

## Chapter 3

# The Efficiency of Mobile Assisted Language Learning (Mall) in Vocabulary Learning

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### INTRODUCTION

Today, it has become quite easy for people to access information. This has deeply influenced the education world, too. Firstly, computer aided learning systems were developed. With the proliferation of mobile phones, mobile learning has started to spread rapidly. Mobile learning, which offers self-learning opportunities without time and space constraints, now has become one of the most popular learning tools. For this reason, learning vocabulary in a foreign language through mobile applications has been examined as a research area. A semi-experimental study was carried out to test the effectiveness of Memrise vocabulary learning application. Control and experimental groups were formed from students studying in English preparatory classes of a public university in İstanbul. In addition to regular classes, the experimental group received Memrise vocabulary learning application. Students in both groups were inquired about the target words in a pretest and posttest before and after each unit. When the results of the control group inquired, the study indicated that there was not a significant difference between the posttest and pretest results of the control group. In the experimental group, on the other hand, majority of the students answered most of the vocabulary correctly in the post-tests, and thus, there was a significant difference between pretest and posttest results revealing the positive effects of the Memrise application.

## **STATEMENT OF THE PROBLEM**

The use of mobile tools in educational practices and mobile learning applications have gained significance in modern education and language education classrooms with the increasing technological advancements. It is important to study the influence of mobile learning applications in EFL learning, especially its impact on vocabulary learning, because vocabulary learning forms the cornerstone of language learning.

In this study, an experimental and a control group were formed to study the effect of mobile applications on vocabulary learning through the use of Memrise mobile application. English preparatory school students of a public university constituted the participants of the study. Students were at the intermediate level and studied speak out intermediate level course book. Students were within the age range of 18-21. The findings of this research on vocabulary learning will shed light on Memrise application's effect in vocabulary learning outcomes. The study can also provide implications about engaging in more effective language teaching practices, especially vocabulary learning in light of changing technologies.

Mobile learning systems allow new possibilities for more effective vocabulary learning. According to Ally (2009), mobile technology provides quick and instant access to any educational material and thus facilitates autonomous learning. Mobile learning makes learning easier, faster and more fun. Boundaries of classroom is stretched so that learning in different contexts is possible. Thus, constant exposure to language through mobile applications builds on previous learning.

## **RESEARCH QUESTIONS**

- What are the contributions of Memrise vocabulary learning application in vocabulary learning in comparison to traditional EFL teaching and learning practices?
- Are there any differences between genders in vocabulary learning outcomes considering traditional method versus Memrise mobile application?
- What are the differences in terms of performance outcomes between the Memrise mobile application group and the traditional vocabulary learning group?

## LITERATURE REVIEW

This study inquires the effect and potential of Memrise application in the teaching of vocabulary in an English preparatory school of a public university in İstanbul. Before delving into the concept of learning with mobile applications such as Memrise, it is necessary to include the antecedent of mobile learning, which is computer aided education.

The earliest technological process in education was computer aided education. Computer Aided Education is the transfer of instructional content and activities through software. Similarly, computer assisted learning is a teaching system which strengthens the process and student motivation by combining students' learning speed and principles of self-learning and learner autonomy.

Although educators have used computers in teaching foreign languages since the 1960s, they have become more widespread in recent years. Although the use of computers was not fully functional in all schools, use of technology in foreign language teaching began much earlier (Lee, 2000). Computer Assisted Language Learning (CALL) is defined as the examination and investigation of computer applications for language teaching and learning purposes. According to Egbert (2005), CALL is any means of language learning through ICT (Information Communication Technology). This definition reveals the large scope of technology assisted language learning entails.

Computer-assisted language education offers different options and materials for language learning, such as individualization of learning by adjusting input according to the learning speed. This enables the learner to control the learning process and optimizes student success and increases motivation by making learning enjoyable and interesting. There are some limitations to computer assisted language learning, too. Baek (2008: 668) specified some challenges for computer assisted foreign language education such as financial difficulties, lack of computer hardware and software, lack of technical and theoretical knowledge about computers, and resistance to technology use. Also, Baek (2008) argued that adaptation to the curriculum, and inadequacy of learners in terms of computer literacy and computer-assisted language education pose some problems. These limitations were addressed through technological developments and prevalence.

Although computers have been used since the first half of the 20th century, its use in educational practices did not come until the 1960s with

the popularization of CALL and it has become more popular in language education after 1970s. According to Levy (1997), Computer Aided Language Learning started with the PLATO (Programmed Logic for Automated Teaching Operations) Project in 1960 but PLATO could not respond to the needs of all learners fully. PLATO emphasized vocabulary and grammar exercises based on grammar translation leaving out learners' speaking and listening needs unfulfilled. Computers developed rapidly in the early 1980s, both in educational environments and in people's homes. Computer Assisted Language Learning software also became more accessible on the market (Ittelson, 2000: 92). In order to learn about a subject, students can search electronic encyclopedias and watch related films/videos afterwards. The computer laboratory has become an integral part of foreign language programs in most educational institutions with the popularization of computer assisted learning (Hardisty and Windeatt, 1989). According to Warschauer and Healey (1998: 63), the history of computer assisted language learning can be divided into three stages: *Behavioral Computer Assisted Language Learning*, *Communicative Computer Assisted Language Learning*, and *Integrated Computer Assisted Language Learning*. Each stage corresponds to a certain pedagogical approach which are described in the following section.

Behavioral computer assisted language learning was widely used in the 1970s. The audio language teaching method and repetition method were used in this behaviorist period. Communicative computer assisted language learning period was in the 1980s. What was important in in this period was not what was done with the computer, but what the students did with each other while working on the computer. However, communicative period has been criticized since the 1990s. This paved the way for the transition to integrated computer assisted language learning. New second language acquisition theories and socio-cognitive perspectives have influenced many teachers and encouraged them to use more social and student-centered methods in this period. Approaches were developed to integrate the learners into environments where they are active in the process. Instead of visiting the computer labs once a week, students constantly attempt to integrate various technological learning skills in any time and any place.

Due to advances in technology, language learners now have the opportunity to access online discourse communities such as forums and blogs. Computer assisted language learning allows learners to work at their own pace, enables active participation, improves the quality of teaching

methods and gives learners the opportunity to study and repeat after school hours (Kern, 2006: 191). Learners have the opportunity to view their own progress, determine a learning approach according to their learning styles and study autonomously. Students who are able to follow their own progress can take charge of their learning goals and learning pace. The possibility of independent learning free from the boundaries of school and books definitely increases motivation for language learning.

There are also disadvantages to computer assisted language learning. For instance, the cost of computers and software systems is higher than other learning methods which has made it challenging for its widespread use in schools. Also, there is need to human personnel to assist with the working of these online systems. Lee (2000) listed the limitations of computer aided language learning as monetary barriers, use of computer hardware and software, technical and theoretical expertise and adoption of technology. In recent years, computers are ubiquitous and software offers many more opportunities than before through the internet and rapidly developing technology. Therefore, the aforementioned disadvantages have been resolved to a considerable extent.

With the invention of mobile technologies, mobile tools began to develop rapidly. Consequently, mobile learning environments have become commonplace. Mobile learning applications create individual learning opportunities without time and space constraints. Naismith and Corlett (2006) stated that mobile learning supports (1) individual learning in which students can determine their learning speed, (2) situational learning involving a real context, (3) collaborative learning in which individuals learn by working in groups and helping each other, and (4) non-formal learning approaches, which would not be possible in formal learning system. In today's world, everyone has mobile devices, and they do not only support learning, but also enable learners to communicate with each other through various social networks. Mobile learning accesses learning content through digital books or networks, and thus enriches the learning process, learning resources, learning opportunities and experiences.

There is no accepted definition of mobile learning. Various educational experts have defined mobile learning in different ways. According to Geddes (2004), mobile learning is the acquisition of an information or skill by using mobile technologies and the formation of behavior change through them. Another definition by Traxler (2005: 5) is that mobile learning is the preparation of any training with tools that can be used alone or

predominantly in the palm of your hand. Quinn (2011), on the other hand, stated that mobile learning is the intersection of mobile computers and e-learning. E-learning is independent of place and time through ever-present access as well as strong search capacity and rich interaction scope. It strongly supports effective learning with performance evaluation. Hence, mobile learning provides continuity and ease in its use without time and any place constraints even in the absence of a cabled network connection.

Since there are numerous benefits to mobile learning such as enabling a personalized education without time and space boundaries, mobile learning application has become popular in the education world. Also, access to the internet has been easy with mobile internet even with no wired connection. Mobile devices individualize learning and attract many learners despite the cost of owning a mobile device, short battery life and the possibility of being distracted by other functions of mobile devices.

Mobile assisted foreign language learning accelerated in the 2004-2005 academic year owing to some universities in the US offering free iPods to their students (Chinnery, 2006: 12) and the unique mobile device functionality seen on Apple's iPhone in 2007 (Godwin-Jones, 2011: 7). Mobile assisted language learning was once thought to be a subfield of computer assisted language learning. Due to the rapid evolution of mobile devices such as mobile phones and tablets, it has developed as a new study field. Today, the most widely used mobile language learning devices include mobile phones, tablet computers, pocket computers, digital voice recorders and personal digital assistants. People and institutions who develop mobile learning applications use special programming tools, and generally present the applications they produce in the form of different applications that can work on both IOS and Android operating systems. The largest app vendors, the Apple App Store and Google Play, offer over 800,000 mobile device apps. There are as many as 1000 applications for learning languages. Among many other applications, however, Memrise language learning application managed to outperform its competitors and has become one of the most downloaded language learning applications both on Google Play and the App Store and won the best application award from Google Play in 2017.

## **METHODOLOGY**

In the study, Memrise foreign language teaching application was examined. A mixed approach method that includes quantitative and

qualitative elements was adopted. The technique is based on a quasi-experimental research design in order to observe student success in vocabulary learning. The experimental group received mobile assisted vocabulary instruction in addition to regular classroom instruction, whereas the control group followed only regular classroom instruction from the instructor. To compare students' vocabulary development, pre-tests and post-tests were applied to both groups for each unit at the beginning and end of the eight-week instruction. In order to support and enrich students' vocabulary learning, pronunciations of each word and expressions were added to the application and stronger teaching was offered to the experimental group. Age group and gender distribution of the participants is listed in Table 1.

**Table 1:** Age Group and Gender Distribution of the Participants

<b>Gender</b>	<b>Experimental Group</b>		<b>Control Group</b>		<b>All Participants</b>	
	<b>Number</b>	<b>Percent</b>	<b>Number</b>	<b>Percent</b>	<b>Number</b>	<b>Percent</b>
Female	13	52%	14	56%	27	54%
Male	12	48%	11	44%	23	46%
Total	25	100%	25	100%	50	100%
<b>Age</b>						
18	7	28%	8	32%	15	30%
19	9	36%	9	36%	18	36%
20	6	24%	5	20%	11	22%
21	3	12%	3	12%	6	12%
Total	25	100%	25	100%	50	100%

The data were collected by taking the results of pre-tests and post-tests applied to 2 different classes. For the word test, 50 words and expressions were selected in 4 units and applied to control and experimental groups. The targeted words in the units were prepared in packs in the Memrise application. Prior to each unit, a pre-test was applied to the control and experimental groups asking about the targeted words and expressions. The control group continued classes as they did before. In the experimental group, the Memrise application was used in addition to the regular course instruction. At the end of the unit, both groups were applied a post-test by changing the order of the words in the pre-test. The students in the experimental group spent part of the course hours each week studying

vocabulary activities in the Memrise application, and also the time and learning levels of the students were followed by the teacher week by week through the application.

The data obtained in the study were analyzed quantitatively and qualitatively. In the quantitative part, data in pre-test and post-test were compared and the vocabulary learning rates were represented in percentages. The results of the post-tests were examined to study the success of the application quantitatively. The results were analyzed by using the GraphPad Prism program with the multiple t test of two-way ANOVA, applying the Holm-Sidak method. In addition, a qualitative evaluation was carried out to support the quantitative evaluation. Qualitative evaluations were made by taking into consideration the character length of the word items and the periods spent in practice. These qualitative characteristics are not possible to represent in quantitative medium but still represent significant points of consideration worth taking into account.

## **FINDINGS**

All students in the study use smartphones with mobile applications. With frequent use of applications on smartphones, the efficiency obtained from the Memrise application increased and became visible for the researcher to assess.

In the experimental and control classes, the number of female and male students are close. The researcher observation revealed that female students in the experimental group used the Memrise application more intensively. When the general success of all participants was examined, it was determined that female students performed better than male students in pre-tests and post-tests. Number of female learners slightly outnumbered male learners, but it was not a significant difference.

In the experimental group, none of the students who participated in the study were able to answer the entire 50-word test in the pre-tests correctly. While some of the students could not answer any items correctly, the majority of the students were able to answer only a few words correctly. When control group is analyzed, again none of the students answered the entire 50-word test correctly in the pre-tests. Yet, the pre-test results indicated that some of the students in the control group outperformed the experimental group participants.

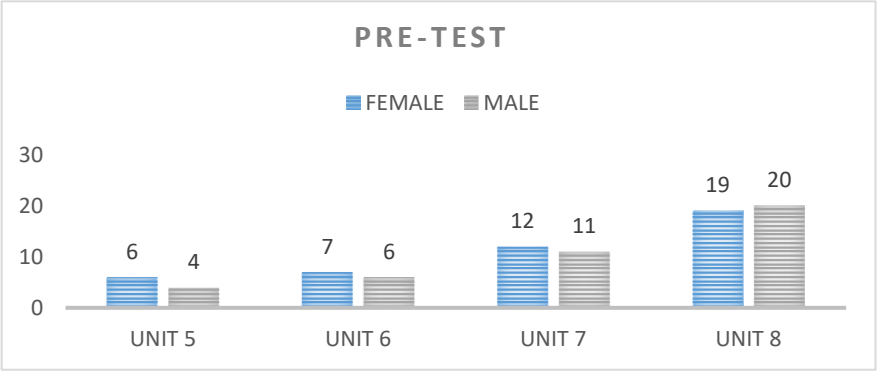
The post-test results of the experimental group contain quite different



findings than the pre-test results. Most of the students in the experimental group answered almost all of the given words correctly. There were no students who could not answer any words correctly. In the control group, on the other hand, the results in post-test very much replicated their previous performance in the pre-test. Surprisingly, the number of correct answers given by the control group students to the post-test is the same as the number of correct answers in the pre-test. There are also some students who could not answer any items in the post-test correctly.

When the results of the experimental and control groups were compared in the pre-tests, the control group showed more successful results, yet the difference was not significant. When the results of the post-tests were analyzed, it was observed that the experimental group made significant progress compared to the control group.

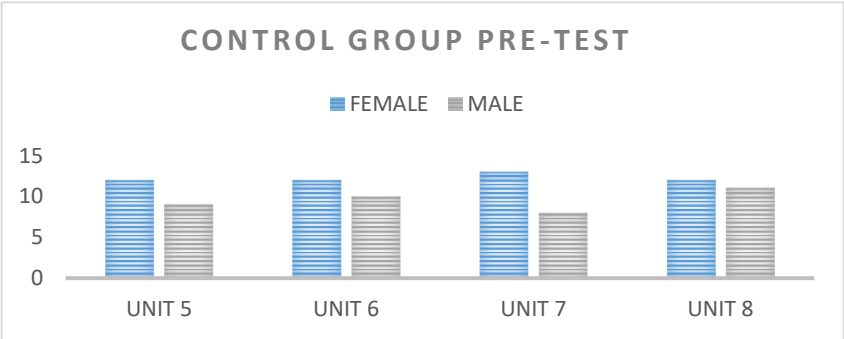
When both experimental and control groups considered, long and complex expressions were answered incorrectly by almost all students in the pre-tests from both the groups. Most participants answered shorter words correctly. However, in the experimental group, the incorrect answers given in the pre-tests for the longer and more complex words were answered correctly in the post tests, which shows the improvement of the experimental group participants. In the case of the control group, the longer and more complex words and expressions that had been answered incorrectly in pre-tests, were also answered incorrectly in the post-tests, showing lack of progress in this group’s participants. Hence, the Memrise application increased motivation among students and an increase in vocabulary knowledge was observed in the experimental group.



**Figure 1:** Both Control and Experimental Group Participants’ Pre-test Results

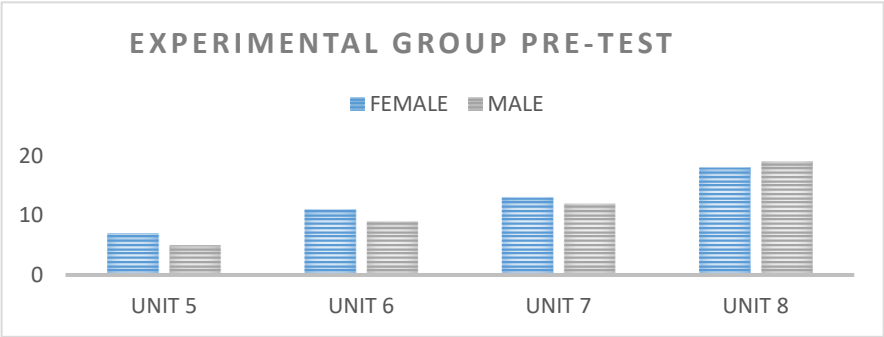
In the control group, there is no significant increase in the performance of the participants dissimilar the experimental group.

According to the Figure 1 which shows pre-test results, it is seen that female students had 22% success rate in all units. Male students showed 20% success rate in all units. There is an increase of success as we move from unit 5 to 8. It is possible to claim that the success of the students increased with the knowledge of vocabulary gained from the past units and with interest in the Memrise application.



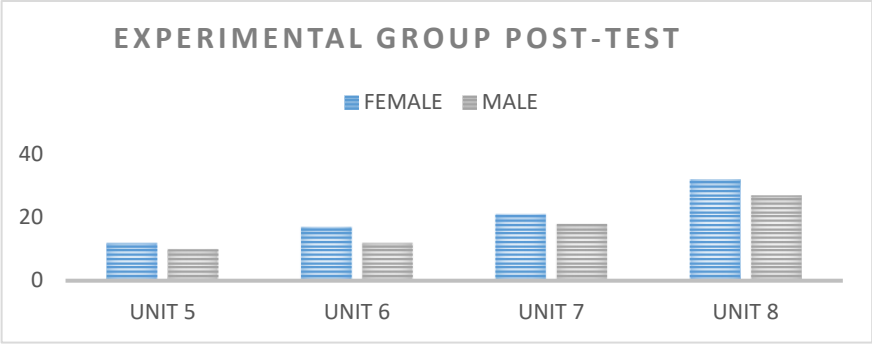
**Figure 2:** Control Group Pre-test Results

According to Figure 2, although the average success of the control group in unit 5 and unit 6 was higher than the success of the experimental group in the pretests, a significant increase was observed in each unit in the experimental group participants. There was no such consistent increase in the results of the control group participants. When the pre-test results of the control group are evaluated according to gender, the average success of females was higher than males in each unit. Accordingly, the average success of females in all tests was 24%, while the average success of males was 19%.



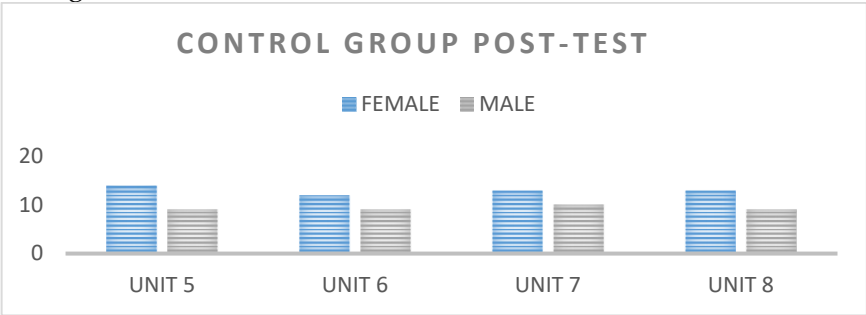
**Figure 3:** Experimental Group Pre-test Results

There is a tendency of increase in the success of the experimental group using the Memrise application according to the pre-test results, while a similar success trend was missing in the pre-tests results of the control group.



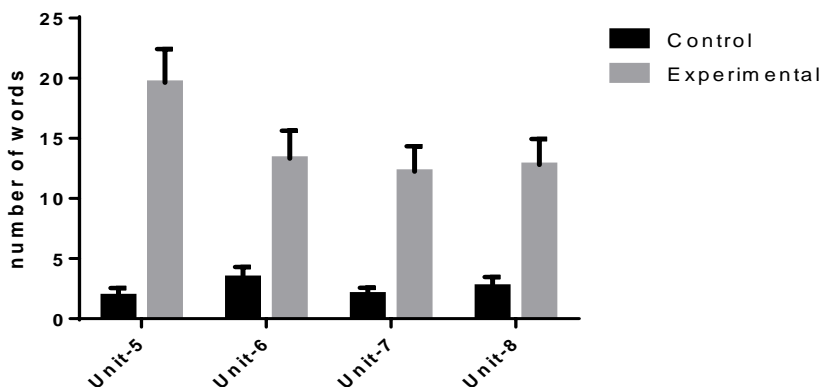
**Figure 4:** Experimental Group Post-test Results

According to Figure 4, the success rate for female participants was 40% and the success rate for male participants was 33%. When the comparison is made according to the pre-test results, the success rate of females increased by 81.8% and the success rate of males increased by 65%. It is observed that the success rate increased considerably after the application of Memrise for both genders.



**Figure 5:** Control Group Post-test Results

Figure 5 indicated that, the success of the female participants increased only slightly while the success of the male participants did not change at all in the post-test results of the control group. There can be several factors for the lack of increase in achievement, but one of the factors can be due to not having different stimuli in the traditional language classes.



**Figure 6:** Learning Figure of the Students

Number of words= # correct replies to the words in the post test - # of correct replies to the words in the pretest (whole class). The graph indicates standard error of mean (SEM). Statistical significance is determined using the Holm-Sidak method. Experimental group is significantly different from control group ( $p < 0.0002$ ,  $n = 25$ ). The effect of Memrise application on the overall success is clear. Both groups were given the same content in terms of vocabulary. The only difference between the groups was the Memrise application for the experimental group participants. The experimental group, whose vocabulary knowledge increased considerably, was able to obtain the efficiency required from Memrise application.

## CONCLUSION AND DISCUSSION

Memrise application is a constantly developing application, therefore it is hard to estimate the results for future results. Only a limited number of participants were involved in the study which makes generalization to larger audiences problematic. Since no systematic change could be observed in students' success graphs, the research deliberately chose to focus on the qualitative evaluation of the results in addition to the quantitative results in order to yield more reliable results.

According to the results, the study can claim that the Memrise vocabulary learning application was influential. The students in the experimental group were observed to be more motivated after they participated in the study throughout the two months period. They felt more confident as a result of their increasing success as they continued to be a member of the Memrise learning experience. Their attitudes towards the

classes changed. They started to participate in the course more actively and they were more interested in the subject matter. These are qualitative changes that were observed because of the instructor's first hand observation of the experimental group participants. Mobile applications such as Memrise can make students more active participants of the learning process by sustaining their interest. The instant feedback students received from the application encouraged them to be more self-aware, which was observed through their classroom participation and general interaction in learning. We can say that Memrise application contributed towards more autonomous learning behaviors for the experimental group students.

It is necessary to acknowledge that mobile applications may not teach a language on its own. However, educators can take advantage of mobile applications as supportive tool in their classes. Mobile applications can make regular classroom instruction more understandable and relevant to students. Besides, Memrise breaks the restrictions of time and space, and becomes a savior of the language teacher in overcrowded traditional classes of predetermined curriculum. An application like Memrise may allow vocabulary learning activities to be performed at a desired level otherwise impossible in traditional language classrooms. Mobile applications can be useful and supportive resources for language teachers who want to support the learning of their students. Vocabulary learning can be a boring task for many learners. Even very motivated learners can get bored trying to learn new words and keep them in memory. With applications such as Memrise, vocabulary learning can be fun and can be added flexibly to the schedule. This gives the student decision making power and increases learner autonomy. Also, Learners compete with each other in a relaxed atmosphere without fear of making mistake in front of others and enjoy learning vocabulary through gamification techniques.

The education system should be developed and supported with new learning models. Mobile learning tools are constantly evolving, so there is a need to specify design principles and processes so as to develop mobile learning contents expeditiously. Almost everybody uses mobile devices, and thus all learners, but especially young learners should be encouraged to use these applications in education and in their private learning endeavors. These applications are particularly great resources for language instructors and language learners of all ages. Foreign language teachers should be instructed and motivated through training programs about technological devices and applications. In-service training about the use of technological

devices could be supplied for educators who may need assistance. Both teachers and learners should cooperate collaboratively in online and mobile learning practices. Teachers, instructional designers and application developers should all cooperate and learn from one another in order to attain the best educational possibilities. More research should be geared for the analysis and development of mobile applications because they hold a great place in the future of teaching in general and language teaching in particular. To conclude, a pandemic as Covid 19 proved the importance of online systems and distance education in our learning contexts and highlighted the importance of developing mobile applications.

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