Self-directed English vocabulary learning with a mobile application in everyday context

Hui Deng
Education Technology Department
South West University
Beibei, Chongqing
denghui@swu.edu.cn

Yinjuan Shao
LSL, NIE
NanYang Technological University
Singapore
yinjuan@gmail.com

ABSTRACT

Vocabulary is the important component of language proficiency. How to help students to enlarge their vocabulary is a challenge for English teachers. This study explores the experiences of undergraduates and graduates students in China to build vocabulary through a mobile application- Remword installed in their mobile phone. Survey and interview data were collected and the following findings are found (a) students are self-directed and well automate in their vocabulary learning with the affordance of this software in their everyday life. (b) Students indicated high readiness to mobile learning. (c) Challenges are indicated to the sustainability of mobile learning.

Author Keywords

English vocabulary, mobile dictionary, everyday, self-directed

INTRODUCTION

A large amount of applications—cell phones, personal digital assistants, and portable digital audio players—has been widely employed in second language learning. Mobile technologies offer numerous practical uses in language learning while it requires thoughtful integration of second language pedagogy.

In this research, we intend to examine how university students use Remword (a digital dictionary installed in mobile phone) to learning English words, and how the design of the application might be improved.

RESEARCH BACKGROUND

In China, having been studying English in the teacher-directed contexts in primary and secondary schools for long time, most university students found it difficult to study English with far less scaffolding from teachers when they enter the university. Each student, however, has been required to take National English Tests such as CET4 and CET 6, which requires students to own certain amount of English vocabularies. For example, CET 4 and CET 6 require the students grasp 4200 vocabulary and 5500 vocabulary separately. Therefore, enlarging English vocabulary is of great significance in English acquisition, and is a major difficulty college students encountered during their college study. Learning

outside of classes becomes necessary and important for them as the teachers are not always available as they were in primary and secondary schools.

According to Pilling-Cormick and Garrison, self-directed or self-regulated learning (SDL) was seen as students "taking primary responsibility and control of their learning process, including setting goals, finding resources, determining strategies, and evaluating outcomes"(Pilling-Cormick and Garrison 2007, page number for directed quotes). No longer the passive recipients of education, learners are seen as a consumer making choices in the learning market (Gremmo and Riley 1995). Particularly in social settings in everyday life, students might use "conscious learning strategies" to direct their own learning (Wenden 1981). University students are adults and primarily responsible for the organization and direction of their own learning. We argued that university students who learn vocabulary out of class are self-regulated as they are articulated motivational with external management practices and internal monitoring processes (Zeidner, Boekaerts et al. 2000). University students may have their own individual goals to learn English and the strategies of memorizing English words vary greatly. Their methods of memorizing vocabulary might be self-paced or calendar-based and they prefer to remember them at the best of their time and space. Traditionally some students may carry their self-made cards. They have to spend time on making cards, and the number of cards and the presentation of words is very limited (for example, no audio or visual). The emergence of mobile technology brings convenience to users with high mobility and flexibility.

It has been reported that most university students have their own mobile phones. In Japan, for instance, cell phone ownership has been reported to be nearly universal amongst college-aged individuals(Dias 2002; Thornton & Houser 2005). In a recent study of students in higher education in China, among the 62% mobile Internet users, 85.7% universities access mobile Internet with their own phones(CNNIC 2010). Large opportunities are there that universities students could be better supported by autonomy as well as self-assessment by using mobile technology in their vocabulary learning.

Digital dictionary is one of the mobile technologies widely used among students in China. However, most of these dictionaries only include the meaning, translation and a few explanations as traditional dictionaries. Advanced mobile technology such as PDAs, tablet PCs, and cell phones has gradually become considered effective tools for vocabulary learning. Large amounts of vocabulary learning system have been developed and used (Chen and Chung 2008) to help students develop English vocabulary.

Digital dictionary is one of the mobile technologies widely used among students in China. However, most of these dictionaries only include the meaning, translation and a few explanations as traditional dictionaries. Advanced mobile technology such as PDAs, tablet PCs, and cell phones has gradually become considered effective tools for vocabulary learning. Large amounts of vocabulary learning system have been developed and used (Chen and Chung 2008) to help students develop English vocabulary.

Considering large population of university students in China and the ROI for each student using mobile phones to remember English words, free or low-cost of mobile application is the most desirable choice for students to sustain their word memorizing with it. We then choose REMWORD, a popular mobile dictionary as the tool for vocabulary learning specifically in our research. We aim to explore the following research questions:

• What are students' attitudes and perceptions towards using Remword in their vocabulary building?

- What are students' strategies of using Remword to memorize vocabulary?

- What needs to be improved in terms of the design of Remword?

METHODOLOGY

A mixed research approach was used in this study. A pre-use survey and follow-up individual interviews were conducted to get participants' behaviour of memorizing vocabulary before and during using Remword. The study lasted for four weeks with naturalistic use of Remword in their everyday vocabulary learning.

PARTICIPANTS

16 students from different departments (4males, 12females) took the pre-use survey while only 13 of them (3males, 10 females) were able to install the mobile application, i.e., Remword, in their own phones due to the constraints of the phones they used. 10 of them were undergraduate students and 3 of them are postgraduates.

Participant	gender	major	grade	Model of mobile phone	Internet Traffic per month
1	female	Educational technology	Fresher	Nokia e71	50mb
2	female	Educational technology	Fresher	Nokia e63	50mb
3	male	Educational technology	Fresher	NokiaE63	70mb
4	female	Educational technology	Fresher	Nokia5230	100b
5	female	Educational technology	sophomore	Nokia s60v3	90mb
6	male	Educational technology	sophomore	NokiaE63	70mb
7	female	Educational technology	sophomore	Nokia5233	40mb
8	male	Educational technology	sophomore	Nokia 6120CI	30mb
9	female	Computer Science	Fresher	Nokia6120ci	50mb
10	female	Computer Science	Fresher	Nokia5233	50mb
11	female	Educational technology	first-year graduate	Nokia 5230	20mb

12	female	Educational technology	first-year graduate	Nokia 5230	50mb
13	female	Educational technology	first-year graduate	HTC G9	20mb

Table 1: Profiles of the participants

INSTRUMENT

Remword is a free mobile English-Chinese dictionary, which can be installed in diverse mobile phones. The distinguished feature of Remword is that it is not only a dictionary but also has some aids for vocabulary memorizing.

Dural-Code Theory and Ebbinghaus Forgetting Curve are important theories underpinning vocabulary building. Dural-Code Theory suggests that both visual and verbal codes for representing information are used to organize incoming information into knowledge that can be acted upon, stored, and retrieved for subsequent use. Mobile technologies are advancing quickly. Their output became both verbal and visual(Colpaert 2004),which might facilitate memorizing English words. Remword provides text, image and audio to assist word memorizing. Figure 1 is a screenshot of Remword. Different vocabulary database such as CET 4 or 6, IELTS had been built into this dictionary. Users then can choose their own
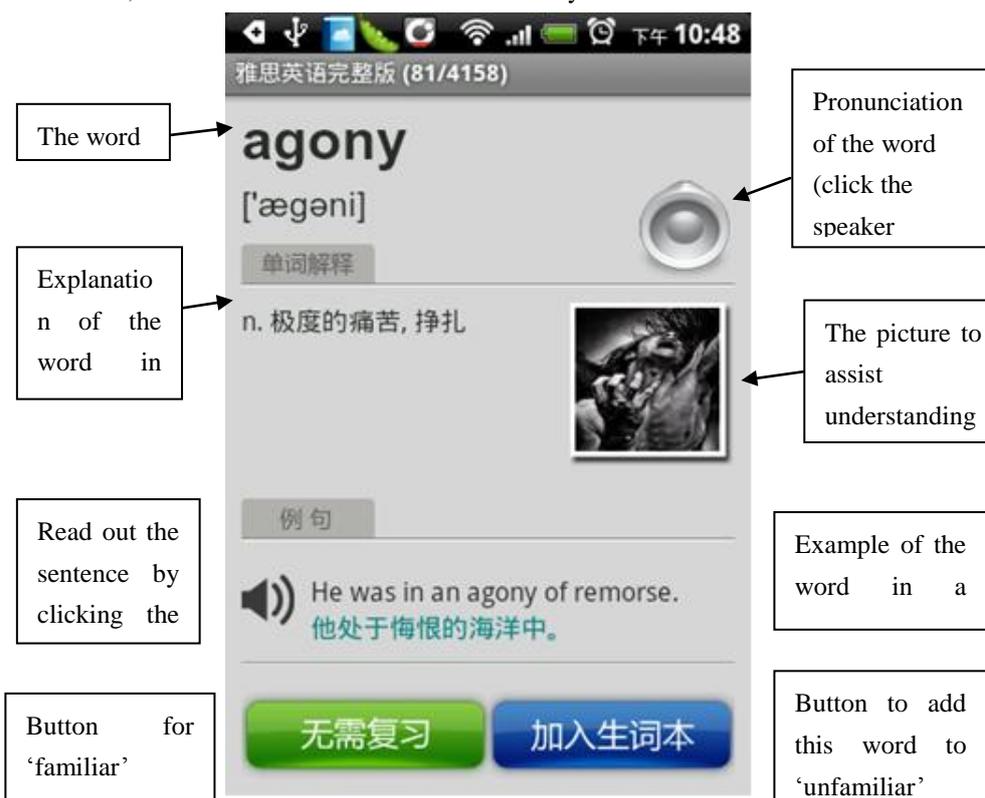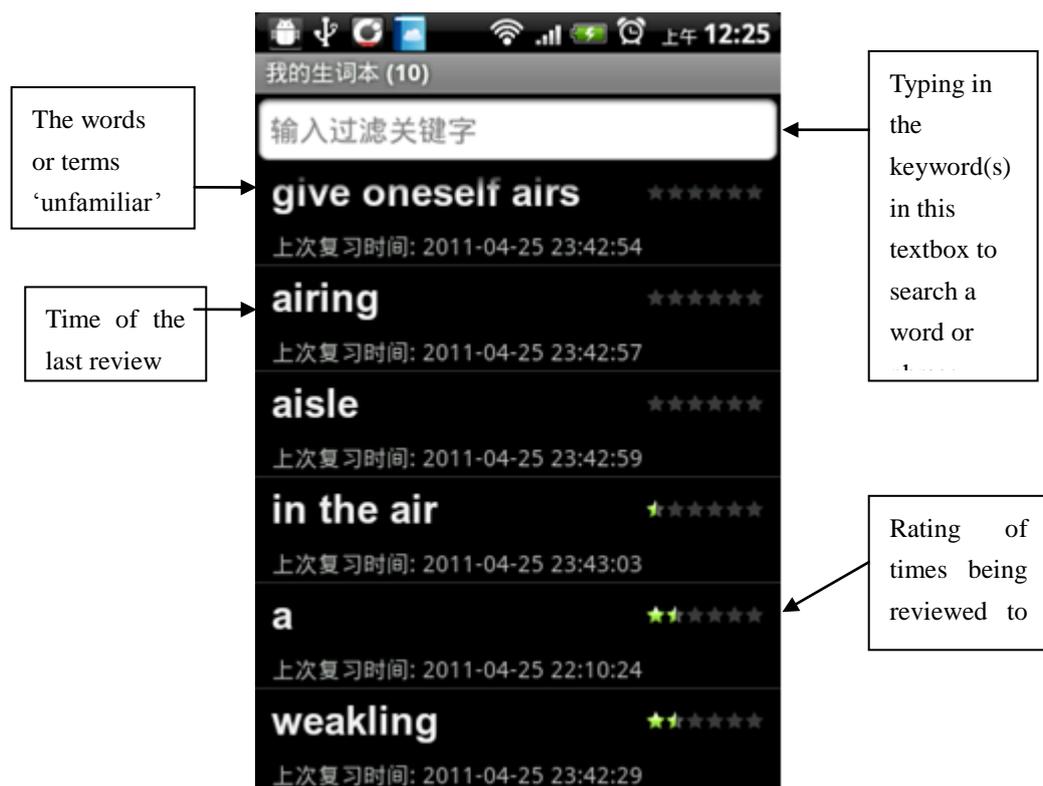

learning goals by choosing the vocabulary database. User could choose any vocabulary database they need. Remword also can remind users to memorize vocabulary periodically.

Figure 1: Remword Screenshot

The screen was divided into four main sections. When a word is displayed on the screen, the learner can read the word by his/her self from phonetic symbol or can click the button on the right top of the screen to listen to the pronunciation of the word. In the second section, Chinese explanation and a

picture were given to help learners understand the word. In the third section a sentence was given to provide a context that the word can be used together with a speaker icon optional so that learners can listen to reading of the sentence. And in the last section at the bottom of the screen, two buttons for learners to choose 'familiar' or 'unfamiliar' to construct their own personalized database of "new words".

Ebbinghaus Forgetting Curve illustrates the decline of memory retention in time. It suggests that vocabularies have been remembered could be forgotten. Therefore, Remword has a word review system which automatically records words or terms which were viewed by users and shows them again. When students click 'unfamiliar' button, the word will be collected into the "New Word Book" in this

The words or terms 'unfamiliar'

Time of the last review

Typing in the keyword(s) in this textbox to search a word or phrase

Rating of times being reviewed to

我的生词本 (10)

输入过滤关键字

give oneself airs

上次复习时间: 2011-04-25 23:42:54

airing

上次复习时间: 2011-04-25 23:42:57

aisle

上次复习时间: 2011-04-25 23:42:59

in the air

上次复习时间: 2011-04-25 23:43:03

a

上次复习时间: 2011-04-25 22:10:24

weakling

上次复习时间: 2011-04-25 23:42:29

application. Each student has his/her own personalised "New Word Book", which is formed during the process of his/her reading about the English words or terms that were identified as "unfamiliar words". Figure 2 below illustrates a list of the "New Word Book".

Figure 2: Personalized "New Word Book" in REMWORD

In this "New Word Book", "Unfamiliar words" were collected and displayed randomly with the regulation of Forgetting Curve.   The active recall of a word is one of the best methods to increase the strength of memory. For near-perfect retention, initially repetitions may need to be made within days, but later they can be made after a long period. Herein the application records the exact time when each word is displayed to the learner and displayed the time of the last recall. The application automatically tracks how many times that a word or phrase been viewed in the "New Word Book" and also displays the tracing by stars of rating. There is also a search engine embedded in this "New Word Book". Learners can enter any search word to find what they remembered before to start their own pace of new words memorizing. Meanwhile the time of each word or phrase students learned the words are also recorded. This mechanism offers a guarantee as far as possible for individual learners to learn

vocabulary completely at their own space towards a learning purpose. Put it in another way, this "New Word Book" provides personalised own dictionary to fulfil the needs of self-directed learning.

PROCEDURE

16 participants volunteered to fill a survey of willingness for using mobile phones for vocabulary learning in Chongqing. Students were asked to install Remword with the researchers' help. 13 of them succeeded but 3 students dropped out as Remword was not compatible to their own phones. 12students' phones were symbian phone and one has an android phone. They were asked to feel free to use the REMWORD for their vocabulary memorizing specifically. After one month of the installation, an interview was conducted to know participants' experiences.

ANALYSIS

A questionnaire consists of several open questions. Follow-up interviews were analysed with thematic coding. We utilized Nvivo as the tool for the analysis and have the test of inter-rater reliability among two researchers with the agreement value 0.732 (Cohen's Kappa).

FINDINGS

According to survey and interview, findings are as followed:

Motivation for vocabulary remembering

Although all students admit their primary motivation to word memorizing is to pass CET4 and/or CET6 Exams, five of them articulated their willingness of continuing vocabulary learning because of personal interest in English songs and potential needs in future career. However, they also expressed their doubts and confusions about how to sustain their English learning after the graduation. The awareness of life-long English learning indicates the requirement of methods and tools to support long-term learning any time anywhere. Students only have one or two English lessons each week therefore students need to more self-regulation in their own learning. We found most students have to spend time out-of-class in memorizing English vocabulary and our data indicate that several changes as result of students' using of mobile phones as the tools.

Changes of time

Changes have taken place on the time and duration for vocabulary memorizing since they use the mobile application Remword. By comparing the time they spent on vocabulary memorizing before and during this research, we make a summary of time referred by these participants from the data of survey and interviews.

When		Without mobile phones	With mobile phones
Self-planned	In class	8	4
	Before English class	1	1
	Between the classes	1	1
	In the morning	3	2
	Before sleeping	1	6
	On jogging	0	1
Unplanned time	Walking	0	2
	Boring	1	5
	Eating	0	1

	Leisure time of evening	0	2
	Once thinking of	0	4
	Listening to the music	0	2

Table2: Number of references of time for remembering vocabulary

We found students had their self-paced or self-scheduled arrangements for memorizing vocabularies. In Table 2 we differentiate the time they mentioned in the survey and interviews for vocabulary learning as "planned" and "unplanned". Traditionally students mainly learnt and remembered vocabularies in class, which they inherited the habit of English learning in high schools. Other than the English classes, they took some time between two classes, self-scheduled some time in the morning and in the evening to memorize English words. Obviously the time had been left out particularly for memorizing vocabulary by different individuals. Put it in another way, they had own plans for vocabulary memorizing. Nevertheless, we found in the "unplanned time", more emergent learning occurred when students have their mobile phones installed with Remword. More learning occurred in 'fragmented' time such as walking, eating, and listening to the music and on thinking of. They just took out their mobile phones and started vocabulary memorizing.

The duration of memorizing English vocabulary with this mobile application each time also varied greatly. Some students removed the scheduled time in the morning about half an hour planned time special for vocabulary memorizing but turned the time into more 'fragmented' periods to memorize words at any free time. Although the time is fragmented, students pointed out that mobile phones provide great convenience of referring to vocabulary instantly and contextually. On the other hand this also partly implies that students have gained more autonomy of time for learning by using mobile phones.

Change of place

Other than the changes of time spent on memorizing vocabulary, choices of places for learning vocabularies also changed. In our research, students were found to conduct increasing vocabulary learning out of traditional learning space. Table 3 below illustrates the places mentioned by our participants in their vocabulary learning.

	Where	Without mobile phones	With mobile phones
Traditional learning space	In the classroom	8	5
	In the dorm	2	6
	At lakeside (quiet places)	1	0
Learning space as emergent	On the way (to the classroom, canteen and dorm)	0	7
	Anywhere when boring	1	4
	Canteen	0	1
	In bed	0	4
	On the bus	0	3

	waiting	0	3

Table3: Number of references of place for remembering vocabulary

Table 3 shows a decrease of references for learning vocabulary in formal settings, i.e., the classroom. More learning is happened in informal settings in everyday life such as ….. . Students reported more learning activities on the move with mobile phones. More diversity of places for memorizing English vocabulary was reported. Students were able to learn vocabulary at any place with their own phones. This expansion of learning space also indicates that students have gained more autonomy for learning vocabulary.

Change of strategies

Among the 13 students in pre-study survey, 8 of them said they wrote down the English words on paper while they were learning the vocabulary.   Two of them relied heavily on phonetic symbol of the words, and one of them said he/she preferred memorizing vocabulary in the context of a paragraph or sentence. Two of them liked to associate the word with other phrases or similar words. All of them need to repeat a new word several times in order to remember it and required the recall or review at certain intervals. Two girls used to carry cards daily to make memorizing vocabulary easier.

After these participants have used mobile phones as the tools for memorizing English vocabularies, several changes were found about their learning strategies.

Before students used mobile phone for vocabulary memorizing, most of them preferred writing down the words on remembering them. Using Remword, students described that they only looked at the words on mobile phones again and again and got rid of pen and paper.   They didn't have to make cards by themselves and carry the limited number of cards only for learning vocabularies. The big memory of mobile phone supplies enough space for storing English words. They could choose 'familiar' or 'unfamiliar' to differentiate those words as known and unknown.   In this way, those 'unfamiliar' words would be appeared more frequently in the mobile application to draw students' attention. Automatically students got personalized paces on memorizing the words step by step.

Instead of reading the English word out when they tell phonetic symbols, students were able to listen to the standard pronunciation provided by the mobile application and follow it. Eight out of 13students in the later interviews agreed that this feature helped them dramatically in pronouncing the words correctly, which enhanced their efficiency of memorizing the words.

As students carry their own phones all the time, increasing chances are there for them to learn vocabularies at their convenience. One example below reveals the great changes that mobile vocabulary application brought to students.

 "Mobile vocabulary learning increases the channels for active learners and promotes the chances for passive learners." (Female, undergraduate)

Students had a good awareness of the strength of mobile technology in vocabulary learning that it offers other accesses to learning vocabulary on the move anytime.   But they also realized that to be a successful mobile learner, they need to be independent, active, and purposeful. Students know they should take initiatives to learn vocabulary and direct the learning by themselves.

Readiness for mobile vocabulary learning

According to interview, all participants expressed that they liked the experiences of using their own mobile phones to learn vocabulary and enjoyed very much the convenience and flexibility that mobile phones bring to them for vocabulary building.

"I never spent time on remembering vocabulary before when I entered the university. However I can refer to the vocabulary anytime now as I carry my own mobile phone all the time. I start remembering words and will keep doing afterwards." (Male, undergraduate)

This student stated that he made a dramatic change in vocabulary learning, from a non-vocabulary remembered to a mobile learner of vocabulary because of the use of Remword. Most students didn't like carrying a book all the time for learning but all students in this research admitted Remword enhanced their vocabulary learning. They all agreed that Remword can help them remember more words then before. The convenience of carrying mobile phones was proved to be an advantage for vocabulary learning. Most participants said they felt more at ease to learn vocabulary with mobile phones because they can have full control of learning without taking a heavy book with them. One students pointed out this mobile application improve her motivation to memorize English words as she felt she were doing casual learning like playing a game. Half of the learners stated that they can remember more words each time because now they could make full use of the 'fragmented' time for vocabulary learning.

"I felt less confused for learning English. In the past it's ridiculous and not feasible to hold a book at all time for learning. Now it changes. Mobile phone is one of my favourite belongings and I took it with me all the time. Reading vocabulary from my own mobile phone make me has a sense of playing a mobile game" (Female, Undergraduate)

The girl quite enjoyed her experiences of learning vocabulary on her own mobile phone. For her it seems less stressful to memorize vocabulary on mobile phones than reading the book in the classroom. As students had the self-awareness of memorizing vocabulary, they directed their own learning with more freedom and at their own paces.

The features of Remword participants liked most and felt most effective include:

- Affordable. Remword is free of charge for downloading

- Accessibility. The online and offline settings provide sufficient updates and synchronization. Students can access to mobile Internet for updates as the costs are far lower now (on average ￥10/month for 50Mbytes).

- The function of audio pronunciation enhanced the learning efficiency.

- The use of picture alongside with each word assists vocabulary association and therefore enhances word memorizing.

- The example sentence provides a good context for the user to understand the vocabulary and assist word memorizing.

Feedback to improve the design of the mobile application

Feedback from our participants indicates some improvements might be made to facilitate students' vocabulary learning.

- Needs more relevance between the picture and the word itself.

- Includes the updated and top-rated news in English.

- Includes the ranking for unfamiliarity to new words and display those words in order of unfamiliarity.

- The examples could be more close to everyday life so that students can easily applied what they have learned

- Remword was designed and triggering at CET 4 and CET 6, fitting students' needs at large. Half of the participants suggested an assessment section to be added to Remword to evaluate their own learning outcomes. It indicates an orientation towards independent language learning. Probably a good way to say is: "assessment might be valuable adds-on for the future design of the application, as it will facilitate self-directed learning process. ".

From these responses, it indicates a trend that students have more personalized and self-paced requirement for learning vocabulary. Their learning is getting fairly self-directed and not limited to the CET4 and CET6 tests.   They anticipated the real application of English in their everyday life.

Challenges to the sustainability of mobile learning

Although all participants like this mobile application, several challenges exist for individual students to sustain mobile vocabulary learning:

- Students should have their own relatively high-tech mobile phones, especially big memory and quick programme response.

- Students should be well self-motivated and self-disciplined to keep learning on pace.

- Mobile Internet traffic and devices should be affordable for students. Application should be easy to operate.

- Updates of vocabulary and attractive English materials are necessary to sustain students' learning motivation.

CONCLUSIONS AND DISCUSSIONS

Attempts have been made to enhance the efficiency and performance of students' English language learning.   In this research we examined the use of Remword as a vocabulary learning tool in a college environment. Students spent their personal time to learn English especially for English word memorizing. They self-scheduled their time and self-initiated to remember vocabulary from time to time. This learning is more self-directed and is not constrained by any other people or by time and space. Students showed diverse strategies to learn vocabulary in our study. All learning was regulated by students themselves and mediated by the mobile learning tool Remword. All students held positive perceptions of confidence and abilities to continue the vocabulary learning with the aids of Remword. In the end of this research all students stated that they would like to continue learning by themselves in their everyday life after this research. As for the sustainability of vocabulary learning, the advantages of flexibility, autonomy and low costs of Internet access all devote to long-term self-directed vocabulary learning.

In our study we only examined 13 students. We have every reason to believe we can scale up as the following reasons: most university students have their own mobile devices and the software is totally free itself. The cost of using mobile Internet in China has been greatly reduced in the past few years and no students felt it as a problem in our study.   Students are already aware of the sustainability of English learning after institutional studies and this mobile application at a certain extent articulated their learning in formal and informal environments.

We are delighted this kind of free software would greatly benefit students and hope it's not only limited to students but for all people who would like to carry out life-long learning in the future. And the advancement and development of mobile technology should be able to push forward the life-long learning in more self-paced and self-regulated way in future.

REFERENCES

Chen, C. M. and C. J. Chung (2008). "Personalized mobile English vocabulary learning system based on item response theory and learning memory cycle." Computers & Education 51(2): 624-645.

CNNIC (2010). 26th Statistics Report for Internet Development in China.

Colpaert, J. (2004). "From courseware to coursewear." Computer Assisted Language Learning 17(3-4): 261-266.

Dias, J. (2002). "Cell phones in the classroom: Boon or bane? [Part 1]." C@lling Japan: The Newsletter of the JALT-CALL Special Interest Group 10(2): 16-22.

Gremmo, M. J. and P. Riley (1995). "Autonomy, self-direction and self access in language teaching and learning: The history of an idea." System 23(2): 151-164.

Pilling-Cormick, J. and D. R. Garrison (2007). "Self-Directed and Self-Regulated Learning: Conceptual Links." Canadian Journal of University Continuing Education 33(2).

Thornton, P. and C. Houser (2005). "Using mobile phones in English education in Japan." Journal of Computer Assisted Learning 21(3): 217-228.

Wenden, A. L. (1981). The processes of self directed learning: A study of Adult language learners. Annual Convertion of Teachers of English to Speakers of Other Languages. Detroit, MI.

Zeidner, M., M. Boekaerts, et al. (2000). Self-regulation: Directions and challenges for the future. San Diego, Academic Press.