self-efficacy in mobile learning; identify strategies to mitigate these concerns.

References

- 1 Sharples, R.: '16 Mobile Learners and 'English as an Additional Language'', *Ontologies of English: Conceptualising the Language for Learning, Teaching, and Assessment*, 2020, pp. 315-315
- 2 Kukulska-Hulme, A.: 'Will mobile learning change language learning?', *ReCALL*, 2009, 21, (2), pp. 157-165
- 3 Hsu, Y.-C., and Ching, Y.-H.: 'A review of models and frameworks for designing mobile learning experiences and environments', *Canadian Journal of Learning and Technology*, 2015, 41, (3)
- 4 Mpungose, C.B.: 'Are Social Media Sites a Platform for Formal or Informal Learning? Students' Experiences in Institutions of Higher Education', *International journal of higher education*, 2020, 9, (5), pp. 300-311
- 5 Bernacki, M.L., Greene, J.A., and Crompton, H.: 'Mobile technology, learning, and achievement: Advances in understanding and measuring the role of mobile technology in education', *Contemporary Educational Psychology*, 2020, 60, pp. 101827
- 6 Elbyaly, M.Y.H., and Elfeky, A.I.M.: 'THE IMPACT OF BLENDED LEARNING IN ENHANCING THE

- SKILL PERFORMANCE OF PRODUCING DIGITAL CONTENT AMONG STUDENTS OF OPTIMAL INVESTMENT', *Ann. For. Res*, 2023, 66, (1), pp. 2031-2043
- 7 Vygotsky, L.S., and Cole, M.: 'Mind in society: Development of higher psychological processes' (Harvard university press, 1978. 1978)
- 8 Duman, G., Orhon, G., and Gedik, N.: 'Research trends in mobile assisted language learning from 2000 to 2012', *ReCALL*, 2015, 27, (2), pp. 197-216
- 9 Elfeky, A.I.M., and Elbyaly, M.Y.H.: 'THE EFFECTIVENESS OF VIRTUAL CLASSROOMS IN DEVELOPING ACADEMIC MOTIVATION ACROSS GENDER GROUPS', *Ann. For. Res*, 2023, 66, (1), pp. 2005-2020
- 10 Kukulska-Hulme, A., and Shield, L.: 'An overview of mobile assisted language learning: From content delivery to supported collaboration and interaction', *ReCALL*, 2008, 20, (3), pp. 271-289
- 11 Krashen, S.D.: 'The input hypothesis: Issues and implications' (Addison-Wesley Longman Limited, 1985. 1985)
- 12 Pegrum, M., Howitt, C., and Striepe, M.: 'Learning to take the tablet: How pre-service teachers use iPads to facilitate their learning', *Australasian Journal of Educational Technology*, 2013, 29, (4)
- 13 Elfeky, A.I.M., and Elbyaly, M.Y.H.: 'EXAMINING THE EFFECTS OF VIRTUAL CLASSROOM USE INSIDE LEARNING MANAGEMENT SYSTEMS ON ENHANCING STUDENT SATISFACTION', *Ann. For. Res*, 2023, 66, (1), pp. 1980-1990
- 14 Qian, Y.: 'User Review Analysis of Mobile English Vocabulary Learning', *Journal of Educational Technology Development and Exchange (JETDE)*, 2022, 15, (1), pp. 4
- 15 Lave, J., and Wenger, E.: 'Situated learning: Legitimate peripheral participation' (Cambridge university press, 1991. 1991)
- 16 Holden, C.L., and Sykes, J.M.: 'Leveraging mobile games for place-based language learning', *International Journal of Game-Based Learning (IJGBL)*, 2011, 1, (2), pp. 1-18
- 17 Kukulska-Hulme, A., and Lee, H.: 'Mobile collaboration for language learning and cultural learning', *The handbook of informal language learning*, 2019, pp. 169-180
- 18 Benson, P.: 'Teaching and researching: Autonomy in language learning' (Routledge, 2013. 2013)
- 19 Godwin-Jones, R.: 'Mobile apps for language learning.-Language learning & Technology', June, 2011, 15, (2), pp. 2
- 20 Lai, C.: 'Modeling teachers' influence on learners' self-directed use of technology for language learning outside the classroom', *Computers & Education*, 2015, 82, pp. 74-83
- 21 Alanzi, N.S., and Alhalafawy, W.S.: 'A Proposed Model for Employing Digital Platforms in Developing the Motivation for Achievement Among Students of Higher Education During Emergencies', *Journal of Positive School Psychology (JPSP)*, 2022, 6, (9), pp. 4921-4933
- 22 Alanzi, N.S., and Alhalafawy, W.S.: 'Investigation The Requirements For Implementing Digital Platforms During Emergencies From The Point Of View Of Faculty Members: Qualitative Research', 2022, 2022, 9, (6), pp. 4910-4920
- 23 Alhalafawy, W.S., Najmi, A.H., Zaki, M.Z.T., and Alharthi, M.A.: 'Design an Adaptive Mobile Scaffolding System According to Students' Cognitive Style Simplicity vs Complexity for Enhancing Digital Well-Being', *International Journal of Interactive Mobile Technologies*, 2021, 15, (13)

- 24 Alhalafawy, W.S., and Tawfiq, M.Z.: 'The relationship between types of image retrieval and cognitive style in developing visual thinking skills', *Life Science Journal*, 2014, 11, (9), pp. 865-879
- 25 Alhalafawy, W.S., and Zaki, M.Z.: 'The Effect of Mobile Digital Content Applications Based on Gamification in the Development of Psychological Well-Being', *International Journal of Interactive Mobile Technologies (iJIM)*, 2019, 13, (08), pp. 107-123
- 26 Alhalafawy, W.S., and Zaki, M.Z.: 'How has gamification within digital platforms affected self-regulated learning skills during the COVID-19 pandemic? Mixed-methods research', *international Journal of Emerging Technologies in Learning (iJET)*, 2022, 17, (6), pp. 123-151
- 27 Alshammary, F.M., and Alhalafawy, W.S.: 'Sustaining Enhancement of Learning Outcomes across Digital Platforms during the COVID-19 Pandemic: A Systematic Review', *Journal of Positive School Psychology*, 2022, 6, (9), pp. 2279-2301
- 28 Alshammary, F.M., and Alhalafawy, W.S.: 'Digital Platforms and the Improvement of Learning Outcomes: Evidence Extracted from Meta-Analysis', *Sustainability*, 2023, 15, (2), pp. 1-21
- 29 Alzahrani, F.K., and Alhalafawy, W.S.: 'Gamification for Learning Sustainability in the Blackboard System: Motivators and Obstacles from Faculty Members', *Sustainability*, 2023, 15, (5), pp. 4613
- 30 Alzahrani, F.K.J., and Alhalafawy, W.S.: 'Benefits And Challenges Of Using Gamification Across Distance Learning Platforms At Higher Education: A Systematic Review Of Research Studies Published During The COVID-19 Pandemic', *Journal of Positive School Psychology (JPSP)*, 2022, 6, (10), pp. 1948-1977
- 31 Alzahrani, F.K.J., Alshammary, F.M., and Alhalafawy, W.S.: 'Gamified Platforms: The Impact of Digital Incentives on Engagement in Learning During Covide-19 Pandemic', *Cultural Management: Science and Education (CMSE)*, 2022, 7, (2), pp. 75-87
- 32 Najmi, A.H., Alhalafawy, W.S., and Zaki, M.Z.T.: 'Developing a Sustainable Environment based on Augmented Reality to Educate Adolescents about the Dangers of Electronic Gaming Addiction', *Sustainability*, 2023, 15, (4)
- 33 Zeidan, A.A., Alhalafawy, W.S., and Tawfiq, M.Z.: 'The Effect of (Macro/Micro) Wiki Content Organization on Developing Metacognition Skills', *Life Science Journal*, 2017, 14, (12)
- 34 Zeidan, A.A., Alhalafawy, W.S., Tawfiq, M.Z., and Abdelhameed, W.R.: 'The effectiveness of some e-blogging patterns on developing the informational awareness for the educational technology innovations and the King Abdul-Aziz University postgraduate students' attitudes towards it', *Life Science Journal*, 2015, 12, (12)
- 35 Zeidan, A.A., Shibl, E.S., and AL-Subahy, A.A.: 'The effect of interaction between shooting angles and shots sizes in microteaching situations based on digital video sequences in the development of teaching competences among the students of general pedagogic diploma at King Abdulaziz university', *Life Science Journal*, 2014, 11, (3)
- 36 Elfeky, A.I.M., and Elbyaly, M.Y.H.: 'THE IMPACT OF VIRTUAL CLASSROOMS ON THE DEVELOPMENT OF DIGITAL APPLICATION SKILLS AMONG TEACHERS OF DIGITAL SKILLS IN NAJRAN REGION', *Ann. For. Res*, 2023, 66, (1), pp. 2044-2056
- 37 Burston, J.: 'Mobile-assisted language learning: A selected annotated bibliography of implementation studies 1994-2012', 2013
- 38 Elbyaly, M.Y.H., and Elfeky, A.I.M.: 'The effectiveness of a program

- based on augmented reality on enhancing the skills of solving complex problems among students of the Optimal Investment Diploma', *Ann. For. Res.*, 2023, 66, (1), pp. 1569-1583
- 39 Elbaly, M.Y.H., and Elfeky, A.I.M.: 'Investigating the effect of vodcast to enhance the skills of the Canadian smocking and complex problem solving', *Current Psychology*, 2022, 41, (11), pp. 8010-8020
- 40 Kukulska-Hulme, A.: 'Mobile assistance in language learning: A critical appraisal', 2016
- 41 Krashen, S.: 'Principles and practice in second language acquisition', 1982
- 42 Gromik, N.A.: 'Cell phone video recording feature as a language learning tool: A case study', *Computers & education*, 2012, 58, (1), pp. 223-230
- 43 Ducate, L.C., and Lomicka, L.L.: 'Adventures in the blogosphere: From blog readers to blog writers', *Computer Assisted Language Learning*, 2008, 21, (1), pp. 9-28
- 44 Basal, A.: 'The implementation of a flipped classroom in foreign language teaching', *Turkish online journal of distance education*, 2015, 16, (4), pp. 28-37
- 45 Hung, H.-T.: 'Flipping the classroom for English language learners to foster active learning', *Computer Assisted Language Learning*, 2015, 28, (1), pp. 81-96
- 46 Lai, C., and Zheng, D.: 'Self-directed use of mobile devices for language learning beyond the classroom', *ReCALL*, 2018, 30, (3), pp. 299-318
- 47 Al-Jarf, R.: 'Chapter Six: Mobile Technology and Tudent Autonomy in Oral Skill Acquisition': 'Left to my own devices: Learner autonomy and mobile-assisted language learning' (Brill, 2012), pp. 103-130
- 48 Sung, Y.-T., Chang, K.-E., Lee, Y.-H., and Yu, W.-C.: 'Effects of a mobile electronic guidebook on visitors' attention and visiting behaviors', *Journal of Educational Technology & Society*, 2008, 11, (2), pp. 67-80
- 49 Ally, M., and Prieto-Blzquez, J.: 'What is the future of mobile learning in education?', *RUSC. Universities and Knowledge Society Journal*, 2014, 11, (1), pp. 142-151
- 50 Huang, C.S., Yang, S.J., Chiang, T.H., and Su, A.Y.: 'Effects of situated mobile learning approach on learning motivation and performance of EFL students', *Journal of Educational Technology & Society*, 2016, 19, (1), pp. 263-276
- 51 Chen, Z., Chen, W., Jia, J., and An, H.: 'The effects of using mobile devices on language learning: A meta-analysis', *Educational Technology Research and Development*, 2020, 68, (4), pp. 1769-1789
- 52 Klimova, B.: 'Impact of mobile learning on students' achievement results', *Education Sciences*, 2019, 9, (2), pp. 90
- 53 Godwin-Jones, R.: 'Riding the digital wilds: Learner autonomy and informal language learning', 2019
- 54 Solihin, S.: 'Using mobile assisted language learning (MALL) to teach English in Indonesian context: Opportunities and challenges', *VELES: Voices of English Language Education Society*, 2021, 5, (2), pp. 95-106
- 55 Piaget, J.: 'Science of education and the psychology of the child. Trans. D. Coltman', 1970
- 56 Hwang, G.J., and Chang, S.C.: 'Effects of a peer competition-based mobile learning approach on students' affective domain exhibition in social studies courses', *British Journal of Educational Technology*, 2016, 47, (6), pp. 1217-1231
- 57 Hendricks, G.P.: 'Connectivism as a learning theory and Its relation to open distance education', *Progressio*, 2019, 41, (1), pp. 1-13
- 58 Moayeri, M., and Khodareza, M.R.: 'The effect of mobile-assisted language learning on speaking accuracy of

- EFL learners', in Editor (Ed.)^(Eds.): 'Book The effect of mobile-assisted language learning on speaking accuracy of EFL learners' (2020, edn.), pp.
- 59 Deci, E.L., and Ryan, R.M.: 'Intrinsic motivation and self-determination in human behavior' (Springer Science & Business Media, 2013, 2013)
- 60 Segura Arias, R.: 'The Role of Mobile Phones in Developing Motivation through Reading Activities in English Language Learners', *GIST Education and Learning Research Journal*, 2021, 22, pp. 7-19
- 61 Pegrum, M., Oakley, G., and Faulkner, R.: 'Schools going mobile: A study of the adoption of mobile handheld technologies in Western Australian independent schools', *Australasian Journal of Educational Technology*, 2013, 29, (1)
- 62 Zimmerman, B.J.: 'Self-regulated learning and academic achievement: An overview', *Educational psychologist*, 1990, 25, (1), pp. 3-17
- 63 Hanif, M.: 'Students' Self-Regulated Learning in Iconic Mobile Learning System in English Cross-Disciplined Program', *Anatolian Journal of Education*, 2020, 5, (2), pp. 121-130
- 64 Crompton, H., and Burke, D.: 'The use of mobile learning in higher education: A systematic review', *Computers & education*, 2018, 123, pp. 53-64
- 65 Shortt, M., Tilak, S., Kuznetcova, I., Martens, B., and Akinkuolie, B.: 'Gamification in mobile-assisted language learning: A systematic review of Duolingo literature from public release of 2012 to early 2020', *Computer Assisted Language Learning*, 2021, pp. 1-38
- 66 Page, M.J., McKenzie, J.E., Bossuyt, P.M., Boutron, I., Hoffmann, T.C., Mulrow, C.D., Shamseer, L., Tetzlaff, J.M., Akl, E.A., and Brennan, S.E.: 'The PRISMA 2020 statement: an updated guideline for reporting systematic reviews', *Systematic reviews*, 2021, 10, (1), pp. 1-11
- 67 Hong, Q.N., Pluye, P., Fàbregues, S., Bartlett, G., Boardman, F., Cargo, M., Dagenais, P., Gagnon, M.-P., Griffiths, F., Nicolau, B., O'Cathain, A., Rousseau, M.-C., and Vedel, I.: 'Mixed Methods Appraisal Tool (MMAT), Version 2018. User guide', McGill, 2018, pp. 1-11
- 68 Liu, G.Z., Chen, J.Y., and Hwang, G.J.: 'Mobile-based collaborative learning in the fitness center: A case study on the development of English listening comprehension with a context-aware application', *British Journal of Educational Technology*, 2018, 49, (2), pp. 305-320
- 69 Wu, W.-C.V., Hsieh, J.S.C., and Yang, J.C.: 'Creating an online learning community in a flipped classroom to enhance EFL learners' oral proficiency', *Journal of Educational Technology & Society*, 2017, 20, (2), pp. 142-157
- 70 Wang, Z., Hwang, G.-J., Yin, Z., and Ma, Y.: 'A Contribution-oriented self-directed mobile learning ecology approach to improving EFL students' vocabulary retention and second language motivation', *Journal of Educational Technology & Society*, 2020, 23, (1), pp. 16-29
- 71 Motlagh, H.S., Khafaie, H., Arastoo, A.A., Cheraghi, M., and Khafaie, M.A.: 'Application of social network in traditional sciences education on the vocabulary acquisition of secondary English learner students', *Education and Information Technologies*, 2020, 25, pp. 3071-3085
- 72 Saritepeci, M., Duran, A., and Ermiş, U.F.: 'A new trend in preparing for foreign language exam (YDS) in Turkey: Case of WhatsApp in mobile learning', *Education and Information Technologies*, 2019, 24, (5), pp. 2677-2699
- 73 Şendağ, S., Gedik, N., and Toker, S.: 'Impact of repetitive listening, listening-aid and podcast length on EFL podcast listening', *Computers & Education*, 2018, 125, pp. 273-283
- 74 Xiangming, L., Liu, M., and Zhang, C.: 'Technological impact on

language anxiety dynamic', *Computers and Education*, 2020, 150, pp. 1-38

75 Mellati, M., Khademi, M., and Abolhassani, M.: 'Creative interaction in social networks: Multi-synchronous language learning environments', *Education and information technologies*, 2018, 23, pp. 2053-2071

76 Tai, Y.: 'Contextualizing a MALL: Practice design and evaluation', *Educational Technology and Society*, 2012, 15, (2), pp. 220-230

77 Alizadeh, I.: 'Evaluating the educational usability of Telegram as an SNS in ESAP programs from medical students' perspective', *Education and Information Technologies*, 2018, 23, (6), pp. 2569-2585

78 Song, Y., and Ma, Q.: 'Affordances of a mobile learner-generated tool for pupils' English as a second language vocabulary learning: An ecological perspective', *British Journal of Educational Technology*, 2020, 52, (2), pp. 858-878