

Artificial Intelligence-Based Mobile Learning in English Language Teaching (ELT) for EFL Learners: Enhancing Pronunciation with ELSA SPEAK in Oman

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Abstract

Mobile learning powered by artificial intelligence (AI) holds great promise in revolutionizing education through the introduction of personalized tutoring systems. This transformative approach aims to empower all learners, fostering autonomy and promoting collaborative learning. In this study, ELSA Speak Learning was utilized to implement mobile learning enhanced by AI. The ELSA Speak mobile learning platform, driven by AI, offers an enjoyable and practical language learning experience for students studying English as a Foreign Language (EFL). Each level of ELSA Speak encompasses meaningful learning objectives,

including vocabulary, grammar syntax, listening, pronunciation, and role-playing. The objective of this study was to assess the progress of EFL college students in Oman who utilized AI-based mobile learning for English language instruction. The study employed a pretest-posttest non-equivalent control group design, consisting of two groups: a control group that did not utilize AI-based mobile learning and an experimental group that did. The findings revealed that the t critical value (6.373) exceeded the t table, as evidenced by the positive lower score (4.56524) and upper score (8.61126). The Sig (2-tailed) value was below 0.05, leading to the conclusion that the

experimental group displayed significantly higher English competence compared to the control group. Moreover, students exhibited positive attitudes towards AI-based mobile learning, highlighting two outcomes: increased learning opportunities and areas for improvement identified during the implementation of ELSA Speak.

Keywords: ELSA Speak, autonomy, mobile learning

* Introduction

Recently, the advancements of technology have revolutionized the educational field by transforming the traditional classroom environment into interactive and dynamic learning spaces. The integration of Artificial Intelligence (AI) is one of the most important and significant development tools in the educational practices (Li & Lan, 2022). With the availability of mobile phones and the proliferation of the specialized language learning applications, Artificial Intelligence has been considered one of the powerful tools for learning English as a Foreign Language to improve and enhance the learning acquisition skills (Almanjah et al, 2022).

Transforming to digital learning material was one of COVID-19 Pandemic biggest results in the educational fields. E-learning, for

learners and teachers, can be seen as a creative approach to the delivery of educational services via electronic forms of information that reinforce knowledge, skills, and other outcomes of learners (Fazlollahtabar & Muhammadzadeh, 2012). That is to say, e-learning is the use of modern ICT, computers and mobile phones connected to the Internet to offer teaching and learning contents (Beqiri, Chase, & Bishka, 2010). On the other hand, some researchers such as Purwarno et al (2023) referred to unsuitability of fully online learning mood for all types of learners.

The use of Artificial Intelligence (AI) technology, specifically chatbots, has brought about notable changes in English language learning within the educational setting. A study conducted by Ebadi and Amini (2022) investigated university students' perspectives on the potential role of AI-assisted mobile applications. It also examines how social presence and human-like characteristics impact learner motivation from a chatbot perspective. The findings revealed that learner motivation was significantly influenced by social presence and human-likeness. Qualitative analysis of the data showed that learners' motivation,

enthusiasm, and confidence to learn English were enhanced by the attributes attributed to the CSIEC teacher. These study findings can guide future research on using chatbots as learning companions outside the traditional classroom, allowing educators to customize assessment and feedback processes accordingly.

Citrawati, et. al (2021) examined the use of Telegram, a social networking service (SNS), for enhancing students' English language skills. The study reviews 20 previous manuscripts from reputable international journals indexed by Scopus. The findings indicate that Telegram positively affects students' reading, writing, speaking, and listening skills in English. It benefits students in areas such as vocabulary, reading comprehension, writing content and organization, grammar, language style, pronunciation, and listening comprehension. The relaxed and informal nature of Telegram is highlighted as a factor that reduces anxiety and increases motivation for learning. Based on these positive effects, the study suggests that Telegram can be an alternative for online and extensive English language learning.

Bashori, et al. (2020) showed that students indicated a moderate-to-

serious level of foreign language speaking anxiety, that they evaluated the learning websites positively, and believed that web-based language learning could alleviate their speaking anxiety. The interviews revealed that students felt less anxious when speaking in front of the Automatic Speech Recognition ASR-based websites compared to speaking to peers or people. In order to evaluate the real effectiveness of ASR-based learning websites, future studies should investigate actual improvement of learners' speaking skills over a longer period of time.

A review study conducted by Husein (2021) raising the significant impact of the environment, human and financial resources, and educational knowledge on the speed digital transformation of education, as the speed of digital transformation leads to the development of digital transformation performance in the Sultanate of Oman. Oman, recognizes the importance of English as a global language and its role in promoting international communication, economic development, and cultural exchange. Despite concerted efforts to enhance English language proficiency, EFL learners in Oman often struggle with pronunciation, hampering their

overall language proficiency and confidence.

The Sultanate of Oman has seriously invested in teaching English as a foreign language at all levels beginning in the early years of schooling and including public and private, gender-separated schools, colleges, and universities. The English language is taught as a textbook-based and teacher-centered compulsory subject from grade one to undergraduate and postgraduate degrees (Al-Mahrooqi & Asante, 2010). On the other hand, recent studies concentrated on shifting learning from teacher-centered learning into student-center learning and support autonomous learning in Oman (Al-Shallakh, 2022).

In spite of investigating the students' weakness in learning English and its sounds in the Omani educational institutions, Omani learners state that there is a big need to improve their pronunciation and the strategy the teachers use in teaching this side of the language (Zarzycki, 2021). Mesti (2022) concentrated on a phonetics and a phonological analysis of a first -grade learner as a case study. The centre of the paper is on two main classifications of pronunciation; segmental and super-segmental. The investigation demonstrates a

significant variation in speech sounds of the learner. He resulted his paper mentioning that the training opportunities in spoken language and reading skills for the teachers may fix the problem.

A study conducted by Al-Dulaimi (2012) stated that Omani students learning English often face difficulties in perceiving, identifying, and producing different English speech sounds, which can be categorized as Phonetic and Phonological problems. These issues predominantly arise due to the complex orthographic system of English taught to Omani students during the initial stages of English language learning. Additionally, challenges arise from the inconsistent relationship between spelling and pronunciation in English and the differences between the sound systems of Arabic and English. Recently, Other researchers such as explored how Omani Arabic influences the perception of English phonemes among Omani learners. Two instruments were developed: a questionnaire to understand the Omani phonetic system and a test to measure the perceptual distance between Omani Arabic and English phonemes. The study tested the hypothesis of the revised speech learning model and found that

learners naturally associate second language sounds with the phonetic groups of their first language, supporting the model's proposition.

Moreover, **Zarzycki (2020)** aimed to analyze the perception of pronunciation needs among Omani ESL learners, as well as the pronunciation-related challenges they face and the strategies they employ to improve their pronunciation. Additionally, the study explores whether Omani students are aware of their pronunciation difficulties. The research focuses on Omani university students from the Ad Dakhiliyah Region and examines their pronunciation needs, considering that pronunciation skills often receive less emphasis in ESL classes compared to other language skills like grammar, reading, writing, and vocabulary. The study seeks to identify the most effective aspects and strategies for teaching pronunciation to ESL students. A significant number of participants expressed difficulties with intonation and stress in their pronunciation. Interestingly, none of the students in the study mentioned using a dictionary as a means to learn pronunciation. It is possible that the students are not familiar with phonetic transcription, which may hinder their ability to study

pronunciation using a dictionary. Additionally, over half of the Omani students indicated that both segmental and suprasegmentally aspects of pronunciation teaching are equally important.

*** Statement of the Problem**

To bridge this gap, the present paper aims to explore the effectiveness of ELSA Speak, an AI-based mobile application, in improving the pronunciation skills of EFL learners in Oman. ELSA Speak, short for English Language Speech Assistant, leverages cutting-edge AI technology to provide learners with real-time feedback on their pronunciation, allowing for targeted practice and personalized instruction.

This study builds upon previous research conducted on the use of AI and mobile learning platforms in ELT, focusing specifically on the unique context of Oman. By examining the potential benefits and challenges associated with integrating ELSA Speak into the EFL classroom, this research seeks to contribute to the growing body of knowledge on the application of AI-based technologies in language education.

The primary objectives of this paper are twofold: firstly, to investigate the impact of ELSA Speak on the pronunciation skills of

EFL learners in Oman, and secondly, to explore the learners' perceptions of using an AI-based mobile learning platform. By examining both the quantitative and qualitative aspects of the learners' experiences, the researcher aims to gain insights into the potential of ELSA Speak to enhance pronunciation instruction and facilitate autonomous learning in the Omani EFL context.

*** Purpose of the Study**

The findings of this study are expected to provide valuable insights for educators, policymakers, and researchers interested in leveraging AI and mobile learning technologies to support language learning, specifically in the area of pronunciation instruction. Ultimately, the integration of AI-based mobile learning platforms like ELSA Speak has the potential to revolutionize EFL education in Oman, empowering learners to communicate effectively and confidently in English on a global stage.

*** Research Questions**

This study aims to answer the following question:-

1- To what extent does ELSA Speak contribute the improvement of learners' pronunciation in terms of intelligibility and comprehensibility in spoken English?

2- What are the perceptions of EFL learners in Oman regarding the effectiveness of ELSA SPEAK in enhancing their pronunciation skills?

*** Methodology**

This study is considered as a quasi-experimental one, which is aimed to examine whether the use of the online application called ELSA Speak can improve Omani's pronunciation performance. In order to measure and evaluate the students' progress, the pretest-posttest non-equivalent control group design was implemented to assess the intelligibility and comprehensibility of the learners' pronunciation in English.

*** Sample and Setting of the Study**

The sample of the study consisted of 100 students, male and female students who registered in Communication Skills course in the first semester in a college in Oman in the academic year 2021-2022. The students came from Business and Information Technology departments. All students sat for pretest to measure their pronunciation competence. After the pretest, the control group and the random groups were randomly selected. Fifty percent of the sample was chosen as the experimental group. All students' language proficiency was approximately equal that the students

are not allowed to register unless they finish some pre-requirement courses in the English department and their GPA should be 2.0 or above. Another factor also proves that both groups are not significantly different in English competence as can be seen from the mean score of the pretest of the two groups.

* **Research Design**

The data was collected employing tests and interviews. The procedures of the intervention started at the beginning of the fall semester. All students were given a pretest to assess their initial pronunciation skills. Then, the group was divided randomly into control group and experimental group. The control group was given Communication Skills course that consists of face-to-face interaction as normally conducted in the college for all students. As intervention step, the experimental group was given ELSA Speak access as external learning source additional to the used learning material of the control group. The students were given eight weeks access to the ELSA Speak online website as a defined period to encourage the participants to engage in regular practice sessions to improve their pronunciation skills. An orientation training was given to the experimental group at the

beginning of the course. The post-intervention assessment was conducted using the same instrument used in the pretest to both groups. The collected data on participants' post was conducted in one semester to both groups by the same lecturer.

The researcher used Guttman Split-Half Coefficient to assess the reliability of independent group of the research. The Guttman Split-Half Coefficient is a statistical measure commonly used to assess the reliability or consistency of a measurement tool that consists of two halves or subsets of items. The calculations resulted $0.913 > 0.196$ (value from r table) and the dependent group of the research was assessed and resulted $0.919 > 0.196$ (value from r table). These results indicate that both assessments are reliable because the results were higher than the r table.

Moreover, the researcher conducted semi-structured interviews to collect data about the learners' attitudes toward using ELSA Speak and if it affected the learners' performance or not. The researcher chooses 10 students, which presents 20% of the experimental group, to interview them to answer the second question of the research.

* Data Analysis

After conducting the tests, the researcher used the findings to determine if there is a significant difference between the students' groups. The research employed two sample t-tests which is used to compare the means of two groups and determine if there is a significant difference between them. Independent samples t-test is used when comparing the means of two independent groups. Then, the means and the standard deviations of the experimental and control groups to investigate whether there is a significant difference or not. The researcher used the 25th version of SPSS to test the collected data with a significance level of $\alpha=0.05$.

To interpret the data statistically, the researcher depended on two hypotheses to find out the study's significance: (1) the null hypothesis (H0) means that there is no significant difference between the means of the experimental and control group; (2) the alternative hypothesis (H1) means that there is a significant difference between the means of the experimental and control group.

To determine any significant differences between the post test results, an independent t-test was calculated on the data from both

tested groups. Table 1 below shows the independent t-test groups' statistics after computing them.

Table 1: Independent t-test group statistics

	Groups	N	Mean	Std. Deviation	Std. Error Mean
Results	Experimental	100	86.201	6.75862	0.5324
	Control	100	73.024	8.23657	0.7025

Finally, different questions were asked to the learners based on their experience during the assigned period to know their attitude toward using ELSA Speak IA as stated in the second research question. The questions were asked individually to the 20% of the participant randomly.

* Results

* Inferential Statistics

The study's results are presented in inferential statistics as shown 1 before. The results indicated that half of the selected population of 100 students were given a treatment using the AI based mobile learning, while others were dealt normally in the classroom and used the usual learning material. The mean score of the controlled group was approximately 73, while the other group showed increasing in the mean score to be 86. Therefore, the independent t-test was applied to compare the means of the two groups to determine whether there is statistical evidence associated with population means are significantly different or not. Table 2 compares the data collected from independent t-test

of the control and experimental groups.

Table 2 T-test of different scores between the two groups

		Levine's Test of Equality of Variances		T-test for Equality of Means						
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the difference	
								Lower	Upper	
Results	Eq. Var. assumed	12.325	0.001	6.373	198	0.000	6.50620	1.02094	4.56524	8.61126
	Eq. Var. not assumed			6.373	188.6	0.000	6.50620	1.02094	4.56123	8.62548

The results in Table 2 indicate that the F-value is 12.325, and the associated p-value is 0.001. This suggests that there is a significant difference in the variances between the two groups (assuming equal variances). The results denote that the t-value is 6.373, the degrees of freedom are 198, and the associated p-value is 0.000 (assuming equal variances). This suggests that there is a significant difference in the means between the two groups. The mean difference is 6.50620, and the standard error of the mean difference is 1.02094. The 95% confidence interval for the mean difference ranges from 4.56524 to 8.61126. Therefore, the experimental group means are statistically significantly different.

*** Learners' Attitudes**

To find out the relationship between the learners and ELSA Speak application, the researcher conducted semi-constructed interviews with experimental group. The learners' attitudes were

categorized under more opportunities to learn and areas of improvements.

The classroom environment affects the learners learning process. More learning opportunities explore wide English learners in Arab countries such as Omani learners who learn in big classrooms. The big size of classrooms which contains big number of learners affect the learning feedback from the teacher to the learners. Learners rarely get sufficient feedback from their teachers. Therefore, IA learning is a big chance to change this environment and focus and give the learners more opportunities to learn the second language. One of the students mentioned that he often doubted her pronunciation, so she could try several times and the application checked it directly. Many other learners stated that this was their first chance to use applications to learn a skill and they found it helpful and interesting. They could practice and improve their pronunciation several times. Another student stated that he was very happy using this application because it is available all days and nights without limitations. On the other hand, one female student reported that her shyness was the biggest obstacle of saying something wrong in the classroom in front of the students.

She added that ELSA Speak is my best teacher now because I am not afraid of making mistakes during my learning. Other learners showed their highly satisfaction because they see themselves as mobile addicted and cannot be separate from their phones, so they could spend more time on learning English using their mobile phones.

Some minor matters were raised by the learners related to the usage of the application such as of what a learner mentioned that he tried to record the sentences many times but the recording button was not active so he left the recording to another time. Another mentioned that if any noise was heard during the recording, the results came negatively.

An interesting point mentioned by all interviewed learners was the easiness of using the application and its features due to the simple instructions. They felt that day after day they became more familiar with the application. Using the application to practice and improve the pronunciation is useful and helpful for all learners at all levels.

*** Discussion**

The analyzed data showed that both control and experimental groups have significantly different results on the competence of the students. Two

factors of learning by using ELSA Speak can be mentioned to be considered as the contribution of the learners' competence in this study. These factors are supporting learning environment and reducing anxiety. It can be also mentioned that more opportunities in learning can be gained when the artificial intelligent could provide a supportive environment to be focused. It aligns with Citrawati, et. al (2021), Husein (2021) and Bashori (2020) that an SNS environment could encourage students to practice their English skills because the use of social networking platforms creates an online space or community where students can interact and communicate with each other in English. The learners who moved forward to the next course were driven by self-motivation.

Enhancing collaborative learning is possible through the utilization of ELSA Speak and other artificial intelligence-driven educational tools. Interestingly, this discovery aligns with the research conducted by Bashori (2020), which highlighted the potential for significant improvement in communication skills through various contemporary websites. One crucial aspect of integrating artificial intelligence into education is that

learners are no longer confined to physical classrooms, providing students with the flexibility to foster independent learning (Almanhaj, 2022).

The findings of this study demonstrate the feasibility of implementing artificial intelligence-based mobile learning for autonomous learning, supported by Biqiri et al. (2010) and Al-Shallakh (2022), who emphasized the role of smartphones in developing learners' autonomy and integrating technology into language learning. Furthermore, Fazlollahtabar & Muhammadzadeh (2012) highlighted the impact of widespread mobile device usage on teaching and learning, creating versatile environments where learners can study and practice anytime, anywhere. Li & Lan (2022) also discussed how AI and social robot teachers are revolutionizing the learning process both inside and outside the classroom. Additionally, Ebadi and Amini (2022) emphasized the importance of mental competencies and the flexibility and capacity to learn. Considering these theories, it can be concluded that students' psychological state, particularly when they have the freedom to learn flexibly in terms of time and place, significantly influences their academic

achievement. In the present research, the implementation of ELSA Speak as an AI for language learning creates a comfortable learning experience for students, enhancing their motivation, which is closely linked to human psychology.

Compared to traditional classroom learning, artificial intelligence-based mobile learning offers the advantage of faster assessment of each student's pronunciation and comprehension, particularly in large classrooms. This is reinforced by UNESCO (2019), which suggests that AI can be employed as an assessment tool, alleviating the teacher's burden of grading tests and homework, thus saving time. Furthermore, due to the high student-to-teacher ratio in classrooms, it becomes challenging for students to seek individual attention or receive corrections on their pronunciation. This aligns with the findings of Ebadi and Amini (2022) that non-native English speakers in EFL environments often face difficulties in accessing authentic sources for real-life communicative practice, limiting their exposure to the target language in practical contexts. In this context, leveraging artificial intelligence-based mobile learning enables a more authentic, accessible, appropriate,

and accurate language learning experience, aligning with the global reach of mobile technologies. Consequently, students can make multiple attempts at practicing their pronunciation until they are satisfied with their performance. Additionally, the use of artificial intelligence-based mobile learning reduces students' nervousness, allowing them to relax and give their best performance while engaging in exercises through their mobile devices. This is further supported by Mesti (2022), who assert that AI technology offers advanced features that enable human-like communication, leading human users to interact with AI agents as if they were interacting with other human beings.

*** Conclusion**

The research findings establish that ELSA Speak, as an Artificial Intelligence (AI)-based mobile learning platform, significantly enhances students' English competence. The incorporation of ELSA Speak as an AI-based mobile learning tool has demonstrated substantial positive impacts on students' English proficiency by providing them with increased learning opportunities. Additionally, Novo Learning, as a supportive learning environment, enables flexibility in conducting learning

activities, making it possible for students to engage in learning anytime and anywhere. Consequently, the utilization of ELSA Speak in English as a Foreign Language courses is recommended, particularly in classrooms with a large number of students. This AI-based mobile learning experience reduces students' nervousness and fosters an enjoyable learning atmosphere for completing exercises. As a result, learners gain confidence and exhibit enhanced intrinsic motivation, leading them to exert their best efforts in completing Novo Learning courses. To enhance motivation among non-English department students at SUC, ELSA Speak emerges as a valuable AI-based mobile tool for language learning. It allows students to access language learning resources conveniently, irrespective of their physical location, as long as they have an internet connection.

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