

Mobile Learning Application Development for Learning English to Preschool Students

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Abstract: *The use of mobile device and applications has become a common and effective mean for learning languages; in this context, mobile technologies including, smartphones and tablets, have greatly integrated as an innovative tool in education. In this research, we have developed a playful interactive learning English application called BenKids. The mobile devices application was designed to motivate preschool students to learn English. The BenKids application was evaluated by 20 preschool students aged from three to five years to investigate its effectiveness as an enjoyable learning tool. This article describes the design of the BenKids application as well as the results obtained.*

Keywords: Mobile Learning, Motivating preschool students, Learning English language, Mobile educational applications

1. Introduction

In recent years, mobile devices are becoming popular, and the number of mobile device users has been increased around the world. Moreover, mobile devices are very prominent in the lives of children, and mobile devices ownership among children ages 4-14 has been growing since 2005 [1],[2]. In Libya, according to the report "Digital in 2017" by Kemp (2017), approximately 11 million mobile subscriptions represented a penetration rate of 169 percent [3].

Mobile devices are used frequently; especially among students from preschool through high school [4],[5]. In addition, mobile technologies have been gradually integrating into learning. Thus, there are many educational applications for mobile devices available for children, especially for second language learning [1],[2],[6]. Because of these, the incorporation of mobile technologies into education is inevitable, and they could not be ignored in any learning environment; especially, that children are more skilled in using mobile devices nowadays [1],[6].

A person who feels energized or stimulated toward a behavior or an action is deemed to be motivated. Therefore, motivation can frame the development and practice of education in children; because of motivation an action that is inherently interesting, satisfying or enjoyable [7].

Many studies indicated that mobile devices applications, when designed appropriately, may impact students' academic achievement, which motivates them towards learning [2],[4],[5],[8]. There is a need to understand thoroughly how children interact and think; if the application design does not match the children's mental model, it will lead to children confusion. Thus, the application would be a failure. Therefore, the field of motivation in the aspect of mobile application design is most relevant [2],[5],[8].

A number of studies have found that user Interface, colors, information recall, and pictures are important at applications design for children. For example, Children's User Interface Design which should differ from adults' as their requirements, skills, and anticipations are not the same. Also, these applications, usually with sound, images, and interactions, are certainly appealing to learners [2],[4]-[6].

Mobile devices applications for second language learning have been developed to support different language learning skills and components, including listening, speaking, reading, writing, vocabulary, and grammar [2], [6], [9]. However, the existence of mobile devices applications for English language learning for preschool students is neglected [10],[11]. Thus, this research aims to design a mobile device application to teach the English language to preschool students by Android studio and evaluate to what extent students can understand and use the application.

2. Creating the application

In this research, Android Studio was used in the application design, which is a free tool. It is the IDE for mobile application development and uses Java as a programming language. It provides a friendly interface that assists developers during the implementation phase [12]. The mobile application developed aimed at motivating preschool students to learn some Basic English vocabulary. The application designed is known as BenKids, where "Ben" refers to the city of Benghazi.

3. Description of the benkids application

The development of a mobile learning application that teaches young children vocabulary is not a simple process [10],[11],[13]. The application introduces each

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vocabulary item with an accompanying image. Each term is pronounced as soon as it appears; therefore, children can repeat the correct pronunciation. It contains a number of functionalities such as the alphabet, numbers, animals, colors, handwriting, songs and lastly games. The reason why games are added to the application is to motivate children to continue using the application.

When it comes to developing new learning tools, it is important to analyze the State Education Regulations (SER)[13]. However, in Libya, there are no Regulations concerning preschool education. Therefore, preschool English teachers and parents were interviewed before the application was designed due to the important role they play in the formation of the children's characters and the way they perceive the outer world.

Parents can use the BenKids application as a learning tool with children who do not attend school; it could be downloaded to the parents or children's phones or tablets. This type of learning is known as individual learning and can be performed at home by the parent[13]. This application can also be used in the absence of Internet connection making it more practical for constant use [14]. The ability to use this application offline gives it great advantage.

The first factor for the success of an application is design. It is proportional to the usability of the application [14]. The researcher designed four vocabulary learning units for children to use in one semester. These units are: vocabulary, handwriting, games, and songs as shown in Figure 1.



Figure 1: Screen shots of Home page in the BenKids

a) Vocabulary Sections

This section of the application is designed to teach the alphabet, numbers, animals and colors. Once the "Alphabet" tab is pressed, the letter "A" appears with a picture of an apple above and the word "apple" below. The application also produces a spoken pronunciation of the letter and the word, "A - apple". Sound was included to assist the skill of speaking. It is possible to press the repeat button to hear the pronunciation or press the left arrow and move on to the next alphabet. The numbers tab leads to numbers. Each time it is pressed, a number appears with a matching number of pictures and pronunciation is heard. Students can repeat or move on to the next number likewise. The animals tab reveals animals through pictures, written words, and pronunciation. Lastly, the colors tab leads to nine boxes of colors. The colors are pronounced as soon as the boxes are touched. This section is shown in Figure 2.



Figure 2: Vocabulary Sections

b) Write Sections

This section contains two tabs. The first one provides alphabet writing practice. When pressed an alphabet appears and the children can trace it, press erase or move on to tracing the next alphabet. The second tab, the numbers tab, works in the same way as shown in Figure 3.



Figure 3: Write Sections

c) Games

This section contains a memory game and a questions game. These games provide the children with practice of the vocabulary in the previous two sections. The memory game requires the children to match a letter from the alphabet to a picture of an object that starts with the same letter. The children press two cards that are revealed once pressed. If they match, the student hears a cheer. If the cards don't match, a sound indicating a wrong answer is heard, and all the cards turn back, so the children can play again as shown in Figure 4.



Figure 4: Games

d) Songs

This section contains four songs as shown in Figure 5. Each song recycles a concept in an enjoyable melody. The first song is about animals. The second is about the alphabet. The latter two songs are about colors and numbers.



Figure 5: Songs

4. Performance Evaluation**a) Data collection for the BenKids Evaluation**

Written informed consent was obtained from the students' parent for the publication of this manuscript.

This study was carried out for one semester in a Libyan preschool in Benghazi. The participating preschool children were randomly selected. The sample comprised of 20 children, 14 boys and 6 girls, aged between 3 years and 5 years. All the children never had any foreign language learning experience prior to this study. Most of the children, however, did have experience using mobile devices. Therefore, the children did not need any special training when they were first given the BenKids application.

The sample was given an hour-long session with a tablet or a smartphone using the BenKids as an educational tool in their school; images from the experiment are shown in Figure 6. The pre-test and post-test were used to assess the extent of children's knowledge of the vocabulary in the application.



Figure 6: Images from the Experiment

b) Efficiency of the BenKids application

The aim of this study was to design a mobile application that teaches English to preschoolers, and to evaluate the

students' understanding of the application, its usability and its effect on students' motivation.

The paired t-test was used to compare the students' learning motivation in both the pre-test and post-test. The results of this test are displayed in Table 1. The mean of the post-test (53.0) was significantly higher than that of the pre-test (28.6) ($p < 0.05$).

Table 1: The result of paired t-test learning motivation data in the experiment group

	t	df	P value	Information
Pretest-Posttest	-4.3	9	0.002	There is difference of mean

The students' learning motivation has risen from weak (scale ranging from 0 to 33 of 67) to medium (scale ranging from 34 to 53 of 67) as shown in Table 2. That is, the mobile application BenKids has led to the dramatic increase of students' motivation.

Table 2: The results measurement of the gain score learning motivation data in the experiment group

Values	Pretest	Posttest
Mean	28.6	53.0
Category Gain Score	Low	Medium

5. Conclusions

This study has provided a depth of understanding of how motivation can frame the development of a good educational application for children. Thus, the BenKids application contains attractive and interesting functions such as letter writing, numbers, useful games, and educational songs. The BenKids application works without Internet. Bright and comfortable colors were used in the application to get the children's attention. In addition, preschool students can use the application interfaces easily and smoothly with a background sound. Furthermore, based on the results of the BenKids application, there was a statistically significant change in students' motivation for learning due to their use of mobile devices. It can be concluded that the use of mobile devices can improve children learning motivation.

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