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## **AN ENTERTAINING MOBILE VOCABULARY LEARNING APPLICATION**

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**Abstract:** Learning a foreign language has become a necessity in today's globalized world. While grammar structure of foreign language is learned easily, it is generally a difficult and boring job for people to develop the vocabulary knowledge. At this point it is essential to make learning easy, practical and fun. Beginning to play a substantial role in learning, mobile platforms are utilized for their practicality, portability and dynamism in this context. Moreover, it is viable with a game to turn the learning process into fun. In this work, it is purposed to develop a mobile game assisting people in memorizing the words of a foreign language. It is a kind of word prediction game giving clues according to the user's guesses. In this game, both options are available, either to play with the whole words already in the application or to specify the words used in the gameplay.

**Keywords:** Game based learning, mobile programming, foreign vocabulary learning.

### **Introduction**

It is a plus to learn a second language which can be used in every aspect of life such as vacation and socialization. Most of the countries take note of foreign languages within their education systems. Providing a whip hand for the students, it is begun to teach English as a foreign language at primary school in Turkiye continuing with high school and university likewise.

Learning environment of a language consists of four main sections including listening, speaking, reading and writing. As a requirement in all of these sections, vocabulary is the core stuff in any learning process. Poor vocabulary knowledge leads to have poor communication skills. Having a good vocabulary knowledge is not a redress by itself. Oxford (1990) indicated that language learners have trouble with remembering large vocabularies frequently. Hence learners also must do some memorial exercises on vocabulary. Oxford (1990) categorized the memory exercises into four categories as creating mental linkages, utilizing images and sounds, employing actions and reviewing. In our study an importance is attached to the reviewing process.

Gaining a vocabulary knowledge in a reasonable level is a difficult job and a long process while learning a second language. It is considered boring to learn vocabulary by the students especially who grew up in the digital age (Yip & Kwan, 2006). The negative perception affects the success of the second language learners adversely. It is a vital to turn this process into an enjoyable stuff which has a potential to be achieved by the help of digital games.

By means of the advances in technology, various and fascinating digital games have been developed. Surpassing age constraints, digital games have started to appear in most of the areas interacting with people. Education is one of these areas which games enable a huge numbers of engagements in. Accessing to a digital game is very simple due to mobile devices which are another edge in order to utilize them in education. Accordingly, educational gaming gains importance day by day.

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## **Related Work**

There have been many studies which work up to develop language learning skills of the students through digital applications. Most of the studies and researches are done on English which is the most prevalent language in the world. Liu and Chu (2010) investigated effects of ubiquitous games on learning outcomes and motivation of English listening and speaking. They demonstrated that the use of ubiquitous games in learning can produce better learning outcomes than the non-gaming method. Chen and Chung (2008) developed a personalized mobile English vocabulary learning system based on item response theory and learning memory cycle. The system consists of a remote management server, client mobile learning system and data synchronized agent. In the system, personalized English vocabulary is recommended for each user according to the user's vocabulary ability. The experimental results reveal that the review strategy in the proposed system is very helpful for the interested learners. Yip and Kwan (2006) compared the learning outcomes of two groups that consist of undergraduate students learning English vocabulary. While students in the first group try to learn English vocabulary by activity based lessons, students of the second group studied with two dedicated websites having games. Their research results show that learning with online games is more effective than activity based learning with respect to learning outcomes. Wu and Huang (2017) constructed an English vocabulary practice system that utilizes game based learning concept. According to the results they obtain, the game based system not only increased students' interest and attention but also effectively strengthen their memory and learning ability. Yen, Chen and Huang (2016) analogized two mobile English vocabulary learning applications to find out the effects of game related functions on the learning performance. In their study, it is revealed that gamified functions of the mobile application are positively correlated with the learning performance. Sandberg, Maris and de Geus (2011) built a mobile English learning application in a serious game form and they observed the effects of the application on fifth grade children with respect to vocabulary learning outcomes. The application composes five different types of games: a multiple choice quiz, a spelling quiz, a memory game, a Yes or No game and a jigsaw puzzle respectively. It is demonstrated in the study that the application, which allure students, provides adequate learning recipes for them. Smith et. al. (2013) designed an experiment which compares two groups of Chinese college students studying with eBooks that includes inference based computer games and studying with traditional methods like reading hardcopies, multiple choice questions etc. Their study purported that inference based computer games incline students to study and make them learn significantly more vocabulary than the traditional methods.

## **Application Details**

### **Scope**

In this study, it is aimed to leverage the vocabulary skills of the learners with a mobile game developed for this purpose. It is intended to make students carry out the review process of the vocabulary by using the mobile application. People will not only learn but also will have pleasure in this way.

### **Design and Functionalities**

Our application is composed of two basic functionalities:

**Word Supplement:** User is able to designate particular words that he/she wants to learn in the application. While user can attach the words one by one, he can also select a category of words such as plants, animals, etc. to study with. This feature will provide a fully personalized practice system for the user.

**Gameplay:** There is an entertaining word prediction game in the application in order for learners to do practice. User tries to find the word picked by the system by way of some feedbacks given after each try of the user. In the beginning of the game, the system picks a word through the supplemented words in the application randomly. User starts to play the game by entering a word. The system checks the entered word against the secret word and gives some – and + points to the user. For each letter matched with its position, the system counts +1 point. For each letter matched without its position the system counts -1 point. If a letter does not occur in the secret word, no point is counted for that letter. After the points are calculated by the system, + and – points are summed up respectively and delivered to the user. In the consideration of these points, user makes prediction with a new word and again gets a feedback for his word. It goes on like that until the user reaches the desired word. The point here is that the user has to find out the word within minimal number of steps. An example is given below inasmuch as comprehension of logic of the game:

Secret word: house

Prediction 1: place

Points: +1

Prediction 2: touch

Points: +2, -1

Prediction 3: amuse

Points: +3

Prediction 4: mouse

Points: +4

Prediction 5: house

Points: +5

You win within 5 steps. Congratulations!!!!

### Operating Environment

The application is developed via Android Studio and available for mobile devices which have the android OS. SQLite database is utilized for the storage procedure. There is a local storage system which a user is able to supply interested words and manage them to do practice with.

### User Interface

The game includes three screen which are shown in Figure 1.

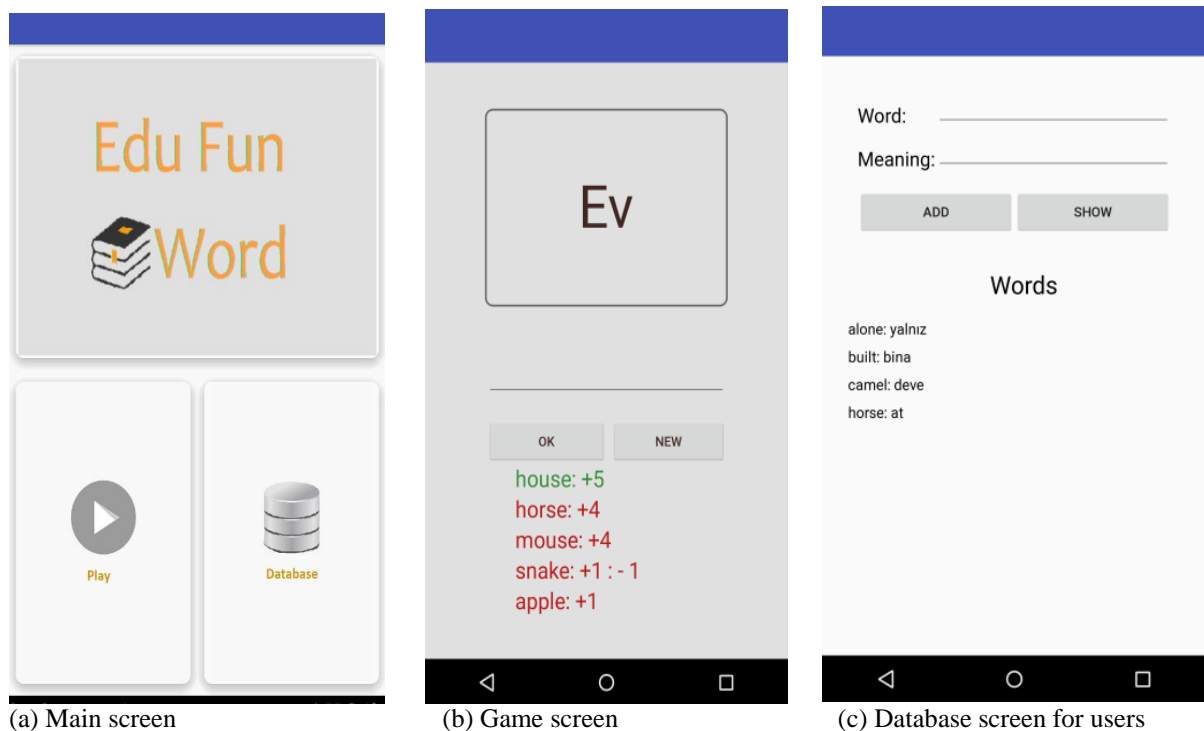


Figure 1. The designed user interface of mobile learning game

In (a) we see main screen which is firstly opened when application is started by user. There are two buttons and a symbol of game in this screen. Play button directs to user game screen (b) so the game starts by this way. The second button is to open the database screen (c).

There is a panel that shows the meaning of the word to be estimated at the top of the game screen (b). At the below of this panel, there is an edit text to type a word which is expected to be correct. There are also two buttons one of which is to submit the word and see whether choice is correct or how much closer to real and the

other is for selection a new word to be guessed. Lastly the bottom section of this screen has a scroll view that shows guessing words and points of them.

The last screen (c) is for database operations. This panel opens to user directly. There are two edit text and two buttons. By using Edit texts and add button, player can add words that he wants to memorize and show button will help to see to user words that are added with scroll view at the last part of this screen.

## Conclusion

Mobile learning is among state of the art issues in education. With the revolution of technology, learning without dependency to time and place is possible via mobile devices in today's world. Additionally, it is a virtue to have a stimulator inciting people to learn which contributes to game based learning concept. In this study, we designed a game based mobile application assisting people to build up their vocabulary in the process of a foreign language learning. It is a personalized learning tool that a user is able to supply interested words that he/she would like to memorize. Although learning large vocabulary is known as a difficult and boring job, people have fun while extending their vocabulary knowledge by this way.

In the future studies, we want to implement our application as a ubiquitous learning framework in which people can also play the vocabulary prediction game with each other. It will be provided by the framework to enable people share their vocabulary knowledge with each other while trying to find out their secret words. Furthermore, such kind of a game is considered to raise competition and enthusiasm. Vocabulary learning capabilities of the users would be enhanced hereby.

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