Computers & Education 85 (2015) 170–179

Contents lists available at ScienceDirect

Computers & Education

journal homepage: www.elsevier.com/locate/compedu

# Designing a smartphone app to teach English (L2) vocabulary

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ARTICLE INFO

*Article history:*
Received 22 December 2014
Received in revised form
26 February 2015
Accepted 26 February 2015
Available online 10 March 2015

*Keywords:*
Distance education and telelearning
Interactive learning environments
Multimedia/hypermedia systems
Pedagogical issues
Intelligent tutoring systems

ABSTRACT

The researcher developed a Basic4Android smartphone app (named as Word Learning-CET6) and investigated its effectiveness as a tool in helping English as a Foreign Language college students learn English vocabulary. The app, containing 1274 English words, was designed to be installed into smartphones with Android operating system. To test the program's effectiveness, two groups of students were set up as a test group (those with Word Learning-CET6) and a control group (those without Word Learning-CET6). Knowledge of the vocabulary was tested before and after the study to assess the impact of the program. The study showed that the students using the program significantly outperformed those in the control group in acquiring new vocabulary. At the conclusion of this study, the researcher designed an app and established a pedagogical paradigm which can be followed as a way of mobile learning.



## 1. Introduction

### 1.1. English as a foreign language (EFL) vocabulary learning strategies

Vocabulary acquisition strategies are generally categorized into two types:

a) Incidental vocabulary learning, and;
b) Intentional vocabulary learning (Nation, 2001).

Researchers (Hulstijn, 1992; Laufer & Yano, 2001; Nation, 2001) found that intentional vocabulary learning is responsible for most of EFL learners' vocabulary expansion because new words are difficult and slow to acquire without ambiguity out of contexts. Studies (Hulstijn, 2003; Mehrpour, 2008; Qian, 1996) that compared these two strategies clearly indicated that intentional learning is more effective than incidental learning. However, other studies showed results that contradict the argument (Ahmad, 2011; Horst, 2005; Pitt, White, & Krashen, 1989).

Word lists and/or word cards methods, which simplify the learning process so as to increase repetitions with words, are the prevailing techniques for intentional vocabulary learning. In a conversation about the ten best ways for EFL students to learn vocabulary, Batia Laufer and Paul Nation suggested word lists and word cards, respectively (Editorial, 2005). Read (2000, p40) elaborated on the wordlist learning method with “by working through a list of L2 words together with their L1 translations and memorizing the word–gloss pairs.” Studies by Waring and Takaki (2003), Webb (2007) concluded that there are a minimum number of encounters or repetitions needed with a word to recognize its morphological form. Xue et al. (2010) detected the neural mechanism of repetition to advance better memorization and stated that “repeated study improves memory”.

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http://dx.doi.org/10.1016/j.compedu.2015.02.013
0360-1315/

### 1.2. English education in the Chinese colleges

Schmitt (2008) concluded that a vocabulary size of 8000–9000 word families is necessary for reading and a quantity of 5000–7000 word families for oral address is required in English. Whereas, the Chinese college students plateau at 3934 English words (Dai, 2013) by the end of their second academic year. The 3934 words were calculated from a glossary pool that included simple words like "I", "in", "one", etc. Song and Yu (2004) discovered that the productive vocabulary amount for sophomores was 2000 words in a top Chinese university. Most Chinese college students receive 11 years of English education (3 years in elementary school, 6 years in junior and senior high schools and 2 years in college), in other words, they are taught English for a total of 1672 class hours (based on an estimate of 38 class weeks per year, 4 English class hours each week). On top of that, they probably spend twice as many hours doing homework and learning on their own. A research (Gao & Wang, 2011) discovered that Chinese college students spent more than 50% of their self-study time on learning English. Compared to Schmitt's (2008) requirements, the daunting gaps in vocabulary size and the tremendous amount of time spent on learning the language propel many Chinese English learners to look for shortcuts if there are any, and spur teachers on to search for useful vocabulary acquisition techniques.

The importance of passing College English Test-Band 6 (CET6) is not emphasized enough. Some universities will not issue his/her diploma until the student passes CET6. The biggest obstacle for students to overcome is to master the 6674 words designated by the Chinese Ministry of Education. An astounding number of vocabulary books are printed in order to help students learn these words. A keyword search returned 23,817 results when "CET6 vocabulary book" was typed in an e-commerce website (www.taobao.com) on October 15, 2013. In searching for a new way to help learners memorize English words, and for this project, the researcher referred to eight CET6 vocabulary books and the handbook of *College English Curriculum Requirements* (Wang, 2004) to collect 1274 words to form a database which was then incorporated into a smartphone vocabulary acquisition app, also designed by the researcher, called Word Learning-CET6.

### 1.3. Mobile learning: Theories and practice

In searching for new vocabulary acquisition techniques, researchers (Thornton & Houser, 2001, 2004, 2005; Stockwell, 2007, 2008, 2010) turned to mobile phones and conducted many studies. They proposed "pushing" and "access" theories. By sending short text messages at spaced intervals, EFL students are pushed to learn English vocabulary. Since a mobile phone is always in one's pocket, its convenient accessibility is superior to that of textbooks and computers, etc.

That EFL college students learn English vocabulary or idioms via mobile phones was empirically investigated by Thornton and Houser (2005) in Japan, Lu (2008) in Taiwan, Cavus and Ibrahim (2009) in Turkey, and Hayati, Jalilifar, and Mashhadi (2013) in Iran. Their studies showed that mobile technology improved learning, however, all their experimental designs utilized very small texts or several idioms sent via short message service (SMS), e.g., there were merely 14 words in one week (Lu, 2008). The obvious deficiency in SMS is the size of the message. Even where mobile carriers allow subscribers to send large files, few learners will have enough patience to scroll down a small screen and keypad to study large content without a format for any length of time. Another deficiency in SMS method is in delivering and receiving messages. Thornton and Houser (2005) admitted that only 10% of participants read messages at the time of reception. Mobile-assisted language learning (MALL) should be "anytime, anywhere" (Kukulska-Hulme & Shield, 2008). The third deficiency is that traditionally with mobile technology, learners have no learning choice. They wait to receive their lessons; they have no choice of content, and no way to access further material when they have mastered what they have received to date. The usefulness of any design with these three shortcomings should be questioned. Burston (2014) regards their SMS studies and other MALL researches as class trials, deems the value of these designs as marginal in practical implementation and believes there is technological foundation to pull MALL in from the fringes to the mainstream of foreign language learning. It is the functional shortcomings of mobile phones that limited their researches in employing mobile phones for foreign language learning to be conducted with specifically tailored small content in artificial environments.

### 1.4. Language learning with smartphones

A smartphone can execute a third party application since it is built with an operating system. Although the field of development of smartphone apps has been widely explored, the smartphone apps for foreign language learning are "rare" (Burston, 2013). In particular, no smartphone app designed for EFL curriculum learning can be found in China yet. Of the few researches involving smartphones for MALL, they were positioned at either interacting instructors with learners in a Q/A type simple design through MSN and SMS (Tai, 2012), or tutoring kids to look for a word at smartphone's online dictionary (Bromley, 2012). One possible reason for this absence is most EFL English teachers do not venture to code because they have limited knowledge of computer sciences. For these with some knowledge, they often think they have to be experts in complicated Objective-C programming language to create an Apple iOS app and Java to design an Android app. Given the advances in mobile technology, software and hardware, MALL designs should be application based (Godwin-Jones, 2011). This researcher designed an app with broad practical usage to exploit MALL with smartphones in a normal way, without much modification and intervention, in a naturalistic setting.

### 1.5. Selection of smartphones and Basic4Android programming language

The selection of smartphones to conduct this study was based on four criteria: First, the technology; smartphones are designed with fast operating systems, big display screens, large internal storage, and touchscreen technology with a zoom function. Touchscreen with zoom allows users to react to what is displayed and to control how it is displayed by zooming (i.e. expanding or shrinking text size). Second is the popularity of smartphones; the majority of students possess smartphones (personal survey: all 143 students attending the researcher's classes carry smartphones). China Mobile, the largest wireless carrier with the most subscribers in the world, goes to the Chinese universities to offer free smartphones for a low price subscription plan. A student can obtain a smartphone on a subscription plan of 30 Yuan/month (1 USD = 6.10 Yuan). Third, custom made apps such as the one this researcher designed can be installed into smartphones. Regular