The Impact of Integrating Smartphone's in Teaching Spelling for Secondary School Students in Riyadh

Amal Aqeel Musfer Al Moteri

Master Degree of Arts in Applied Linguistics, Al-Imam Muhammad Bin Saud University

Language and Translation College,KSA

E-mail:a.q.m117@gmail.com

Dr. Ali Al Rajhi

Imam Muhammed bin Saud University
E-mail: amrajhi@imamu.edu.sa

Abstract

This study examined the impact of using smartphone applications to teach English to Al-Majd secondary school students in Riyadh. The study focused on Apple's iPhone applications because they are known for providing and supporting educational applications. The COOL SPELL application was used as an example of educational applications. Moreover, thirty students at Al-Majd private secondary school participated. They were divided into an experimental group, which used the application for two weeks, and a control group, which did not use the application. A pre-test and post-test were conducted to assess the students' performance. The findings revealed a statistically significant difference in the students' spelling test results before and after using the application. Finally, the results showed that using smartphone applications can positively impact student performance.

Chapter One: Introduction

Learning is no longer characterized by a classroom, a whiteboard, and a teacher. This prototypical picture has changed recently. Nowadays, a student who is too busy to attend regular school still has a chance to learn. New ways of learning have been created, and these new learning methods have contributed to advanced teaching methods. New technologies improve learning and make knowledge and information more accessible than ever before.

Background

According to Brown (Cavus & Ibrahim, 2008, p.1) , "mobile technologies have the power to make learning even more widely available and accessible than we are used to in existing e-learning environments" . Computers, PDAs, cell phones, and most recently smartphones are examples of technologies that have been integrated in education. Many studies have shown that Mobile Assisted Language Learning (MALL) is useful for teaching English as a foreign language (EFL). MALL is a subset of mobile learning, or M-learning. These two types of learning are discussed below.

Mobile Learning.

M-learning is identified by Keegan ((Rismark , Slovberg, Stromme &Hokstad, 2007, P.85) as "the provision of education and training on PDAs/palmtops/handhelds, smart phones and mobile phones". It is believed that Information and Communication Technologies (ICTs) can help teachers and learners by promoting communication and interaction. They create new styles of education and generally change the process of traditional teaching and learning. There are many different forms of ICTs such as computers, laptops, notebooks and PDAs. Mobile phones, for example, can improve education in the developing world. New technologies motivate students to learn outside of the classroom.

A growing number of projects explore the effects of M-learning in the developing world. Many researchers have investigated the advantages that mobile technology can bring to education. For example, Cavus & Ibrahim (2008) pointed out some advantages of using mobile technology in education mentioned by Berger :

- Recognizing the advantage of the concept "anywhere, anytime"

- Freedom of organization in and out of the classroom

- Collaboration among students separated geographically

- Internet connectivity

 Some additional features of mobile technologies mentioned by Milrad (Cavus & Ibrahim, 2008) are the following : portability, social interactivity, individuality, and merging of the digital and physical realms. Mobile devices offer many advantages, including mobility, flexibility, convenience, remote accessibility, ease of use, and utility. One student who uses mobile technology for schoolwork states, "School is with me everywhere I go. I like that. It is a new way of learning. all I need is my iPhone and I can study anywhere (Nihalani & Mayrath, 2010, p. 2) ".

Mobile learning has two major effects on education. First, M-learning improves access to education while maintaining the quality of education. Second, M-learning facilitates alternative learning processes and instructional methods, which in turn create new styles of learning (Valk, Rashid & Elder, 2010). M-learning helps those who cannot physically attend school. It also helps learners continue their studies according to their own agenda. With M-learning, learners are not bound by fixed class times. M-learning enables learning at all times and in all places. Students can learn during breaks, before or after work shifts, or at home.

M-learning can change the character of traditional learning methods, which in turn can impact educational outcomes. M-learning represents more than an extension of traditional forms of education; it encourages alternative learning processes and instructional methods. According to supporters of new learning, mobile technology facilitates personalized learning in that it is responsive to differences and diversity in the way learning occurs.

Mobile technologies in education facilitate lifelong learning. They are more flexible in the sense that they support learning that occurs in everyday life outside of the classroom. Effective learning is learner-centered, knowledge-centered, assessment-centered, and community-centered (Valk et al., 2010). Mobile phones are learner-centered in that they enable students to adapt the transfer of and access to information to their own educational goals. The learner is responsible for the learning process instead of passively receiving information from a teacher. In a traditional model of education, knowledge is transferred from a teacher to students. M-learning, by contrast, allows students to actively participate in the learning process.

Mobile technology can also facilitate knowledge-centered learning by providing efficient and creative methods by which students can learn and deepen their understanding of specific subject matter. These methods are superior to the old models of learning that called for students to memorize large amounts of information. Moreover, mobile devices make assessment-centered learning possible in the sense that they provide continual feedback throughout the learning process. They provide learners with necessary information and guidelines as to what they will learn next. M-learning provides motivation that sometimes is not available in traditional models of education. M-learning devices, specifically smartphones, appeal to many users. "Market reports confirmed that the iPhone and iPod Touch were gaining mass appeal, and it seemed that children as young as age three were participating" (Chiong & Shuler, 2010, p.7).

Mobile technology promotes collaborative learning, which is the acquisition of knowledge, skills, or attitudes occurring in individuals as the result of group interaction. Students can carry on conversations regardless of their physical location, thus enhancing the process of learning. They can collaborate to solve problems, understand the experiences of others, and create a common understanding of the world (Valk et al., 2010).

M-learning has already altered the nature of education by facilitating new ways of learning. Teachers and curriculum designers should take advantage of M-learning by integrating smartphones into teaching in general—and into teaching English in particular. Mobile devices can be attractive to those who have not succeeded in traditional learning environments. These devices provide instant feedback, which can motivate students who are not interested in traditional educational environments. Moreover, M-learning is appealing simply because it is new and exciting.

MALL.

Mobile Assisted Language Learning (MALL) refers to an approach to language learning that is assisted or enhanced by the use of handheld mobile devices. MALL is a branch of both M-learning and Computer-Assisted Language Learning (CALL). MALL devices include cell/mobile phones (including the iPhone or iPad, MP3 or MP4 players (e.g. iPods), Personal Digital Assistants (PDAs) (e.g. Palm Pilot and Blackberry) (Valarmathi, 2010).

Recently mobile phones have become much more than devices that transmit the human voice wirelessly. Mobile phones provide a variety of data and multimedia features such as short messages, video and audio, interactive games, and access to information such as driving directions and email. With MALL, language learning materials and communications with

teachers and classmates are available to students anytime, anywhere. MALL is not only a primary source of language education for students, but also supports the retention and utilization of newly-acquired language skills. Through mobile interactions such as short exercises and educational tasks, learners are able to maintain and improve their linguistic abilities.

MALL represents a collaborative learning approach. Collaborative learning is a student-centered approach to learning in which the instructor is more like a facilitator than a teacher. Collaborative learning encourages all classmates to help, support, and motivate each other to achieve learning objectives. Since collaborative learning is student-centered, it often succeeds in engaging the learner. This type of learning affects language learning positively. Collaborative language learning can be achieved with the help of mobile devices. However, mobile devices are not fully responsible for teaching the language; the learners are ultimately responsible. Mobile devices, like other educational tools such as pencils and books, are a means to enhance the learning process (Valarmathi, 2010) .

Mobile techniques for language learning are effective and easy. Educational games and applications generate interest and make the process simple. Mobile learning techniques include the principle of "anytime, anywhere," meaning that they are available to the learner whenever desired. The mobile phone is a device that effectively makes use of time; the user is not restricted by time limitation. The user is not controlled by time; in the sense that he/she can respond to messages and actively engage in different videos and audio applications whenever he/she can. A mobile language class supports a variety of learning techniques in a timely and interactive style (Valarmathi, 2010).

Definitions of Terms

M-learning: M-learning is learning that can take place anytime, anywhere with the help of a mobile device.

MALL: MALL is language learning using mobile devices such as cell/mobile phones (including the iPhone or iPad), MP3 or MP4 players (e.g. iPods), Personal Digital Assistants (PDAs) (e.g. Palm Pilot and Blackberry).

Smartphones: A smartphone is a cellular telephone with an integrated computer and other features not originally associated with telephones, such as an operating system, web browsing, and the ability to run software applications.

Statement of the Problem

This study aims to explore the impact of using smartphone applications to improve secondary school students' performance in learning correct English spelling. An iPhone spelling application, COOL SPELL, was chosen as an example.

Significance of the Study

English plays a vital role in communications and international relations. In recent years there has been an increasing need for Saudi Arabian students to acquire and master the English language. The Saudi government recognizes the importance of English education and encourages the acquisition of English language skills. This paper highlights one innovative way to support English language education.

Objectives of the study

This study aims to achieve the following goals:

1. Shed light on the benefits of teaching English with smartphones
2. Prove the positive effects of using mobile technologies for teaching English
3. Encourage English teachers and supervisors to integrate this technology into their classrooms

Research Questions

1. Is there a statistically significant difference between the English spelling proficiency of students before and after using the mobile spelling application?
2. What is the impact of using an educational smartphone application to teach English?

Study Limitations

1. This study was conducted only on female secondary school students in Riyadh.
2. Thirty secondary school students participated in this study.

Chapter Two: Literature Review

The study of smartphones in education is in its exploratory stages. Much of the literature in this field is experimental and explores the benefits and effects of M-learning. Many studies have been conducted on the mobile learning process and students' performance. This literature review presents recent studies on the use of mobile phones for teaching.

Mobile technologies can deliver information and knowledge in a variety of ways. They present educational concepts attractively. Collins (2005) explored the emerging technology of mobile language learning. He provided a model for integrating research-based pedagogy with available and emerging technologies to develop learning objects for effective, engaging mobile language learning. Technology allows educators to create instructional materials ranging from text to multimedia. Collins examined ways in which mobile multimedia content can create a rich learning environment that is particularly suited to the teaching of foreign languages. By using smartphones, a variety of content can be created: recorded audio stories, picture dictionaries with illustrations, short videos, etc. These technologies offer the ability to develop meaningful, effective learning objects for language teaching .

Valk, Rashid & Elder (2010) reviewed the role of M-learning in contributing to improved educational outcomes in the developing countries of Asia. The article explored the results of six M-learning pilot projects that took place in the Philippines, Mongolia, Thailand, India, and Bangladesh. It examined the extent to which the use of mobile phones improved educational outcomes in two specific ways. First, the study examined the role of mobile phones in improving access to education. Mobile phones provide portability and enable learning at all times and in all places. Second, the study examined the role of mobile phones in promoting new forms of

learning. Mobile phones impact educational outcomes by changing the character of traditional education. They promote personalized, learner-centered, collaborative learning.

The authors selected the projects according to the following criteria:

1. Projects clarified the use of mobile technology in education

2. Projects were conducted in low-income countries

3. Projects provided evidence of the impact of mobile phones on educational outcomes

The analysis of the projects revealed evidence that mobile phones facilitate access to education. However, there is less evidence that mobile phones promote learning.

There has long been a question about the value of integrating mobile technology in teaching English. Sanberg, Maris & De Geus (2011) tried to answer this question. Three groups of fifth grade students participated in a study that explored the value of mobile technology for learning English as a second language. The first group of fifth graders studied the English names of zoo animals in a traditional classroom setting. The second group took classroom lessons and used a mobile application about a public zoo. The third group was the same as the second group, except that students in the third group were allowed to take the mobile application home. This study was based on a quasi-experimental pre- and post-test design. Pre- and post-tests were administered to measure the individual differences in mastery of a set of targeted English words. The results showed that the group that used the mobile phone at home improved the most. The results indicated that students were motivated to use the application in their spare time, and this affected their learning positively. The authors concluded that formal classroom education can be

improved by learning in an informal environment, away from school. The study showed that the mobile application motivated students, adding value to the school's English program.

One of the leading studies of MALL was conducted by Thornton & Houser in 2005. The authors used mobile phones to send English vocabulary words to Japanese university students via SMS or mobile email. They compared web-based and SMS- based learning. The authors delivered short web-based videos and 3D animations via mobile phones to provide visual explanations of English idioms. The results indicated that students who learned by SMS remembered over twice the number of vocabulary words as the students who learned through the web interface. The authors concluded that SMS-based lessons were more effective because they were delivered as a facilitating tool rather than as passive email messages. SMS technology motivated the students to practice more frequently. The results showed better retention of the material. Moreover, the researchers received positive feedback from learners on the benefits of mobile technologies in EFL (Thornton & Houser, 2005).

Nwaocha (2010) conducted a study that proved that mobile learning supports English classroom teaching. Nwaocha used an SMS-based mobile learning system in rural Nigeria to determine if there were noteworthy differences between high school students' success rates. His main objectives were to determine the opinions of high school students on the SMS-based mobile learning system and the effectiveness of using an SMS-based mobile learning system to support classroom teaching of English phrases. Before conducting the study, an interview was carried out to confirm that all students had mobile phones. In order to determine the effectiveness of the system, pre- and post-tests were completed. Pre-tests were administered to the experimental and control groups after both groups received classroom instructions from the same

instructor. Subsequently, post-tests were administered to both groups after the experimental and control groups had received SMS-based instruction and extra classroom instruction, respectively.

The results clearly revealed that after receiving the SMS- based instruction, the experimental group performed better than their counterparts who had received additional classroom instruction. Questionnaires were administered to the participants to collect their feedback on the use of the mobile learning system. The results indicated that before using the SMS-based mobile learning system, the experimental group had lower success rates than after using the system. All participants expressed their satisfaction with the new instructional device. Participants were able to give accurate descriptions of English phrases after the experiment. This study provided a clear indication of the effectiveness of the SMS-based mobile learning system in English education.

Research indicates that mobile phones do not distract students and that they are effective in the classroom. Al Aamri (2011) investigated the current use of cell phones in English courses at Sultan Qaboos University. This study tackled mobile phone practices among students, along with problems that students faced when using their mobile phones in an educational setting. A survey was administered to one hundred students in the Intensive English for Science Program. The study showed that students use mobile phones for learning, but in a very limited way. The results indicated that the use of mobile phones in the classroom is still limited. Students like to use them, but teachers do not encourage them to do so because they believe that mobile phones will disturb both teachers and students. Regardless of the fact that mobile phones have been proven to be good learning tools, further proof is needed to convince teachers and decision-makers that mobile devices are useful in the classroom.

Mobile phones contribute positively to students' learning activities. Rismark, Solvberg, Stromme & Hokstad (2007) completed a study of how students use mobile phones to prepare for university lectures. The participants were students in a biology course at the Norwegian University of Science and Technology. The authors focused on how mobile phones can complement and add value to education by encouraging university students to research topics prior to their lectures. The researchers provided participants with video highlights of upcoming lectures. In these videos, the professor presented main themes and pointed out some key elements that the students should review independently before the next lecture. Students viewed these videos using WALN/3G mobile phones or PCs. The researchers then combined observations and interviews to explore students' experiences with the videos. The participants were excited about the new learning opportunities. Findings suggested that the use of videos and mobile phones contributed positively to students' education. The results indicated that mobile phones introduced new opportunities for learning.

Susan (2009) also pointed out the importance of teaching spelling as part of language learning. She stated, "Good use, even mastery, of our complex language does not have to be a thing of the past or reserved for a few. By using the knowledge from years of research and experience and our ever-developing technological tools, we can teach each student to spell well and enable them to read and write fluently. We owe it to our students to give them the skills that are the tools to learning and communication throughout their education and their lives." .

This study contributes to a growing body of literature on M-learning and will draw the attention of educators and decision-makers to the topic of mobile learning

Chapter Three: Methodology

Variables used in the experiment can be divided into two types: dependent variable, independent variable. The dependent variable represents the effect. The independent variables represent the causes. In this study, the independent variable is the smartphone application COOL SPELL, and the dependent variable is the spelling achievements of the students.

Materials

The material used in this study is an iPhone application called COOL SPELL, which was designed by Fluik Entertainment Inc. and has a rating of 4+. COOL SPELL is a free application that can be downloaded from the App Store. With this application, users learn to spell 12 words. Users have to guess which letters are in a word and put the letters in the right order. The application displays a picture that represents the word being spelled. Each word is read aloud by a native English speaker when the user touches a picture. Letters are scattered around the picture. The user's mission is to drag the letters into the correct order. When the learner spells the first word correctly, he/she moves to the next step. Animations, colors, and sound effects keep the application stimulating and challenging.

Participants

Thirty students at Al-Majd private secondary school in Riyadh participated in this experimental study. They were assigned randomly to two groups of 15 participants: an experimental group and a control group. The experimental group used the application in their free time outside the classroom on a daily basis, while the control group did not use the application. The participants were females ranging in age from 16 through 18. Prior to testing, the students were questioned to determine whether they had mobile devices, thereby ensuring the same educational environment for all participants.

Instruments

To discover the impact of the application on the students' achievements, pre- and post-tests were designed. Tests were multiple choice and consisted of the 12 words presented in the application, with three choices for each word. The time allocated for the test was 20 minutes. Each test question was worth one point, for a total maximum score of 12 points. To ensure the validity of the test, it was checked by a group of five teachers: two English professors and three English teachers. The test was then modified and adjusted according to their suggestions. The number of questions was raised to 12 to cover all the application's words. They suggested also the most misspelled word committed by students.

The test's reliability was assessed through a test-retest method. A pilot study was carried out to measure the consistency of the test. An excluded sample of student volunteers participated in the procedure. Fifteen secondary school students participated in the test-retest procedure at two-week intervals. Data analysis showed the results to be consistent. By using the Pearson Coefficient, the correlation shown to be significant at the 0.01 level (2-tailed) as shown in Table 1, below. The reliability coefficient was 97 percent, which is considered acceptable from a statistical point of view.

Correlations

	VAR00001	VAR00002
VAR00001 Pearson Correlation	1	.970**
Sig. (2-tailed)	.	.000
N	15	15
VAR00002 Pearson Correlation	.970**	1
Sig. (2-tailed)	.000	.
N	15	15

**. Correlation is significant at the 0.01 level (2-tailed).

Table 1. Consistency of the Test

Procedures

After obtaining permission from the school administration, the pre- test was carried out to assess students' existing knowledge. Testing instructions were read prior to administering the test. Students then listened to a recording of a native speaker repeating each word three times. Next, students tried to identify the right choice. After handing in their tests, the experimental group was given an oral presentation about the application. They were provided with a step-by-step written tutorial on how to use COOL SPELL. Students were then asked to use the application on a daily basis for two weeks. Their English teacher was urged to remind the students to use COOL SPELL daily. The control group was confined to the traditional teaching method which is learning spelling from reading and writing lessons.

After two weeks, the researcher conducted the post- test for both groups. The post-test was identical to the pre-test. The same students underwent the same procedures as they had during the pre-test to determine whether the use of the application had improved students' performance. Post-test data were then collected and analyzed.

Chapter Four: Results

Study Findings

The study's first research question was, "Is there a difference between the English spelling proficiency of students before and after using the mobile spelling application?" To answer this question, data were analyzed using SPSS program. As shown in Table 2 and Table 3, statistical analysis revealed that the performance of the experimental group and the control group in the pre-test were the same. The significance is (0.492), which indicates that there is no difference.

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	treatment group pre-test	5.8000	15	1.56753	.40473
	control group pre-test	6.2667	15	2.15362	.55606

Table 2. Paired Samples Statistics of Both Groups

		Paired Differences			t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean			
Pair 1	treatment group pre-test - control group pre- test	-.46667-	2.55976	.66093	-.706-	14	.492

Table 3. Paired Samples Test of Both Groups

By contrast, there was a statistically significant difference between the control group and the experimental group's post-test results. As shown in Table 4 and Table 5, there were statistically significant differences between the mean scores of the experimental group that used the educational application and the control group that attended traditional English classes. The significance is (0.05), which indicates that there is a difference between the two groups. This shows that using the educational application significantly impacts student achievement. The experimental group performed better than the control group on the post-test.

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	treatment group post test	9.5333	15	1.59762	.41250
	control group post test	6.3333	15	1.54303	.39841

Table 4. Paired Samples Statistics of Both Groups

		Paired Differences					
		Mean	Std. Deviation	Std.Error Mean	t	df	Sig. (2-tailed)
Pair 1	treatment group post test - control group post test	3.20000	2.48424	.64143	4.989	14	.000

Table 5. Paired Samples Test of Both Groups

This study's second research question asked, "What is the impact of using an educational

smartphone application to teach English?" The data shown in Tables 6 and 7 reveal that the

experimental group's scores on the post-test were higher than their scores on the pre-test. The

mean score of the post-test was higher than the mean pre-test score, implying that the use of the

smartphone application improved students' performance.

	Tes t	N	Mean	Std. Deviation	Std. Error Mean
treatment group	treatment group pre-test	15	5.8000	1.56753	.40473
	treatment group post test	15	9.5333	1.59762	.41250

Table 6. Group Statistics

	t-test for Equality of Means						
						95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
treatment group	-6.460-	28	.000	-3.73333-	.57790	-4.91711-	-2.54956-

Table 7. Independent Samples Test

Chapter Five: Discussion and Recommendations

Discussion

The analysis showed that there are statistically significant differences between the mean scores of the experimental group participants who used the educational smartphone application and the control group participants who did not use it. Students' scores on the pre-test showed no statistically significant difference between the mean scores of the experimental group and the control group. This result indicated that the participants had the same pre-existing knowledge of spelling before the experiment was conducted. The results proved that the use of the educational application had a positive impact on the students' performance.

Since the smartphone application was the only difference between the two groups' educational environments, the results indicate that any improvement in spelling can be attributed to the use of COOL SPELL. Similarly, Sanberg, Maris & De Geus (2011) concluded that the use of mobile applications in students' spare time improved learning. Mobile applications motivated students and offered sufficient learning opportunities to create a learning effect. The findings of the current study demonstrated that the experimental group participants performed better than their counterparts who had not used the mobile phone application. Nwaocha (2010) found similar results when he compared an SMS-based mobile learning system to classroom instruction. The experimental group that received SMS instruction achieved better scores than the control group that was confined to classroom instruction.

Integrating smartphones applications in language education noticeably enhances the students' performance in spelling achievement. This is because students get feedback more easily than from traditional methods. The smartphone application's colors, animations, and audio

make it attractive and engaging. In addition, smartphone applications are flexible in the sense that they enable users to use them freely anytime and anywhere.

When comparing the results of this study to the results of previous research, we find that this study is consistent with many earlier studies that indicated the positive impacts of mobile learning. This study is unique in its focus on iPhone applications. In contrast to previous studies that focused on English vocabulary and phrases, this study sheds light on English spelling. Moreover, this study investigates the impact of using educational smartphone applications in Saudi culture.

Recommendations

1- Based on the findings discussed above, the researcher makes the following recommendations:

2- The use of smartphones in language education should be investigated further. Researchers should conduct further studies of the effectiveness of smartphone applications for teaching language skills.

3- English teachers should be informed of the existence of high-quality educational applications that help teaching language skills.

4- English teachers should use these applications as supplemental tools to enhance the learning process.

5- Teachers should vary their methods, techniques, and ways of teaching according to their students' ambitions and interests. They should integrate smartphone applications more frequently.

Conclusion

This paper investigated the impact of using a smartphone application to teach English at Al-Majd secondary school in Riyadh. The researcher used the COOL SPELL iPhone application as an example of how to supplement classroom instruction with mobile learning. Thirty students participated in the study. Pre- and post-tests were used to assess students' performance. The study revealed a statistically significant difference in spelling achievement between the pre-test and post-test scores. The smartphone application was shown to enhance students' performance. It is time for English teachers and policy-makers to use revolutionary mobile technologies to enhance the educational process and to meet the ambitions of our digital generation.

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