Measuring the Effectiveness of Using "Memrise" on High School Students' Perceptions of Learning EFL

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Abstract—**Mobile applications of language learning have the capacity to revolutionize the way languages are learned. This study examined the students' perceptions of the effectiveness of Mobile Assisted Language Learning (MALL) based instruction as a complement to direct instruction for 36 high school students in Iran. Specifically, student perception using direct instruction combined with "Memrise" Mobile-based language learning versus direct language instruction only. The findings of this research suggest that Memrise is an effective method of English language instruction. It is important to note that Memrise is not meant to replace direct language instruction, but its purpose is to serve as an effective supplement to state language instruction.**

Index Terms—**mobile language learning application, MALL, Memrise**

I. INTRODUCTION

A notable number of people are using to the mobile phones to learn a foreign language. The digital English language learning products global market , for instance, reached $1.8 billion in 2013, revenues were predicted to boost up to over $3.1 billion by 2019 (Adkins, 2008). Applications of language learning like "Memrise" are excessively popular, with over 20 million registered users (Hickey, 2015). The approaches of mobile language learning are obviously required and will carry on growing in use as more people use the smartphones or tablets as a rudimentary computing device.

Many researchers supported studying the effectiveness of second-language acquisition through technology. As mentioned above, a Language learning application that EFL instructors have considered for teaching English-language acquisition is "Memrise", an interactive software application that is advertised to help users naturally learn English in an immersive and personalized environment.

"Memrise" is a language learning application developed by an American company of language technologies which enables users to master a foreign language with their Mobiles without the help of a teacher. The application guarantees for the users they can learn a language much quicker and easier than ever before without having to learn rules of grammar deductively.

The basic characteristics of a mobile or tablet supply the demands for this method, which leads to a failure in standardized instruction because of the limitations experienced in the classroom environment where teachers are neither able to provide a large amount of background, nor can they focus on each individual student with special attention.

The complete course includes more than 5000 photographs as observable background knowledge. Because the meaning of the heard sound can always be understood by the objects in the scenes or pictures, learners don't seem to need any clarifications in their mother tongue. Unlike the standardized language learning system, structures of grammar are not learned methodically and then practiced, but rather it is expected that the learner develops an intuitive understanding of rules during the this method course work. It lets you them information for free in a fun and effective way using spaced repetition technology.

In the language instruction section of the application alone there are courses each of which is divided into levels so it is easier to manage. It is also possible to sort through courses by language or popularity or search for keywords. Each lesson consists of a preview, atutorial, exercises, and tests. Learners are first confronted with the preview, whenusing the application.

To grow the vocabulary level Memrise uses a garden as a metaphor for memory. When learning a course is started, the vocabulary items will be planted as 'seeds'. As the learner is tested on them through typing and multiple choice tests, they will be transferred from the 'greenhouse' (short term memory) into the 'garden' (long term memory).

Once an item of vocabulary is in the leaner's long term memory, it will need to be watered (tested on) periodically. If he/she gets the answer right in the test, he/she won't need to water it again very soon, and vice versa. Growing and watering items will make a certain number of points each time.

In the most consistently used kind of preparation practice, learners are asked to answer a task including matching visual contexts cues with either spoken or written language or vice versa. In this regard Memrise is different from other standardized language learning softwares, which is typically utilized to complement course instruction and then uses various games and tasks in order to exercise and use those learned material. Moreover, the "correct" or "incorrect" feedback is given immediately in the form of a visual and musical code.

Features of Gamification

The rise of gamification as a new type of software/application design may be seen as a product of the new user-centered technologies, combining the enhanced 'social' features of Web 2.0 with a game-like experience to further motivate and boost language learning.

As it was defined by Deterding, Dixon, Khaled, and Nacke (2011) characterizing the use of elements of game design in non-game backgrounds and contexts, gamification has been employed variously in fields such as marketing, finance, and health, pioneering only very recently as a new type of strategy for language learning and instruction with the advent of "Memrise" in 2010. The main objective of gamification, as highlighted by Deterding et al. (2011) is to motivate and increase user activity and retention" via a "rewards and reputation system. Learning is thus meant to be fun.

Kerr (2013) predicts a switch from conventional and traditional textbooks and moving toward adaptive and more interactive learning contexts with both of the use of big data and analytics to store details about users and an integration of more gamified aspects.

II. Review of the Literature

MALL Researches have mostly been influenced by development of technology. Elementary applications put some portable audio devices into use like the Sony Walkman or Apple iPod (Godwin-Jones, 2007). Chinnery (2006) pointed out that the early internet-capable devices such as cell-phones and Personal Digital Assistants (PDAs) fundamentally used email and web browsers for language learning targets. Pedagogical MALL Research approaches were largely limited to these devices, restricting most applications to one-way content delivery with little peer-to-peer interaction or communication (Kukulska-Hulme& Shield, 2007; Kukulska-Hulme& Shield, 2008).

Coinciding with the emergence of smartphone technology the amount of published MALL studies greatly increased in 2008 (Duman, Orhon, &Gedik, 2015). Users of mobile applications started to make fundamental use of web-based exercises (e.g. Nah, White, Rol, &Sussux, 2008; Stockwell, 2008). Since the level of sophistication of mobile technology applications has grown up, the release of a vast range of language-learning software came into possibility. Among more than a million applications which are available for the users in both the Apple iTunes app store and Google Play, the educational ones comprising 9.95% of this total show a beneficial growth (Statista Inc., 2015). The number of applications of language learning has been roughly calculated to be as high as 1,000 to 2,000 in total (Sweeney & Moore, 2012).

While the advantages of MALL have been acknowledged by educators, some still criticize MALL platforms. Pedagogical qualities, software stabilities, technical difficulties, expertise deficiencies, and multimedia overloads are problems that may be encountered (Wang, 2011). Notwithstanding these challenges, CALL still has potential as an effective means of language instruction.

In spite of the fast growth in numbers of applications, there was also some criticism regarding the MALL researches for a lack of quantifiable learning outcomes and concrete targets. Burston (2015) carried out a meta-analysis of 291 MALL studies done in about 20 years, and discovered only 35 ones had sufficient duration and included a minimum number of subjects. Burston also stated that a lot of them were affected by unacceptable research design due to failure to concentrate on the struggling variables that exist outside of the device itself – the instructor, content, novelty effects , etc.– maybe because of an extremely "technocentric" approach that overemphasizes the role played by technology in the process of learning.

Aside from some deficiencies, there are a lot of positive reports regarding the MALL studies which support the notion that mobile devices are useful learning tools – especially for vocabulary instruction. In the literature review part of Duman, Orhon and Gedik's (2015) of the current research trends in MALL from 69 studies from 2000-2015, "teaching vocabulary" was the most popular topic, taken into account by 28 of those studies. Contrarily, just one of those studies addressed grammar instruction and writing. In the same way, Burston (2015) mentioned that 58% of the 291 MALL studies examined focused on vocabulary acquisition, among them the positive learning outcomes were the most reported. Moreover, Burston also pointed out positive reports for vocabulary learning, reading competency, listening, and speaking skills among those studies.

A. MALL's Evolution and Impact on Language Learning Instruction

The advance of technology has significantly improved the ability to provide quality language learning experiences to learners (Ayres, 2002; Green, 2005; Wang & Heffernan, 2010). Since the 1960s, when computers were first introduced to education, CALL has been studied extensively. CALL was a kind of language learning in which a learner uses a computer and, consequently, develops his or her language proficiency (Beatty, 2003). In the 1970s, CALL programs were relatively basic, consisting primarily of question-and-answer sequences (Jafarian, Soori, &Kafipour, 2012).

Internet use in classrooms widened in the 1990s, and CALL has evolved from isolated programs to interconnected, distance-learning applications (Wang & Heffernan, 2010).

As CALL applications developed, the presentation of language instruction advanced. Teaching language, using visually stimulating text, audio, and video features makes multimedia an effective medium for language instruction (Ayres, 2002) and has prompted a marketable business in developing MALL applications. Green (2005) indicated that the greater interactivity of technology could make a positive impact on English language skills. Greenhas also noted that children who have access to high-quality smartphones with features like authentic audio, sound effects, text that highlights itself as it is read, and vocabulary instruction score much higher on standardized tests. MALL applications are nowadays designed to appeal to visual, auditory, and kinesthetic learners through interactive protocols, thus promoting internalization of the language.

Numerous studies have demonstrated that exposure to MALL applications positively affects all four language skills—speaking, reading, writing, and listening— (Arslan & Sahin-Kizil, 2010; Jafarian et al., 2012; Spenader, 2011; Wang, 2011; Yakimchuk, 2010) and increases students' motivation and attitudes toward language learning (Esit, 2011; Morton &Jack, 2010).

Blake (2009) has noted that English language instruction using MALL applications has evolved considerably from what Garrett (1991) described. New research and theories in second-language acquisition have arisen, and authenticity no longer centers on ensuring that language learners model their pronunciation entirely after native speakers of the target language. Interactivity, now, can involve students producing digital products (e.g., blogs, web sites, PowerPoints, etc.) and having meaningful conversations with native speakers.

B. Scarcity of Empirical Research on Memrise

Limited empirical research exists on the effectiveness of systematically available MALL software. Heil et. Al. (2016) mentioned "Memrise" in his review of trends, challenges and opportunities of mobile language learning applications in self-directed instruction, observing that Memrise used a systematic and guided curriculum with audio, graphics, video, and speech recognition software; however, no studies deal specifically with Memrise's impact on English Language Learners' perception.

Another reference to "Memrise" is in Walker's (2015) work on the impact of using Memrise on students' perceptions of learning vocabulary and on long-term memory of words. He has asserted that as it was formulated by researchers in languages and psychology, the program is created to develop long-term memory of vocabulary by frequent and systematic testing of vocabulary items having the benefits of portability and accessibility via computers and Apps on smartphones or tablets.

Rather than evaluating specific programs, some recent CALL scholarly work (Nowrozi, 2011; Sykes, Oskoz, & Thorne, 2008; Thorne & Payne, 2005) has focused on how learners use technological tools for interaction. Because of the shift in second-language acquisition to a communicative and interactional approach (Gass& Mackey, 2007), researchers have been more concerned with how MALL programs can stimulate communication rather than assessments of applications or software packages.

C. Purpose of the Study

This study examined the students' perceptions of the effectiveness of Mobile Assisted Language Learning (MALL) based instruction as compared to direct instruction for 36 students in a high school. Specifically, student perception using direct instruction combined with "Memrise" Mobile-based language learning versus direct language instruction only.

D. Research Question (Hypothesis)

The amount of increase in employing mobile applications for language learning targets causes a significant question about whether present mobile language learning applications are efficient tools for language learners based upon what we realize about Second Language Acquisition (SLA) research and research in L2 pedagogy .Beside, although the new chances for mobile technology for language learning and the pedagogical usages have been studied in academic contexts, current mobile language learning applications have not been systematically characterized and evaluated.

So the question which should be addressed in this study is regarding the efficacy of "Memrise" Mobile-based language learning application. Accordingly, the research question addressed in this study is:

What is the personal attitude of students who usedirect instruction combined with "Memrise" Mobile assisted language learning application as compared to those who use direct instruction regarding English language?

III. METHODOLOGY

A. Setting and Participants

This study took place at 3 high school located in Yazd in Yazd province in Iran and serving students in Grade 10. The study sample consisted of 36 students enrolled in High school grade 10 classes atthe research site. Demographic information about subgroups indicates that the total sample included 36 students which was split into halvesto create a control group and a treatment group with 18randomly-selected students in each one, the first comprising the direct

instruction group and the second one containing the direct instruction combined with Memrise MALL. The study sample also involved 22(61%) male and 14 (39%) female students.

The researcher sought to determine whether supplementing regular instruction with work on Memrise MALL modules would affect students' perception. Direct English language instruction was supplemented with Memrise MALL application for the treatment Group, while the Control Group received the direct instruction supplemented with additional direct instruction activities (e.g., completing reading comprehension exercises, grammar warm-ups, and formative grammar assessments).

All students in the two groups agreed to participate in the experiment, and all of them were assigned to one or more of the researcher's EFL classes. The 36students were in various classes throughout the day, and students in the Control and treatment Groups were often in the same class period together. Students in both groups received direct English language instruction from the state-chosen EFL course book, a level-appropriate English series containing numerous topics, exercises, and classroom activities.

Researcher-created lesson plans focused on enhancing students' English grammar knowledge. Speaking practice through interactive pair and group work, listening practice through structure-focused listening exercises, vocabulary building-practice through illustrated workbook reading selections and exercises were utilized in daily lessons and activities. Workbook lessons were presented to all students in whole-class direct instruction.

Students in the Control Group used the state schools book series exclusively as their means of learning English. Students in the treatment Group went to the EFL computer lab for the last 20–30 minutes of each class session during the 6-week intervention. They used a log sheet to record minutes spent on "Memrise" and to help the researcher ensure that students were making effective use of their time, using the web-based version of the application.

Students in the Control Group remained in the classroom and completed supplementary exercises that accompanied the state- chosen book series. The students knew each other and were aware that some students were going to the lab for computer work.

B. Instrument

1. Memrise English Learning Application

Memrise is an English language learning application that specializes in foreign language acquisition. Memrise is an online self-study program with the main benefits of availability (via Applications on smartphones and computers and tablets), portability and ease of use. Built by researchers in languages and psychology, the program is created to develop long-term memory of taught items by frequent and systematic testing. Memrise utilizes an algorithmic system of item reviewing in which students should visit and revisit items over and over but at a particular predetermined time schedule, with some reminders to remember reviewing taking place at the time. The Memrise English for Intermediate Students version is available on Bazaar, App Store and Google Play. It can also be reached at www.memrise.com/courses/english/english.

This dynamic system was awarded as the best app for iPhone and iPad and got the google play award for the best app in 2017.It includes more than 150 language courses based on 25 different languages. The app has more than 20 million registered users.

2. Questionnaire

The researcher used a questionnaire to determine the effect of Memrise on attitudes toward the effectiveness of instructional practice to determine if a significant difference existed between the Control and treatment Groups. Student Perception Surveys (see Appendix A) was a 20-item questionnaire administered to students in the Control and treatment Groups after the intervention. Five questions related to students' cultural and educational backgrounds, five questions addressed student attitudes toward their own ELP, and the remaining ten questions focused on the students' attitudes toward either the effectiveness of "Memrise" or the direct instruction exercises. Fifteen attitude statements about their own language skills and the usefulness of either "Memrise" or the direct instruction exercises were listed, and the students chose responses from 1 (strongly agree) through 5 (strongly disagree).

The survey was developed by Griffin et. Al. (2014) and validated by the researcher through peer review with five teacher-researchers. To assist students with different reading levels to complete the survey, the questionnaire was translated into the students' mother tongue. Selected responses on the post-intervention survey were analyzed by comparing students' attitudes toward the effectiveness of their instruction.

IV. RESULTS

Students in both the control and treatment groups completed post-intervention surveys, which measured students' perceptions of their own learning skills and academic aptitudes. The version of the survey administered to students in both the Control and treatment Groups (see Appendix A) specifically measured students' attitudes toward the effectiveness of the direct instruction approach in helping them learn English. A separate version of the survey (see Appendix A, alternate Section III) was given exclusively to students in the Memrise Group to measure their perceptions of the effectiveness of Memrise in helping them build proficiency in English.

TABLE 1
POST-INTERVENTION PERCEPTIONS OF DIRECT INSTRUCTION EXERCISES FOR BOTH GROUPS (N = 36)

Survey Statement	Strongly Agree/Agree	Undecided	Strongly Disagree/Disagree
The book series graphics and illustrations helped me stay focused and concentrate better.	32%	19%	49%
I would prefer Mobile-based instruction to teacher-directed instruction.	69%	12%	19%
I would recommend the book series exercises to other English Language Learners.	29%	28%	43%
The book seriesexercises are a waste of time.	19%	38%	43%
Overall, the book series exercises were an excellent tool for learning English.	37%	21%	42%

Student responses concerning the effectiveness of the direct instruction exercises are shown in Table 1, while responses concerning Memrise are shown in Table 2.When comparing student responses, noticeable differences stand out. A large percentage of Memrise students (79%) preferred computer-based instruction to teacher-directed instruction. While only 32% of students believed the direct instruction graphics and illustrations helped them stay focused and concentrate better, a vast majority of respondents in the Memrise Group (94%) agreed or strongly agreed that the Memrise graphics and illustrations helped them stay actively engaged in the learning process.

TABLE 2
POST-INTERVENTION PERCEPTIONS CONCERNING MEMRISE FOR THE TREATMENT GROUP (N = 18)

Survey Statement	Strongly Agree/Agree	Undecided	Strongly Disagree/Disagree
The graphics and illustrations helped me stay focused and concentrate better.	94%	0%	6%
I would prefer teacher-directed instruction to Mobile-basedinstruction.	10%	11%	79%
I would recommend Memrise to other English Language Learners.	83%	9%	8%
Memrise is a waste of time	2%	4%	94%
Overall, Memrise is an excellent tool for learning English	92%	2%	6%

Only 2% of students in the treatment Group felt that Memrise was a waste of time, but 43% of students in both groups believed the direct instruction exercises were ineffectual. A large percentage of students in the treatment Group (83%) agreed that they would recommend Memrise to other students, and a larger percentage (92%) believed that Memrise was an excellent tool for learning English. The data suggest that Memrise was perceived well among students that were exposed to its media-rich and interactive language learning application.

V. DISCUSSION AND CONCLUSIONS

For the 36 students in this study, the attitudes toward mobile-based applications were positive. Moreover, students' exposure to Memrise Mobile Assisted Language Learning interactive software over the 6-weekintervention period aided in developing positive attitudes toward MALL software applications. The quantitative data collected over the course of this study indicate that when combined with direct instruction and direct exercises, Memrise is a highly effective instructional resource.

Data collected from the student post-intervention perception surveys revealed that students that were exposed to Memrise held a more positive attitude toward its effectiveness than students that participated in direct instruction held toward the direct instruction's effectiveness. In rating the two treatments as excellent tools for learning English, significantly 55% more student participants favored Memrise over direct instruction learning, and17% more students believed the direct instruction exercises were a waste of time compared to those that believed the same about Memrise.

Quantitative data gathered during the post-intervention survey provided support for data from the above-mentioned data. Both sources provided evidence that students believed Memrise was effective because of its strong interactive features and interactive learning.

These findings agree with Ayres (2002), who also found that visually appealing multimedia applications positively impact student attitudes toward learning. Paralleling the studies of Morton and Jack (2010) and Esit (2011), this study found that students' attitudes became more positive as they progressed through multimedia MALL applications. This study supports the findings of Wang (2011), who concluded that MALL-based instruction could inspire students to work harder to become proficient English speakers and readers.

With the population of students in public schools increasing every year (Anderson &Dufford-Melendez, 2011), effective strategies for teaching the English language are necessary. Findings from this research study support the proposition that when combined with direct mainstream instruction Memrise is an effective resource that may significantly impact attitudes toward language learning for students.

A. Factors Influencing Implementation

Some factors may have affected the accuracy of this study's findings. Inadequate implementation of daily computer time for students to work on the program. Six weeks may not be a sufficient period of time to observe positive gains in language proficiency achievement. Furthermore, due to some shortcomings including lack of smart phones and mobile internet network students had to work on the offline web-based version of before mentioned program which may affect the results of the study.

B. Implications and Limitations

The findings of this research suggest that Memrise is an effective method of English language instruction. It is important to note that Memrise is not meant to replace direct language instruction, but its purpose is to serve as an effective supplement to state language instruction. This study, also, has implications beyond the students researched. It is recommended that this study be replicated with a larger experimental group of students. Research using a longitudinal approach and multiple groups with larger numbers of students across grade levels and school districts from state to state would yield the most reliable results. Further research using a number of teachers to implement the intervention could reduce possible bias in data collection for the survey.

APPENDIX. STUDENT SURVEY WITH ALTERNATE FORMS OF SECTION III (QUESTIONS 11-20)

Thank you for your participation in this voluntary questionnaire. You may withdraw from participation in this study at any time. Your responses are anonymous. Your completion of thissurvey indicates your consent to participate.

STUDENT CONFIDENCE

Use the following 1 – 5 scale for items 1 through 20. Please indicate (by circling the most correct response) the degree to which you agree with the statements listed below. Take into consideration that 1 stands for strongly disagree, 2 for disagree, 3 for undecided, 4 for agree, and five for strongly agree.

EFFECTIVENESS OF DIRECT INSTRUCTION EXERCISES (all students)

1. The book series exercises helped me to understand English better.   1 2 3 4 5
2. The book series exercises helped me to speak English better.   1 2 3 4 5
3. The book series exercises helped me to write English better.   1 2 3 4 5
4. The book series exercises helped me to read English better.   1 2 3 4 5
5. The book series graphics and illustrations helped me stay focused and concentrate better.   1 2 3 4 5
6. I would prefer computer-based instruction to teacher-directed instruction.   1 2 3 4 5
7. I would recommend the book series exercises to other English Language Learners.   1 2 3 4 5
8. The book series exercises are a waste of time.   1 2 3 4 5
9. The book series chapter reviews helped me remember what I learned previously.   1 2 3 4 5
10. Overall, the book series exercises were an excellent tool for learning English.   1 2 3 4 5

EFFECTIVENESS OF MEMRISE (alternate form for treatment Group only)

1. The listening exercises helped me to understand English better.   1 2 3 4 5
2. The speaking exercises helped me to speak English better.   1 2 3 4 5
3. The writing exercises helped me to write English better.   1 2 3 4 5
4. The reading exercises helped me to read English better.   1 2 3 4 5
5. The graphics and illustrations helped me stay focused and concentrate better.   1 2 3 4 5
6. I would prefer teacher-directed instruction to computer-based instruction.   1 2 3 4 5
7. I would recommend Memrise to other English Language Learners.   1 2 3 4 5
8. Memrise is a waste of time.   1 2 3 4 5
9. The review sessions helped me remember what I learned previously.   1 2 3 4 5
10. Overall, Memrise is an excellent tool for learning English.   1 2 3 4 5

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