LEX LOCALIS-JOURNAL OF LOCAL SELF-GOVERNMENT
ISSN:1581-5374 E-ISSN:1855-363X
VOL. 23, NO. S6(2025)

IMPACT OF MOBILE-ASSISTED LANGUAGE LEARNING ON ESL LITERACY SKILLS

[1]Pedaveti Julia, [2]Dr B.Jeyanthi

[1]Research Scholar in English, Anna University, Chennai, Tamilnadu, India.
[2]Assistant Professor, Department of English, Anna University Regional Campus -Tirunelveli, Tamilnadu, India

Abstract:
This paper examines the transformative potential of Mobile-Assisted Language Learning to enhance literacy among ESL learners within the digital world. Taking the ubiquity of mobile devices into account, MALL ensures flexible, interactive, and personalized learning opportunities so that learners could become proficient readers, writers, listeners, and speakers. For this purpose, the study involves educational theories including constructivism, sociocultural theory, and connectivism so as to discuss the learner-centered approach of MALL, giving self-directed as well as collaborative learning. A mixed-methods research design covers this study& efficacy across MALL in using the pre-and post-assessments, participant surveys, and qualitative insights. There is significant improvement concerning literacy skills for the participants through the mobile tools that offer real-time feedback, immersion multimedia, and native speaker access. Technical distractions and usability issues appear to be the challenges, arguing that further app designs and teaching strategies are necessary. This research highlights the potential of MALL to integrate traditional language teaching with modern technological capabilities, promoting its use in ESL education. In doing so, the research fills gap in existing studies, providing insights that are useful in optimizing digital tools for language learning in a variety of learning contexts.

Keywords: Mobile Assisted English Language Learning (MALL), literacy skills, English as Second language learners, Smartphone apps, personalized learning, digital age.

Introduction:

The digital age has revolutionized language acquisition, granting learners unprecedented control over their learning. (MALL) is a powerful tool that empowers ESL learners, allowing them to adopt methods that are flexible and convenient, crucial in today& fast-paced, technology-driven world. By utilizing mobile devices like smartphones and tablets, learners can access interactive and tailored resources that enhance language skills, making the learning process more efficient and effective. ESL learners, in particular, find solace in integrating informal learning through mobile technologies, which effectively bridge the gaps in their knowledge and support their language development. According to Rahmati and Miri (2014), MALL significantly enhances ESL learners' literacy skills, enabling them to achieve their linguistic objectives with greater efficiency. Furthermore, Chinnery (2006) underscores the role of mobile learning in providing access to authentic content and facilitating communicative language practice (as cited in Rahimi & Miri, 2014). Despite their diverse backgrounds, ESL learners often grapple with fluency, pronunciation, grammar, and vocabulary, especially when adapting to English-speaking environments in countries like the United States, Canada, or the United Kingdom. These competencies are critical for functional literacy in today digital communication landscape, and MALL is a supportive ally in this journey.

The flexibility and accessibility offered by mobile learning extend beyond the confines of traditional classrooms, fostering a sense of connection and engagement among ESL learners. Through multimedia tools such as audio recordings, virtual reality, and chat features, learners engage in dynamic, immersive learning experiences. They can also collaborate with peers and connect with native speakers, creating a vibrant learning community and receiving valuable feedback that enhances language proficiency. In this context, mobile learning is not just a tool, but a platform that brings ESL learners together, reshaping traditional methods and helping them achieve higher proficiency levels.

Mobile-assisted language learning has recently emerged as a novel approach to support English as Second Language (ESL) learners in developing their language skills and achieving their objectives in acquiring an additional language. This method leverages mobile technology, such as smart phones, tablets, and laptops, allowing learners to access study materials and resources at their convenience, thus making language learning both effective and convenient.

Boroughani et al. (2023) note that mobile-assisted language learning offers unique opportunities for learners to advance beyond the confines of traditional classrooms. It enhances the learning experience through interactive multimedia tools, including audio recordings, streaming, chat functions, and virtual reality sessions. These tools reinforce knowledge and create a dynamic and engaging learning environment. Furthermore, this approach facilitates connections among learners within the community, enabling them to share experiences and insights. They can also interact with native speakers, who provide valuable feedback and corrections, significantly improving language proficiency.

The advantages outlined above position mobile-assisted learning as a vital technology for modern ESL learners, particularly in developing literacy skills in today digital age.

Tragant et al. (2022) assert that this approach is rapidly growing and cannot be underestimated in its role in second language (L2) learning. Its increasing application in ESL education signals a shift from traditional classroom instruction in our continually evolving digital landscape. According to Lai et al. (2016), harnessing the potential of technology maximizes language learning, allowing educational stakeholders to achieve their goals in the 21st century.

In India, teachers are leveraging mobile phones to enhance students' literacy skills in speaking, listening, reading, and writing. Various flipped classroom settings have been employed to assess outcomes, analyze mobile activities and their instructional use, and determine the potential effects on social and creative learning. This underscores the transformative potential of mobile-assisted language learning, which has the power to revolutionize traditional language learning paradigms. By placing control over their education in the hands of learners, this approach offers the flexibility, convenience, and personalization essential in today fast-paced, technology- driven world. Consequently, ESL learners are better equipped to navigate the complexities of language acquisition and achieve higher proficiency levels.

ESL learners often integrate informal learning experiences with mobile devices, merging technology communication and information-gathering capabilities into their daily lives (M. Kondo et al.). This practical approach has emerged as a significant support for language development. Mobile-assisted learning harnesses mobile devices to deliver interactive, flexible, personalized materials. Thus, this article explores the influence of mobile-assisted language learning on literacy skills in the digital age and how it empowers English-language learners to achieve their language objectives. In the age of AI, mobile learning provides specific advantages for language classes, enabling teachers to offer authentic content, communicative language practice, and task completion (Chinnery, 2006, as cited in Rahimi & Miri, 2014).

ESL learners come from diverse linguistic backgrounds and may have relocated to English-speaking countries such as the United States, Canada, or the United Kingdom, or they may be studying English in their home countries to enhance their education or career prospects. Often, they face challenges in developing language skills, including grammar, vocabulary, pronunciation, and fluency—essential components for effective communication and literacy in the digital age.

Mobile-assisted language learning is a powerful tool for ESL learners, enabling them to overcome these challenges and reach their proficiency goals. This approach allows learners to access educational resources anytime and anywhere, offering significant advantages beyond traditional classroom limitations (Boroughani et al., 2023). By providing interactive multimedia components,

such as audio and video recordings, chat features, and virtual reality experiences, mobile-assisted learning enriches the educational experience, enhancing participation and immersion.

Mobile-assisted learning has proven to be an indispensable tool for ESL learners aiming to enhance their literacy skills in the digital age. The accessibility, interactive features, and opportunities for engagement with fellow learners and native speakers position it as a potent resource for promoting language acquisition. As Tragant et al. (2022) note, mobile-assisted learning, an offspring of computer-assisted language learning, is rapidly growing. Its role in English-language education continues to expand, bridging the gap between traditional instruction and the evolving digital landscape.

Enhancing the self-directed use of mobile technology is crucial to maximizing its potential for language learning (Lai et al., 2016). In this digital era, acquiring new educational skills is essential for educators and students. In India, mobile phones are increasingly used to help students develop literacy skills in listening, speaking, reading, and writing. Flipped classroom approaches have been utilized to evaluate learning outcomes, examine the integration of mobile activities, and explore their educational applications.

The Significance of Literacy Skills for ESL Learners

Literacy skills are the key to unlocking effective communication and successful integration into new cultures. For ESL learners, who often come from diverse linguistic backgrounds, mastering English is a journey of empowerment. It's a language that not only opens doors to opportunities but also connects them to a broader world. Developing reading, writing, listening, and speaking abilities is not just a necessity, but a source of confidence and capability. As the world becomes increasingly digital, proficiency in digital literacy skills has become just as crucial as traditional literacy skills, further enhancing their empowerment.

For ESL learners, mastering these skills is apriority for several reasons:

Effective Communication: Proficiency in reading, writing, and speaking is essential for precise and meaningful communication.

Integration into a New Culture: Literacy skills are the bridge that enables ESL learners to understand and participate in the culture of their host country. This understanding is not just vital for social integration, but it also fosters a sense of belonging and acceptance. It through these skills that they can truly become a part of their new community.

Academic success: Many ESL learners aspire to pursue academic endeavors, and literacy skills are fundamental to success in educational institutions. Proficiency in reading and writing is crucial for understanding and expressing complex academic concepts, while speaking and listening skills are essential for classroom participation and discussions. Therefore, literacy skills play a significant role in achieving academic excellence.

21st-Century Skills The importance of being proficient in digital literacy in today's digital world should not just be associated as 'important' but rather a necessity. The skills that construct and comprise digital literacy, such as problem-solving, creativity, critical thinking, collaboration, and communication are the skills that make ESL learners adaptable and prepare for living in today's world. Literacy skills are paramount for individuals learning a new language, particularly ESL learners. These skills encompass the abilities to read, write, and comprehend spoken language, essential for effective communication and successful integration into a new culture. ESL learners must achieve proficiency in reading to comprehend written materials, in writing to articulate their thoughts coherently, and in listening to engage meaningfully with others. Moreover, literacy skills are crucial for academic success, which remains a primary objective for many ESL learners.

As the world increasingly transitions to a digital landscape, proficiency in digital literacy skills has become as vital as traditional reading and writing abilities. Digital literacy, which includes skills

such as navigating the internet, understanding digital texts, and using digital tools, is an extension of traditional literacy. In summary, the significance of literacy skills for ESL learners cannot be overstated, as they form the foundation for effective communication, seamless cultural integration, and academic excellence.

Literature Review:

Integrating mobile technology into education has transformed language learning, with (MALL)emerging as a critical method or improving literacy skills. Combining mobile devices and language learning tools allows learners to engage with language legibly, adaptively, and interactively. Over the last decade, studies have focused on how MALL enhances reading, writing, listening, and speaking for learners of English as a second language (ESL). This review explores how mobile technology has been applied to language learning, its advantages in literacy development, and its challenges.

Mobile technology has become a critical tool in education because of its convenience, portability, and ability to support various learning tasks. Gromik (2012) explains that mobile devices allow users to engage in multiple activities, such as taking and sharing pictures, recording audio, playing games, and communicating with others, all of which support a more immersive learning experience. Mobile devices encourage independent and collaborative learning by enabling learners to practice language in any setting. Chan et al. (2006) argue that mobile technology provides a seamless learning experience where learners can switch between contexts and reinforce their knowledge through real-world applications. These mobile devices, which can be used whenever and wherever needed, modify the learning process and the resulting processes of learning because learners have a deeper engagement with the material.

Kukulska-Hulme et al. (2023) highlight the importance of MALL for both formal and informal learning. environments. Mobile devices allow learners to receive immediate feedback, access authentic language resources, and engage in personalized learning experiences. The flexibility of mobile technology means that learners can adapt their language studies to suit their individual needs, which fosters greater engagement and motivation. According to their research, mobile technology supports language proficiency and contributes to developing critical literacy skills, such as reading comprehension and writing fluency.

Studies investigating MALL and literacy development reveal its effectiveness in enhancing essential language skills. Hazaymeh (2021) discusses how mobile learning improves learners' grammatical accuracy, spelling, and punctuation. His study shows that mobile devices extend learning opportunities beyond traditional classrooms, allowing learners and teachers to connect through real-time communication tools like Skype and Google Hangouts. This interaction fosters a collaborative learning environment where students practice language in authentic settings. Moreover, Hazaymeh highlights the benefits of integrating mobile technology into lessons, a sit facilitates writing, reading, speaking, and listening development more engagingly and practically.

Lin's(2017)researchonmobilelearninginsecond-languagereadingpointstoMALL'spositive effects on learners' cognitive and emotional engagement with reading materials. Mobile platforms provide learners access to multimedia resources, such as videos, audio files, and interactive texts, which aid comprehension and retention. Lin argues that mobile devices allow learners to process reading materials at their own pace, leading to greater independence and motivation. His findings suggest that mobile technology improves reading comprehension and promotes a deeper emotional connection to the material, making the learning process more meaningful.

Kao, Tseng, and Wu (2022) further explore the role of MALL in improving reading comprehension in adult ESL learners. Their study shows that interactive mobile applications, such as Duolingo and

Rosetta Stone, which feature quizzes, flashcards, and multimedia resources, significantly enhance learners' engagement with texts. These applications encourage critical thinking by allowing learners to interact with reading materials in various formats, thus deepening comprehension. The researchers emphasize the importance of designing mobile platforms that meet the specific needs of learners while balancing educational content with engaging, interactive features. The flexibility of mobile apps also helps learner's access resources on their own time, increasing their involvement in the learning process.

Gamification in MALL has been particularly effective in maintaining learners' engagement. Xie and Wang (2021) investigate how gamification strategies, such as rewards and competitive elements, contribute to motivation and language proficiency in mobile learning apps. By creating an interactive and enjoyable learning environment, gamified elements encourage learners to continue practicing the language, leading to improved vocabulary acquisition and comprehension. Their research highlights how mobile devices, through game-like features, provide continuous language practice in a low-pressure setting, which enhances learning outcomes, especially in areas like vocabulary retention.

Zhao and Liu (2023) focus on the impact of mobile-assisted learning on pronunciation using speech recognition technology. Their study finds that speech recognition tools embedded in mobile apps give learners real-time feedback on their pronunciation, helping them make immediate corrections and gradually improve their speaking skills. Learners can practice pronunciation in a comfortable and self-paced environment, which is particularly beneficial for those who may feel hesitant to practice speaking in front of others .Zhao and Liu's findings how that mobile-assisted speech recognition significantly improves pronunciation accuracy and speaking fluency in ESL learners.

The application of MALL can be viewed from two primary perspectives: learner-centered and technology-centered. Chen et al. (2020) explain that the learner-centered perspective focuses on how mobile devices enable learning outside the classroom, allowing learners to access materials on their own time and at their own pace. This approach emphasizes learner autonomy and encourages students to take responsibility for their learning process. On the other hand, the technology-centered perspective highlight show mobile devices adapt educational content to the learner's needs, offering interactive and customizable tools that fit into learners' lives. Both perspectives show that mobile devices are instrumental in creating personalized learning experiences that enhance literacy skills. A more detailed comparison between these perspectives can provide a better understanding of how MALL can be effectively integrated into language education.

Kukulska-Hulme et al. (2023) argue that the future of language learning lies in the continued evolution of MALL, as it allows learners to integrate language study into their daily routines seamlessly. Mobile devices promote self-directed learning and encourage language practice in real-world settings by offering learners autonomy and flexibility. Mobile technology also fosters collaboration, as learners can connect with peers and teachers through online platforms, enhancing communication skills.

Despite the many advantages of MALL, some researchers point to its potential challenges. Chen et al. (2020) highlight concerns over the over-reliance on technology, which can sometimes distract learners from more profound engagement with content. If not carefully managed, mobile devices may encourage superficial learning, where students focus on completing tasks quickly rather than understanding the material. Additionally, Zhao and Liu (2023) warn that all with the support of fundamental theories like constructivism, sociocultural theory, and connectivism, (MALL) is becoming more widely acknowledged as a successful method for enhancing English language proficiency. These frameworks provide a foundation for using mobile devices in language learning by emphasizing social interaction, active engagement, and the importance of networks in learning

processes. MALL's potential lies in its ability to integrate these theoretical insights with the capabilities of mobile technology, creating mobile apps are designed with effective pedagogical strategies in mind. Some apps may lack the necessary support to help learners develop their literacy skills fully, so educators must carefully select tools that align with instructional goals and support learners' progress. Moreover, the use of mobile technology in education raises ethical concerns such as data privacy and the digital divide, which need to bead dressed to ensure equitable access and responsible use of technology.

In conclusion, the literature shows that (MALL) has the potential to enhance literacy skills in ESL learners significantly. Mobile devices provide a flexible, engaging, and adaptive learning environment that supports reading, writing, listening, and speaking development. MALL's ability to integrate interactive features, such as gamification and speech recognition, makes it a powerful tool for improving language proficiency in a more personalized and enjoyable way. While challenges are associated with using technology in education, thoughtful application of mobile learning tools can lead to meaningful improvements in learners' literacy skills.

Research Objectives:

1. To investigate the impact of (MALL) on literacy skills of ESL learners.
2. Explore the effectiveness of MALL tools in improving reading, writing, and comprehension skills.

Theoretical Frame Works Supporting MALL

With the support of fundamental educational theories like Constructivism, socio cultural theory and Connectivism, (Mall) is becoming very widely acknowledged as a successful method for enhancing English Language proficiency. These frameworks provide a foundation for using mobile devices in language learning by emphasizing social interaction, active engagement, and the importance of networks in learning processes. Mall's potential lies in the ability to integrate these theoretical insights with capabilities of mobile technology, creating and interactive, flexible, and learner centered environment.

As a learning theory, constructivism contends that learners actively construct knowledge through interaction with their environment rather than passively receiving it. In the context of MALL, this approach allows learners to engage with language authentically and meaningfully. Poláková and Klímová (2019) argue that MALL encourages students to take control of their learning by providing tools that facilitate exploration and experimentation. These tools, which are primarily mobile devices, allow learners to connect with relevant language resources and communicate with peers or native speakers, which fosters active language practice. Through this process, learners construct their understanding of language forms and cultural nuances, aligning with the core principles of constructivism.

Socio cultural theory, rooted in Vygotsky's work, emphasizes the significance of social interaction and cultural context in learning. MALL is particularly effective in this regard, as mobile devices enable learners to practice language skills in various real-life situations, both in and out of the classroom. According to Wong and Looi (2010), mobile technology allows learners to integrate language learning into their daily routines, making the process more natural and contextually relevant. This theory underscores the importance of collaboration and communication in language acquisition, as learners use their devices to engage with others, enhancing their understanding through social participation. Mobile platforms also enable learners to interact with diverse linguistic and cultural content, helping them grasp the nuances of language in different contexts.

Siemens (2005) put forth the more recent theory of connectivism, emphasizing the significance of networks and connections in learning, particularly in an increasingly digitally

connected world. In the framework of MALL, mobile devices act as gateways to vast networks of language resources and inter active content. Learners can access multimedia materials, communicate in real time, and collaborate with peers across various digital platforms. This theory suggests that learning occurs through active engagement with these networks, as learners constantly interact with new information, adapt to changes, and expand their understanding of language. By facilitating these connections, mobile devices make language learning more dynamic and responsive to individual needs.

MALL's practical application of these theories highlights its effectiveness in promoting language acquisition. By using mobile devices, learners benefit from the flexibility and immediacy of access to language resources, which can be tailored to their learning preferences and schedules. Rahimi and Miri (2014) note that MALL distinguishes itself from traditional computer-assisted language learning by emphasizing the mobility and adaptability of the learning process. Learners are no longer confined to a specific time or place; instead, they can engage with language at their convenience through apps, videos, or real-time conversations with peers or instructors. This adaptability allows for a more continuous and immersive learning experience, bridging formal classroom instruction with informal, everyday language use.

Additionally, MALL fosters critical thinking and deeper engagement with language. The interactive nature of mobile technology encourages learners to apply their skills in various contexts, enhancing comprehension and retention. Learners are exposed to diverse forms of language—whether written, spoken, or multimedia—which aid in the development of comprehensive language skills. Poláková and Klímová (2019) further suggest that MALL promotes learner autonomy, a concept that refers to the learner's ability to control their learning pathways and use mobile tools to support their progress. In the context of MALL, this means that students can choose the resources and activities that best suit their learning style and pace.

The use of mobile devices also supports collaboration and peer learning, essential components of socio cultural theory. Through mobile-assisted platforms, learners can engage in group activities, share ideas, and receive feedback, reinforcing language learning through social interaction. This collaborative approach mirrors real-world language use, where communication with others is vital for developing proficiency. In the context of MALL, 'real-world language use' refers to the practical application of language skills in everyday situations, such as ordering food in a restaurant or asking for directions. The ability to practice language in these real-time scenarios, supported by mobile tools, allows learners to apply their knowledge practically, improving fluency and confidence.

Connectivism's emphasis on digital networks further illustrates the potential of MALL to transform language learning. As learners access a vast array of online materials and participate in digital communities, they are exposed to various linguistic inputs, enhancing their ability to process and understand language. Siemens (2005) argues that learning is a continuous process of connecting with specialized information sources, and mobile technology facilitates this connection by providing instant access to authentic language content. Learners can engage with language in various formats—audio, visual, textual—and from different cultural perspectives, which enriches their language learning experience.

Furthermore, integrating constructivism, sociocultural theory, and connectivism in MALL offers a comprehensive framework for understanding the effectiveness of mobile devices in language learning. These theories emphasize the value of mobile technology-supported active, social, and networked learning. MALL provides learners with the tools to improve their language skills and creates an environment where learning is interactive, engaging, and responsive to individual needs. As mobile technology continues to evolve, its role in language education will

likely expand, offering new opportunities for learners to connect with language in innovative and effective ways.

Current Gaps in Research

MALL has become a prominent topic within language education. Despite its increasing popularity, significant gaps persist in the research, particularly regarding its effects on literacy in the digital age, which we define as the period from the late 20th century to the present. While many studies examine the use of mobile devices in classroom settings, the specific impact of MALL on reading and writing skills remains underexplored.

Existing research often centers on motivation, participation, and learner perspectives. While these factors are crucial, they do not provide a comprehensive understanding of how MALL influences literacy development. A critical gap exists in empirical studies that delve into how mobile-assisted language learning affects learners' reading and writing abilities. More real-world studies are urgently needed to comprehend how mobile devices aid in language and cognitive skills growth in everyday contexts. Although current research often highlights the potential benefits of mobile learning in enhancing language acquisition, much of the evidence is anecdotal and lacks rigorous quantitative support. There is a pressing need for studies that not only claim positive outcomes associated with MALL but also present solid statistical analyses to validate these assertions.

Future research should investigate the tangible effects of mobile technology on reading and writing skills to deepen the understanding of MALL and its role in literacy development. By filling these gaps, researchers can shed light on how mobile devices contribute to language learning and ensure that educational practices are based on reliable evidence. This approach will not only help unlock the full potential of MALL in improving literacy outcomes for learners in today's digital and scope but also guide the development of effective teaching strategies and curriculum design.

The Methodology:

The methodology chosen for this research is a mixed-methods approach, a unique strategy that combines both quantitative and qualitative techniques. This approach is particularly well-suited for our study, as it allows us to thoroughly explore the effects of (MALL) on the literacy skills of ESL learners within the digital age. By integrating numerical data with in-depth insights, we can provide a comprehensive understanding of the subject.

The quantitative aspect of the research was employed to capture broad trends and patterns. Through surveys and assessments, the researchers gathered measurable data on the extent of mobile technology use, the frequency of engagement with MALL resources, and the corresponding improvements in literacy skills among ESL learners. This data helped to identify generaltrends and provided a clear direction for further investigation into the effectiveness of MALL.

On the other hand, the qualitative data was gathered to provide a deeper understanding of the learners' experiences. Through interviews and open-ended questionnaires, we were able to explore learners 'perceptions attitudes, and personal experiences with mobile-assisted language learning. This qualitative element was crucial in understanding the learners' motivations, challenges, and how MALL influenced their language acquisition and literacy development. It enriched the overall analysis by offering a more nuanced view of the learners' experiences, providing context to the quantitative findings.

The choice of a mixed methods approach in this study was intentional, allowing the researchers to obtain a holistic understanding of the subject. The combination of quantitative and qualitative data offered a balanced perspective, ensuring that the research captured the broad trends and the intricate details of how MALL impacts ESL literacy skills. This balanced approach provided the necessary depth to address their search objectives and offered valuable insights into how mobile

technology can enhance language education in the digital age, reassuring the audience of the study's validity.

In conclusion, the mixed-methods approach employed in this study has provided a comprehensive investigation into the role of MALL in improving ESL literacy skills. By integrating quantitative data that illustrated overall trends with qualitative data that offered a detailed understanding of individual experiences, the research presented a well-rounded analysis of MALL's effectiveness. This methodology has contributed valuable knowledge to the field of language education, particularly regarding the balance between mobile-assisted learning and literacy development in ESL learners.

Participants:

The study actively involves a diverse group of 66 adult ESL learners, each with a unique background and a basic yet advanced grasp of English language skills. These students, hailing from different nationalities, age groups, and educational levels, all share a passion for (MALL) and a desire to participate in the study. The central aim is to examine the effects of MALL on literacy skills in the digital age and its potential to enhance the overall language proficiency of adult ESL learners.

To explore this, participants are provided with access to an interactive online platform. This platform offers a variety of engaging activities designed to improve their reading, writing, and listening skills. Over eight weeks, they engage regularly with these resources, actively participating in the language-learning environment. Their progress is measured through pre- and post-assessments conducted at the beginning and end of the study, respectively. These assessments play a crucial role in tracking the development of their literacy skills and assessing the impact of MALL on their overall language performance.

A comprehensive survey is conducted on a carefully selected sample of English language learners as part of the research methodology. This survey is thoughtfully designed to gather valuable insights into participants' patterns of mobile device use for language learning. It aims to uncover the frequency of their MALL usage and their perceptions, preferences, and attitudes toward the practice. The data collected offer a comprehensive view of how mobile technology contributes to literacy development in English as a second language, leaving no aspect unexplored.

The survey explores multiple aspects, including the frequency and duration of MALL use, the types of apps or platforms utilized, and the specific literacy skills targeted during these sessions. It also collects demographic data and information on learners' proficiency levels, allowing for the identification of potential correlations between different variables. These quantitative findings provide an essential baseline understanding of participants' experiences with MALL.

Qualitative Data Collection:

The study actively involves a diverse group of adult ESL learners, each with a unique background and a basic yet advanced grasp of English language skills. These students, hailing from different nationalities, age groups, and educational levels, all share a passion for (MALL) and a desire to participate in the study. The central aim is to examine the effects of MALL on literacy skills in the digital age and its potential to enhance the overall language proficiency of adult ESL learners.

To explore this, participants are provided with access to an interactive online platform. This platform offers a variety of engaging activities designed to improve their reading, writing, and listening skills. Over eight weeks, they engage regularly with these resources, actively participating in the language-learning environment. Their progress is measured through pre- and post-assessments conducted at the beginning and end of the study, respectively. These assessments play a crucial role in tracking the development of their literacy skills and assessing the impact of MALL on their overall language performance.

A comprehensive survey is conducted on a carefully selected sample of English language learnersas part of the research methodology. This survey is thoughtfully designed to gather valuable insights into participants' patterns of mobile device use for language learning. It aims to uncover the frequency of their MALL usage and their perceptions, preferences, and attitudes toward the practice. The data collected offer a comprehensive view of how mobile technology contributes to literacy development in English as a second language, leaving no aspect unexplored.

The survey explores multiple aspects, including the frequency and duration of MALL use, the types of apps or platforms utilized, and the specific literacy skills targeted during these sessions. It also collects demographic data and information on learners' proficiency levels, allowing for the identification of potential correlations between different variables. These quantitative findings provide an essential baseline understanding of participants' experiences with MALL.

Data Analysis:

The data collected, both quantitative and qualitative, were rigorously analyzed to draw meaningful and significant conclusions. Our approach involved a dual-pronged analysis method, highlighting the importance of our research in the field of MALL and ESL literacy skills.

Statistical analysis techniques such as t-tests and correlation analysis were crucial in our research. They were applied for quantitative data, enabling us to identify statistically significant patterns and relationships within the numerical data. For example, we could determine if there were significant differences in literacy skill improvements based on the intensity of MALL usage or the choice of language learning apps.

At the same time, qualitative data were subjected to thematic coding. This process, which involved identifying recurring themes and patterns in the interview transcripts, was invaluable. It offered deep insights into the participants' lived experiences with MALL, allowing us to uncover the qualitative aspects of MALL's impact on ESL literacy skills, including personal growth, challenges faced, and strategies developed.

Pre-Intervention Questionnaire

Oct 13, 2024

* Required

1. What is your age?

Enter your answer

2. What is your gender?

3. What is your native language?

4. What is the highest level of education you have completed?

5. How would you rate your overall English proficiency level? (Beginner, Intermediate, Advanced)

6. Have you used mobile devices (smartphones, tablets) for learning purposes before? (Yes/No)

If yes, please specify the types of activities or apps you have used.

7. How motivated are you to improve your English literacy skills?

1	2	3	4	5

Not motivated — Extremely motivated

8. What are your expectations from using mobile devices for language learning?

- ◯ Seasonal
- ◯ Never
- ◯ Sometimes
- ◯ Rarely
- ◯ Often
- ◯ Always
- ◯ Occasionally

9. How would you rate your English vocabulary knowledge?

1	2	3	4	5

Poor — Excellent

10. How would you rate your English reading comprehension ability?

1	2	3	4	5

Poor — Excellent

11. How would you rate your English listening and speaking skills?

1	2	3	4	5

Poor — Excellent

12. How would you rate your English writing skills?

1	2	3	4	5

Poor — Excellent

13. How user-friendly did you find the mobile learning apps/activities?

1	2	3	4	5

Not user-friendly at all — Very user-friendly

14. How engaging and interactive were the mobile learning activities?

1	2	3	4	5

Not engaging at all — Very engaging

15. How convenient was it to access and use mobile learning resources?

1	2	3	4	5

Not convenient at all — Very convenient

16. In what ways did mobile learning help you improve your literacy skills?

17. What were the main challenges or obstacles you faced while using mobile learning?

18. How did mobile learning compare to traditional classroom learning?

1	2	3	4	5

Much worse — Much better

19. How would you rate your English vocabulary knowledge after the mobile learning intervention? *

	Extremely disagree	Somewhat disagree	Neutral	Somewhat agree	Extremely agree	Good	Excellent
M-Learning	◯	◯	◯	◯	◯	◯	◯

20. How would you rate your English reading comprehension ability after the mobile learning intervention? *

	Extremely disagree	Somewhat disagree	Neutral	Somewhat agree	Extremely agree	Excellent	Good
M-Learning	◯	◯	◯	◯	◯	◯	◯

21. How would you rate your English listening and speaking skills after the mobile learning intervention? *

	Extremely disagree	Somewhat disagree	Neutral	Somewhat agree	Extremely agree	Good	Excellent
M-Learning	◯	◯	◯	◯	◯	◯	◯

22. How would you rate your English writing skills after the mobile learning intervention *

	Extremely disagree	Somewhat disagree	Neutral	Somewhat agree	Extremely agree	Good	Excellent
M-Learning	◯	◯	◯	◯	◯	◯	◯

23. How would you rate your English vocabulary knowledge after the mobile learning intervention? *

	Extremely disagree	Neutral	Somewhat agree	Extremely agree	Excellent	Good
M-Learning	◯	◯	◯	◯	◯	◯

24. How could the mobile learning experience be improved? *

This content is neither created nor endorsed by Microsoft. The data you submit will be sent to the form owner.

Microsoft Forms

Demographic Overview

The survey responses show that 48% of college participants are 18, indicating that many are

fresh out early in their higher education journey. This age group will likely be comfortable with technology, making them good candidates for mobile learning tools. Most respondents are female, a significant factor that could influence learning preferences and underscores the need for gender-inclusive education. Understanding this demographic is essential to ensuring the content is relatable and inclusive.

Language Background and Educational Level

Most participants (67%) report Tamil as their native language, which could significantly impact their learning pace and strategies when learning English. This underscores the need for bilingual or language support. Additionally, 67% of respondents have completed intermediate-level education. This shows that most learners have a basic educational foundation but may still need more focused instruction to develop advanced English skills.

English Proficiency and Motivation

When asked to rate their English proficiency, 56% of participants identify as intermediate-level learners. This indicates that while they have some knowledge of English, they are aware of areas that need improvement. Their motivation to improve their English skills is moderate, with an average score of 3.57 out of 5. This suggests that learners are willing to improve but may need clear goals and, importantly, encouragement to stay engaged and feel supported in their learning journey.

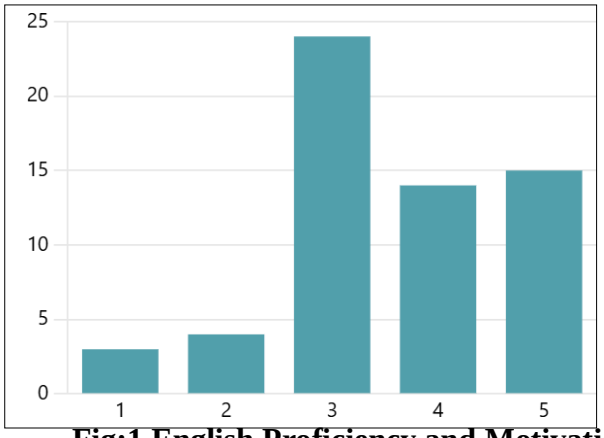


Fig:1 English Proficiency and Motivation

Experience with Mobile Learning:

With only 43% of participants having used mobile devices for learning, it's clear that many are new to this platform. This underscores the crucial need for guidance and support to help these learners navigate and maximize the potential of mobile learning tools. Some may require additional time to adapt to learning through mobile devices.

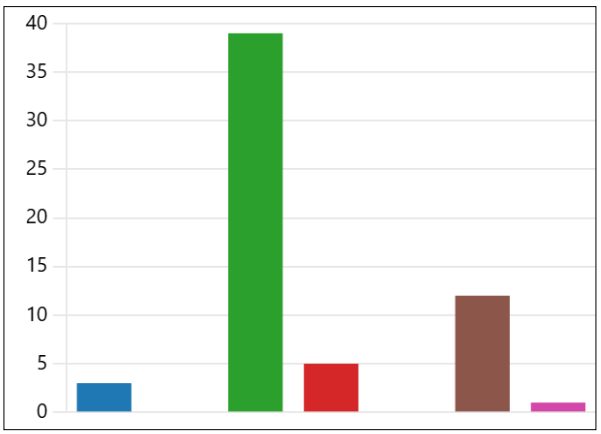


Fig:2 Experience with Mobile Learning

English Language Skills:

The participants' self-assessments of their English skills show moderate confidence in areas like vocabulary (3.51) and listening and speaking (3.83). Their reading comprehension skills are rated slightly higher, at 3.90, suggesting they are relatively comfortable with written texts. Writing skills receive the highest rating (3.97), indicating that most learners feel confident expressing their thoughts through writing. However, it's important to note that there is still a significant need for improvement in all areas, particularly in expanding vocabulary and developing speaking abilities.

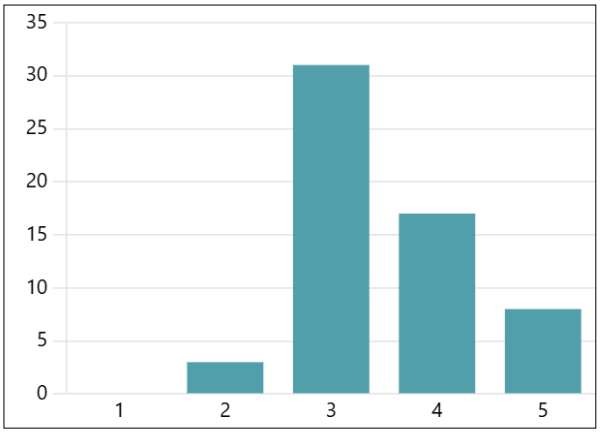


Fig:3 English Language Skills(a)

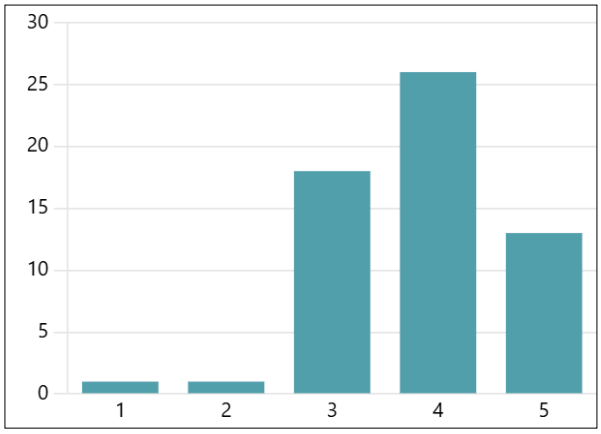


Fig:4 English Language Skills (b)

Mobile Learning Experience:

Participants rate the user-friendliness of mobile learning apps at 3.14, suggesting that while they find these tools somewhat accessible, there are challenges in usability. Improving the design and navigation of these apps could help learners have a smoother experience. The engagement and interactivity of mobile learning activities receive a similar rating (3.17), underscoring the urgent need for more engaging and interactive content to capture learners' interest and sustain their motivation.

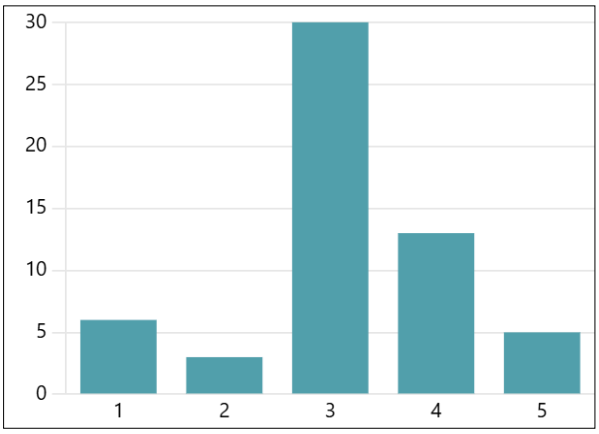


Fig: 5 Mobile Learning Experience

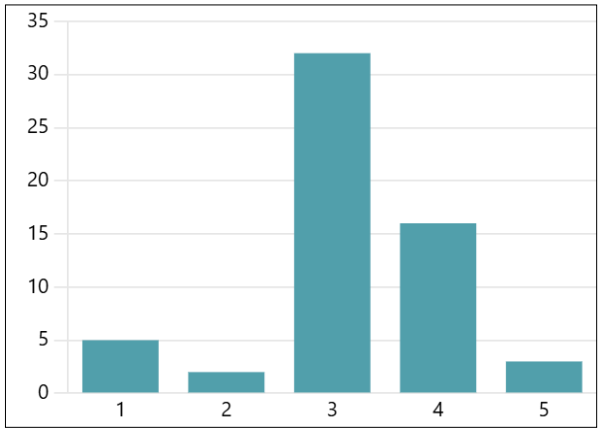


Fig:6 Mobile Learning Experience

Accessibility and Flexibility:

The survey noted that the learning ability to access anywhere is, a learning, without the device afforded, is clear, and with correct, these issues. The information directed towards participants regarding convenience and flexibility of mobile resources effects the participants ranked as the significant Learning at any time advantage of mobile learning, while at the same time mentioned issues with compatibility and access to internet issues related to mobile learning capability

Challenges and Obstacles in Mobile Learning

Participants mention distractions, such as social media, and technical issues, like battery life, as common obstacles in mobile learning. These challenges highlight the need for strategies to minimize distractions, such as creating focused study sessions. Moreover, the development of efficient apps that optimize battery use plays a crucial role in enhancing learning. Addressing these concerns makes mobile learning a more reliable and productive option for learners.

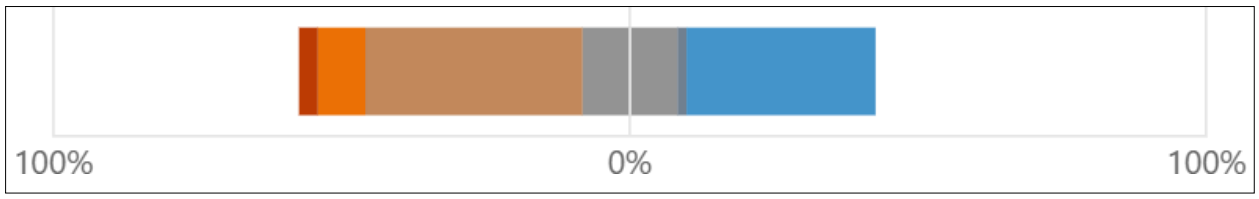


Fig:7 Challenges and Obstacles in Mobile Learning(a)

Fig:9 Challenges and Obstacles in Mobile Learning(a) illustrates participants' assessments of their English vocabulary knowledge after using mobile learning tools. The blue section, representing the majority, shows that they have experienced a significant improvement, indicating that the intervention was generally successful.

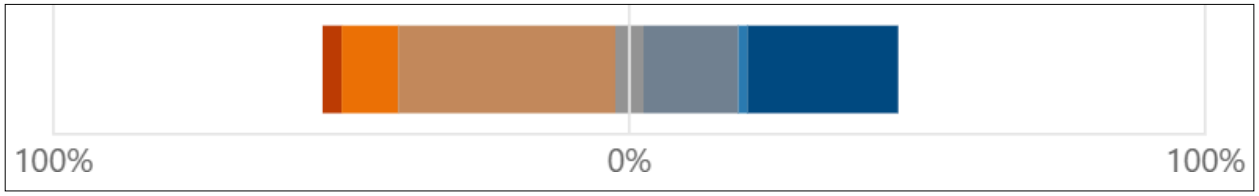
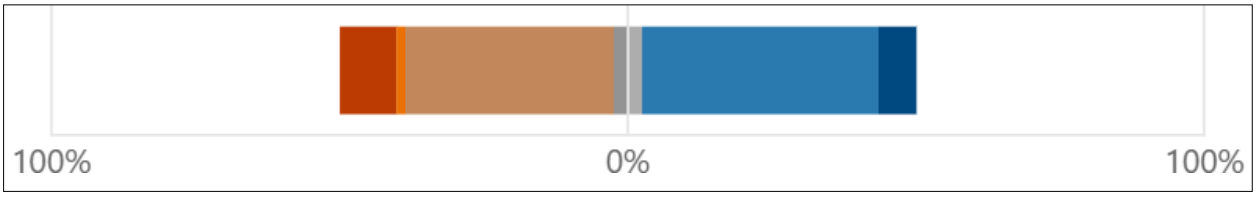


Fig:8 Challenges and Obstacles in Mobile Learning(b)

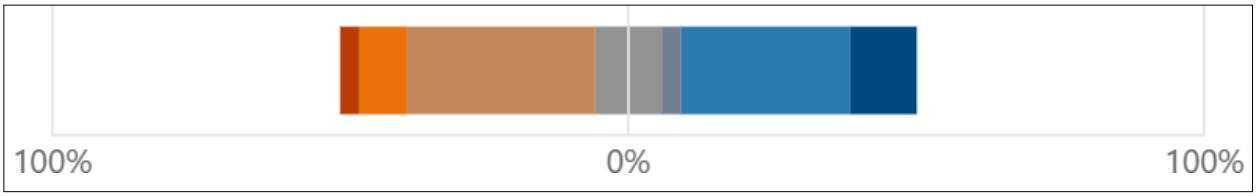
The graph illustrates participants' self-assessment of their English reading comprehension following the mobile learning intervention. Most learners, represented by the blue section,reported significant improvements in their skills. The brown and grey portions indicate moderate improvements for some individuals, while the small orange section reflects slight changes for a few others. Overall, the intervention had a positive impact on most participants; however, the variation in results suggests that mobile learning tools should be better tailored to accommodate diverse learning needs, as some learners may require additional support to further enhance their reading skills.

Fig:9 Challenges and Obstacles in Mobile Learning(c)



This graph presents the participants' self-assessment of their English listening and speaking skills following the mobile learning intervention. A significant number of respondents, represented in blue, show a notable improvement in these skills. The brown and light blue sections reflect moderate enhancement for some learners, while a small orange segment shows minimal change. Overall, the intervention effectively boosts listening and speaking abilities. However, it's crucial to recognize that a small group of learners, represented by the orange segment, may need additional support to fully develop these skills. This emphasizes the importance of empathy and understanding in the learning process.

Fig:10 Challenges and Obstacles in Mobile Learning(d)



The bar chart brings to light the individual progress made in English writing skills through a mobile learning intervention. The orange section on the left reflects participants' initial proficiency levels, with some starting near 100%. The blue section on the right, however, is where the real progress is seen. It indicates improvement, with many participants reaching higher

proficiency after the intervention. The grey area in the center may represent a phase with no significant change for some individuals, but it also underscores the personal journey each participant undertakes. Overall, the chart suggests that the mobile learning intervention improves English writing skills, highlighting the role of technology in language education and the personal impact it can have on each learner.

Comparisons to Traditional Learning

Participants rate mobile learning at 3.32 compared to traditional classroom learning, reflecting a neutral view. While they appreciate the flexibility of mobile learning, it has not yet replaced the value of in-person instruction for many. This suggests that a blended learning approach,

combining mobile learning with classroom teaching, may offer the best solution by balancing flexibility with the structure and interaction of traditional methods.

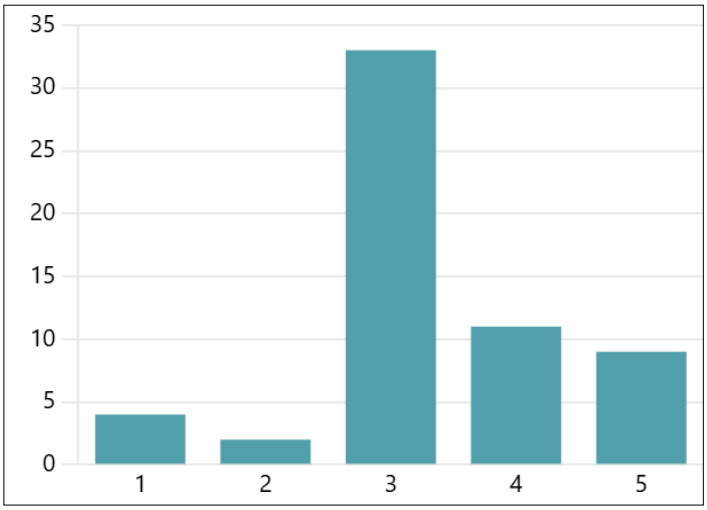


Fig:11 Traditional Learning

Feedback for Improvement

Participants' suggestions for improving mobile learning, such as shorter videos and modular content, are in perfect alignment with the preferences of modern learners for quick, digestible information. This reassures us that the research is not only relevant but also insightful, providing a clear direction for the future of mobile learning. Smaller, more focused learning modules can help maintain engagement, especially for learners who prefer short bursts of learning throughout the day.

The survey results underscore the strengths and challenges of mobile learning for participants. While most are comfortable with basic English skills and appreciate the flexibility of mobile learning, many are new to mobile learning platforms and face technical obstacles or distractions. To enhance the learning experience, it is crucial to create more user-friendly, interactive, and engaging content that aligns with learners' preferences for shorter, focused lessons. Providing support for those new to mobile learning and addressing technical challenges will be key to ensuring the success of mobile learning programs.

Two perspectives implied on MALL are learner-centered and technology-centered. *Student mobility* was defined as the former, whereas equipment mobility and course material adaptability were explained as the latter (Stockwell, 2010). Dubois et al.(1982) defined MALL from the angles of pedagogical media, describing it as a 'generalized and more is the way of adding some learning materials' rather than changing the content of a particular system and using elements from a specific methodology, learners, and syllabus. Learning support, learner/learning control, and feedback were added to these perspectives.

There is a significant and undeniable attitude toward using this modern technology among teachers and students in India. This is particularly evident in the MALL program, a learning platform that allows access to learning materials from anywhere, anytime, and by anyone. The impact of this technology on education is profound, and its potential is vast.

Many critics also voiced it, as the people of the modern world just enjoy the image and ignore its consequences. However, it has many benefits regarding teaching and learning, affecting the attitude towards the language and acquiring good knowledge on social networks, chat rooms, community-based opportunities, and entertainment. Therefore, MALL encourages student-to-student communication, group work, and idea sharing. So, the students can earn good marks on their part from the critic and can be successful.

'The Framework of Mobile Learning':

Implementing flipped classroom teaching strategies successfully hinges on establishing a robust framework for mobile learning. This not only enhances the effectiveness of teaching and learning techniques through smartphone education but also provides a solution to current pedagogical challenges. In his book, Ally Mohamed introduces the 'Framework for the Rational Analysis of Mobile Education' (FRAME) model, a concept that effectively addresses issues such as information overload, knowledge navigation, and collaboration in the learning process.

The FRAME model is a valuable guide for various aspects of mobile education. Its adaptability allows it to be tailored to different educational contexts, shaping the development of future mobile devices, creating learning materials, and the design of specific teaching and learning strategies for mobile education. It paves the way for a more effective and efficient approach to mobile learning, which is becoming increasingly crucial in today's educational landscape.

Ally's insights underscore the significance of a structured model like FRAME in mobile education, offering a comprehensive and strategic perspective. This model fosters a sense of community among educators and learners, encouraging collaboration and shared learning experiences.

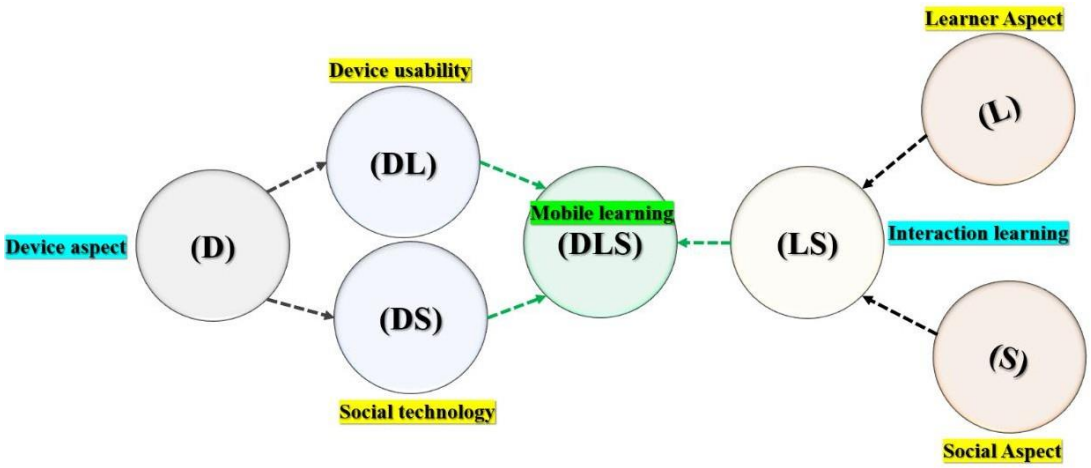


Figure 12 The Frame Model

The model highlights two critical intersections: device usability (DL) and social technology (DS). These intersections capture the capabilities and opportunities presented by mobile technology in education.

1. **Usability of the device (DL):** This intersection emphasizes the functionality and user-friendliness of mobile devices. It underscores the importance of mobile devices in facilitating the learning process. Mobile devices offer many features and tools, such as accessibility, portability, and connectivity, which can significantly enhance the learning experience. The DL intersection emphasizes how the usability of these devices contributes to a seamless and effective learning process.
2. **Social Technology (DS):** This intersection underscores the transformative potential of mobile technology's social and collaborative aspects in learning. It celebrates the role of mobile devices in fostering connections, communication, and collaboration among learners. Mobile devices provide a platform for learners to engage with their peers, educators, and the broader learning community, promoting interaction and knowledge sharing. The intersection of DS shines a light on the exciting potential of social technology to enrich the learning experience through collective knowledge-

building and collaborative problem-solving.

Norman's model framework for mobile learning illustrates how mobile technology encompasses both device usability and social technology, contributing to an enriched and effective learning environment. This framework provides a structured approach to understanding the interaction between devices, learners, and social interactions in the context of mobile-assisted learning. By recognizing these intersections, educators and researchers are empowered to harness the full potential of mobile technology to enhance the learning experience and promote collaborative andinteractive learning in the digital age.

The intersection of technology, pedagogy, and social interaction plays a vital role in shaping the landscape of mobile learning. It underscores the importance of seamless internet connectivity and the affordability of data usage, particularly for language learners who seek to enhance their speaking skills through multimedia resources. However, it's the well-informed pedagogical strategies and policies concerning mobile learning that are paramount in this ever-evolving educational landscape, making the roles of educators and policymakers more urgent and significant than ever.

'Mobile Assisted Language Learning (MALL)' is a significant aspect of language education. It refers to the use of mobile technology to facilitate language learning, often through interactive apps, multimedia resources, and online communication tools. This approach is particularly beneficial for language learners who seek to enhance their speaking skills through multimedia resources. Clarifying critical terms in this context is essential to better understanding the following discussion.
Saville-Troike's language theory, a cornerstone in our understanding of language acquisition, emphasizes that successful language learning extends beyond mere vocabulary memorization. This theory is particularly relevant in the context of mobile-assisted language learning, providing a solid theoretical foundation for our discussion.

Language acquisition encompasses a broad spectrum of skills, broadly categorized as receptive or productive language use. These categories can also be divided into four main components, depending on whether they involve written or oral skills: speaking, listening, reading, and writing (Saville-Troike, 2006).

Furthermore, the distinction between second and foreign languages is essential, and both have significant implications for mobile language learning, particularly in the context of English language acquisition by non-native speakers. Mobile-assisted language learning is a dynamic avenue for improving various language skills, including speaking, listening, reading, and writing, which play a crucial role in acquiring a second language.

Through the innovative concept of mobile learning, English language learners have gainedaccess to a wealth of resources that were previously out of reach. These include vocabulary expansion, language nuances, idiomatic expressions, conversational skills, and other linguistic lessons. In addition, they benefit from motivational content and insightful ideas. Mobile learning, with its dynamic nature, is reshaping the educational experience, offering ESL students an engaging and enriching pathway to language acquisition.

The implications for Mobile Assisted Language Learning (MALL) are as follows:

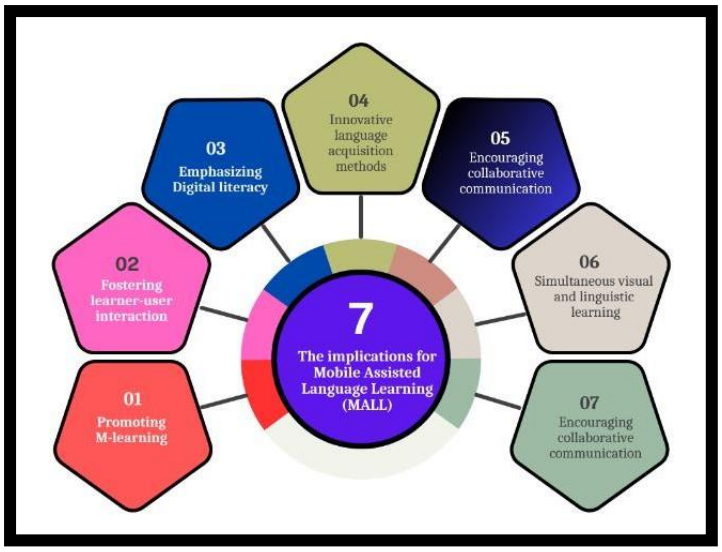


Fig:13 Implications for Mobile Assisted Language Learning (MALL)

The image presents a framework with seven implications for Mobile Assisted Language Learning (MALL), a method that utilizes mobile technology to support and enhance language learning. The implications are organized in a circular format, with each point addressing a specific aspect of MALL. Below is an explanation of each implication:

1. **Promoting M-learning** is about more than just using mobile devices in learning environments. It's about embracing a new, flexible approach to learning that emphasizes accessibility and personalized experiences. M-learning liberates learners, enabling them to access language resources anywhere and anytime, putting them in control of their learning journey.
2. **Fostering learner-user interaction**: Encouraging active interaction between learners and their tools or applications is vital to engaging and meaningful learning experiences. This includes feedback systems, interactive tasks, and communication with others through mobile platforms.
3. **Emphasizing digital literacy** involves equipping learners with the skills they need to navigate digital environments effectively. With MALL, learners must develop competencies using mobile devices and digital platforms to benefit fully from language learning opportunities.
4. **Innovative language acquisition methods**: MALL allows for integrating new and creative ways to learn languages. This could include gamification, context-based learning, or adaptive technologies that adjust content based on a learner's progress.
5. **Encouraging collaborative communication** is a key aspect of MALL. Language learning often thrives in social settings, and MALL facilitates this by fostering collaboration among learners. It allows them to communicate and learn from each other through mobile tools, either synchronously or asynchronously, creating a sense of community and shared learning.
6. **Simultaneous visual and linguistic learning**: Mobile platforms often combine multimedia elements, enabling learners to engage with both visual and linguistic content simultaneously. This multimodal approach enhances comprehension and retention by leveraging different cognitive pathways.
7. **Encouraging collaborative communication**: This might emphasize the significance of fostering collaboration in language learning environments, where learners can practice language skills in context with their peers.

The results of mobile-assisted language learning (MALL) and foreign language learners are

positive and empowering. They make learning English more approachable and open up new possibilities. Mobile technology, such as the K-W-L Chart, a teaching strategy for 'Know, Want, Learn' (Mathew, 2016), helps students organize their thoughts before, during, and after learning. Empowering educators and language learners to embrace English Language Teaching (ELT) more effectively is not just a change in routine; it is a shift in focus toward new learning objectives. This empowering journey includes phonics-based language learning and assessment approaches, including image-based modeling and rendering grounded in mobile education theory.

In the contemporary educational landscape, students envision language learning in the classroom as commonplace as owning a smartphone or tablet. This vision holds great promise, particularly for native language learners, focusing on collaborative and oral communication. Learners actively participate in task-based learning using one mobile device per group or individual. However, Chan, Tak-Wai, et al.'s (2006) seamless learning concept is what piques interest. This concept refers to integrating learning experiences across different contexts and environments in a one-to-one (one mobile device per learner) setting, opening up a world of possibilities for language learning.

In the context of English-language learners, the willingness to improve their language skills through technology is crucial.

According to learning experts Fernette Brock Eide and Will Richardson in "Blogs, Wikis, Podcasts, and Other Powerful Web Tools for Classrooms," blogs have the following educational advantages:

1. They can stimulate critical and analytical thinking.
2. They encourage creative, intuitive, and associative thinking,mainly when utilized to brainstorm, facilitate linking, and comment on interconnected ideas.
3. They promote analogical thinking.
4. They offer the potential for greater access to high-qualityinformation.
5. They facilitate independent and collaborative interaction,fostering solitary and social engagement (Ciussi, 2012).

Mobile-based digital learning (MBDL):

Mobile-based digital learning (MBDL) is a groundbreaking advancement in language education. Lung-Hsiang Wong (2011) noted that mobile-based learning has rapidly evolved over the past decade, resulting in a rich and complex array of interpretations and strategies among scholars and educators. The literature on mobile learning classifications reveals that various classification frameworks have emerged, adding to the richness and complexity of the field. These frameworks range from those with a technical orientation to those that blend technology and pedagogy.

Mobile learning has undergone three distinct phases, each characterized by its own set offeatures and educational approaches. As Yu explained, the phases are as follows:

1. The first generation focused primarily on transferring learning content to mobile devices, emphasizing the transfer of information and behavior.
2. The second generation centered on pedagogical design, adopting cognitive and constructivist principles to enhance the learning experience.

Context-aware technology and a 1:1 learner-device setting characterizes the third generation of MBDL, ushering in a new level of individualized and context-driven learning. As described by Yu, this generation of MBDL is designed to provide a highly personalized and relevant learning experience (Yu, 2007).

MBDL has undergone significant evolution, with a noticeable shift towards effectively integrating technology and pedagogy. This trend is particularly evident in the creation of engaging

and context-aware language learning experiences.

Small Chat:

Emphasizing the benefits of brief conversations in language learning, interactional data analyses endorse this innovative approach in various scenarios. Whether one-on-one or in a larger group, in person or over the phone, these conversations play a vital role in daily discourse. This new method seeks to elevate interpersonal communication by creating a new symbolic status for these short conversations, representing only social interaction between individuals.

Mobile technology plays a crucial role in helping ESL learners enhance their speaking skills in a language class. More importantly, it brings joy to the learning process. Some learners engage in activities that connect them to the real world, fostering a close connection with the world beyondthe classroom. This joy and connection are particularly beneficial when learners encounter language-related challenges and need to communicate and respond to teacher messages, phone calls, or emails.

Recognizing the prevalence of mobile devices, language instructors often allow students to bring them to class, albeit with certain restrictions. One practical approach to maintaining focus in the class is to request that students set their phones to flight mode. This way, they can still use their devices to make audio or video recordings and capture the necessary photographs. Learners can access glossaries, translation tools, pronunciation aids, structural resources, and online sources using their mobile devices and a Wi-Fi connection.

Conclusion

ESL learners the influence of Mobile-Assisted Language Learning on literacy skills in the digitalage. The world is becoming increasingly digital, and this is having a significant impact on the way we learn and communicate. This can prove to be a significant challenge for ESL learners, as they not only have to learn a new language but also adapt to a new form of communication. Mobile-assisted language learning (MALL) has emerged as an innovative and practical approachto assisting ESL learners improve their literacy skills. Mobile learning offers numerous opportunities for English language learners, and assessing its effectiveness can be crucial in granting access to mobile technologies. It is highly motivating for English-speaking learners to use portable devices equipped with web-based digital strategies that offer precise language accuracy. These mobile devices serve as valuable tools for language users and the language learning process. Native language learners may often hesitate to speak English due to the influence of their mother tongue and their specific culture, traditions, and conventions. They might find it challenging to study exclusively in the target language. This necessitates a careful balance between the content provided and the learners' proficiency in the target language. Language learners may encounter various difficulties when studying a second language, including issues related to phrasal verbs, phonetic sounds, vocal slang, pronunciation, and vocabulary. These challenges sometimes hinder native language learners from attaining the desired language proficiency. However, mobile learning not only helps native language learners overcome these challenges but also enables them to become proficient in a foreign language. (Jones, Ann, et al. (2006), assert that mobile learning can motivate second language learners (L2) by giving them a sense of command and control over their learning objectives, such as ownership, enjoyment, communication, and learning in a context that is highly relevant to them.

References:

Boroughani, T., Xodabande, I., & Karimpour, S. (2023). Self-regulated learning with mobile devices for university students: Exploring the impacts on academic vocabulary development. Discover Education, 2(1), 5. https://doi.org/10.1007/s42342-023-00118-7

Chan, T. W., Roschelle, J., Hsi, S., Kinshuk, Sharples, M., Brown, T., ... & Soloway, E. (2006). One-to-one technology-enhanced learning: An opportunity for global research collaboration. Research and Practice in Technology Enhanced Learning, 1(1), 3-29. https://doi.org/10.1142/S1793206806000032

Chen, H., Wang, C., & Chen, C. (2020). Mobile-assisted language learning in an EFL context: Practices and perceptions of undergraduate students. Language Learning & Technology, 24(1), 50-63. https://doi.org/10.1016/j.compedu.2021.104077

Chinnery, G. M. (2006). Emerging technologies: Should mobile devices be used in language learning? Language Learning & Technology, 10(1), 1-10. Retrieved from https://www.lltjournal.org/item/2446

Chinnery, G. M., & Tian, Y. (2016). Enhancing learners' self-directed use of technology for language learning: The effectiveness of an online training platform. Computer Assisted Language Learning, 29(1), 40-60. https://doi.org/10.1080/09588221.2015.1020213

Gromik, N. A. (2012). Cell phone video recording: A powerful tool for the development of autonomous learning. Australasian Journal of Educational Technology, 28(3), 364-381. https://doi.org/10.14742/ajet.847

Hazaymeh, W. A. (2021). Investigating the impact of mobile-assisted language learning on improving EFL learners' literacy skills. International Journal of Learning, Teaching and Educational Research, 20(6), 141-155. https://doi.org/10.26803/ijlter.20.6.9

Jones, A., et al. (2006, July 14–16). Using mobile devices for learning in informal settings: Is it motivating? In Proceedings of the IADIS International Conference on Mobile Learning (pp. 251–255). IADIS Press

Kao, Y. S., Tseng, W. T., & Wu, S. L. (2022). Mobile-assisted reading comprehension in adult ESL learners: Effects and perceptions. Computers & Education, 177, 104377. https://doi.org/10.1016/j.compedu.2021.104377

Kondo, M., Ishikawa, Y., Smith, C., Sakamoto, K., Shimomura, H., & Wada, N. (2022). Mobile-assisted language learning in university EFL courses in Japan: Developing attitudes and skills for self-regulated learning. ReCALL, 34(1), 102-119. https://doi.org/10.1017/S0958344021000299

Kukulska-Hulme, A., Lee, H., & Norris, L. (2023). Mobile language learning: A state-of-the-art review and new research directions. Journal of Computer-Assisted Learning, 39(1), 56-75. https://doi.org/10.1111/jcal.12706

Lin, H. (2017). The impact of mobile-assisted language learning on second language reading: A meta-analysis. Journal of Educational Computing Research, 56(3), 486-513. https://doi.org/10.1177/0735633117714440

Poláková, P., & Klímová, B. (2019). Mobile technology and generation Z in the English language classroom—A preliminary study. Education Sciences, 9(3), 203.

https://doi.org/10.3390/educsci9030203

Rahimi, M., & Miri, S. S. (2014). The impact of mobile dictionary use on language learning. Procedia - Social and Behavioral Sciences, 98, 1469–1474. https://doi.org/10.1016/j.sbspro.2014.03.569

Siemens, G. (2005). Connectivism: A learning theory for the digital age. International Journal of Instructional Technology and Distance Learning, 2(1), 3-10. https://www.itdl.org/Journal/Jan_05/article01.html

Tragant, E., Pinyana, À., Mackay, J., & Andria, M. (2022). Extending language learning beyond the EFL classroom through WhatsApp. Computer Assisted Language Learning, 35(8), 1946-1974. https://doi.org/10.1080/09588221.2022.2040495

Wong, L. H., & Looi, C. K. (2010). Mobile-assisted language learning: A review of recent studies. The International Journal of Computer-Assisted Language Learning and Teaching, 1(1), 42-58. https://doi.org/10.4018/ijcallt.2010010104

Xie, X., & Wang, Y. (2021). Gamified mobile learning for language acquisition: The impact of game mechanics on ESL learners. Language Learning & Technology, 25(3), 69-89. https://doi.org/10.1016/j.compedu.2021.104077

Zhao, J., & Liu, H. (2023). Improving ESL learners' pronunciation using mobile-assisted speech recognition technology. System, 110, 102863. https://doi.org/10.1016/j.system.2022.102863