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MyEVA mobile®: A mixed-modality vocabulary learning and offline-supported mobile system for English learning

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Abstract: In recent years, many studies have examined the effectiveness of MALL (Mobile-Assisted Language Learning); however, little research has been conducted to discuss the usage of VLSs (Vocabulary Learning Strategies) for mobile language learning. In this study, the researchers proposed a mixed-modality vocabulary learning and offline-supported mobile system for EFL (English as a Foreign Language) students to improve their English vocabulary learning. An empirical experiment was conducted, accordingly, to evaluate the effects of the proposed system for vocabulary learning. The experimental results indicated the proposed system enhanced student vocabulary acquisition in general, and also benefited the participating students with four different learning styles, which are visual, auditory, kinesthetic, and tactile, respectively.

Keywords: MALL, VLS, ESL students

1. Introduction

Vocabulary learning is considered one of the most important learning aspects for second/foreign language acquisition. Mearn (1982) indicated that vocabulary learning is a major factor in successful language acquisition for ESL students. Vocabulary knowledge and vocabulary size have a significant impact on listening, speaking, reading, and writing in language learning. Oxford (1990) further argued that VLS (Vocabulary Learning Strategies) can help English learners to remember a large vocabulary more effectively. Learners can produce good learning outcomes if they use adaptive (beneficial) learning strategies. How to develop good learning strategies which make use of application software to assist ESL students in their vocabulary acquisition is a salient issue worthy of notice by SLA scholars and instructors (López, 2010).

Recently, MALL (Mobile-Assisted Language Learning) has become a new focus for language learning (Huang, et al., 2012). Chen and Li (2010) proposed a context-aware learning system, which could detect learner location by wireless positioning techniques and provide meaningful vocabulary within social, cultural, and life contexts. Lee and Chan (2007) developed a lifestyle-integrated podcast system for mobile learning which also yielded extremely positive feedback, including the improvement of uptake levels and the perceived effectiveness because it helped the students learn the subject matter. The research on VLS (Vocabulary Learning Strategies) has focused on what vocabulary learning strategies were preferred by L2 learners, and how the vocabulary of L2 learners develops. Surprisingly little work has been conducted to explore the effects of using mixed-modality VLSs on mobile-assisted language learning for ESL students.

This study proposed a mixed-modality vocabulary learning and offline-supported mobile system based on previous research of the authors (Ou Yang & Liu, 2012), named MyEVA (My English Vocabulary Assistant) mobile®. To explore the effect of MyEVA mobile® on vocabulary learning, an empirical experiment was conducted to assess student learning outcomes by administering a vocabulary proficiency pretest and posttest to the participants. In addition to proficiency levels, the researchers also examined the preferred learning styles perceived by the participants to detect which types of learners would achieve better learning outcomes. In conclusion, the experiment in this study

aimed to answer following research questions: (1) *Did MyEVA mobile® improve the learners' vocabulary capability?* (2) *Which vocabulary learning strategy was most frequently used according to the learners with different preferred learning styles?* (3)*Which learning styles can benefit most from using MyEVA mobile®?*

2. The Design of MyEVA Mobile

MyEVA mobile® is a mobile vocabulary learning system developed by the first author for Android smartphones. MyEVA mobile® has two main features: 1) Applying a mixed-modality vocabulary learning strategy: MyEVA mobile® includes four VLSs (*word card strategy, flash card strategy, Chinese assonance* [similar sounding words] *strategy, and imagery strategy*) to help EFL students memorize the target words. 2) Supporting offline use: word data, system data, log data, and user data are stored in the client-side local database (i.e., on the smartphone). MyEVA mobile® can also be used in environments that do not have an Internet connection, allowing learning to occur at any time or place. Screenshots of four vocabulary learning strategies in MyEVA mobile® are shown in Fig. 1.

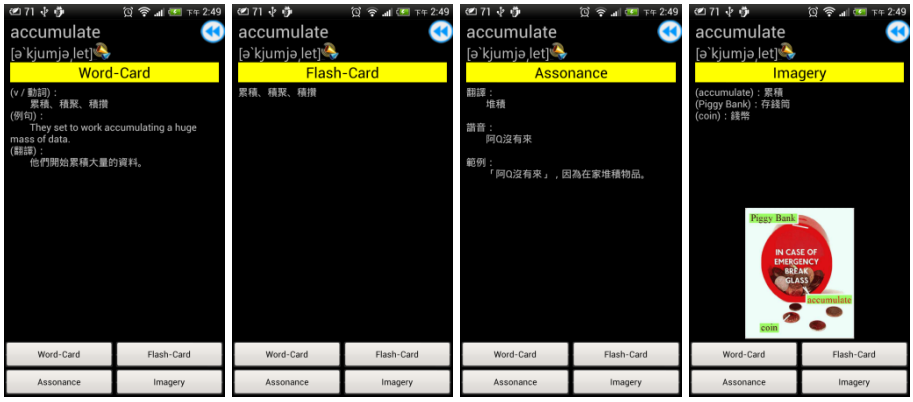

Figure 1. The screenshots of four vocabulary learning strategies in MyEVA mobile®.

3. Experiment, Findings, and Conclusion

The experiment included four steps: 1) *Presetting* - the researchers chose 55 target words form the wordlist of the standardized TOEIC (Test of English for International Communication) for the students to study, and the chosen 50 words were included in the pre- and post-tests. The MyEVA mobile® system was packaged into an Android Appliation for the participants to download for study. 2) *Training, PLSPQ (Perceived Learning Styles Preference Questionnaire) investigation, and vocabulary proficiency pretest* - at the beginning of the experiment, the researchers helped the students to install MyEVA mobile® on their own smartphones and taught them how to operate the system and use different VLSs to learn the target words. After the training, the researchers administered the PLSPQ questionnaires and vocabulary proficiency pre-tests to the participating students. The PLSPQ, consisting of 30 question items, was adapted from Reid (1987) and determined the learning style of the participant from among the six major types of perceptual learning styles (*visual, auditory, kinesthetic, tactile, group, and individual*). The vocabulary proficiency pretest, containing three parts–(*English-Chinese translation, single-choice, and matching*) had 50 questions with a full score of 100 points. 3) *Vocabulary learning phase* - after step 2, the researchers began the vocabulary learning via MyEVA mobile® and the participants were allowed one week for study. 4) *Vocabulary proficiency post-test and log data uploading* - at the end of the experiment, the researchers administered the vocabulary proficiency test to the participants again as a post-test. After the subjects finished their post-test, the researchers helped them to upload the log data from their smartphones by a special operation mechanism that the subjects had not known about previously (note: this action needed to be performed in an Internet-connected environment). The log data included all recorded operational behaviors of the participants during the period of MyEVA mobile®

use, such as "*which function was clicked?*", "*which word was learned?*", "*which VLS was used?*", and so on.

Table 1: The summary of experiment results with six preferred learning styles.

	Paired Samples Statistics					Paired Samples Test			VLS usage rate				
Type	N	Pretest Mean	Posttest Mean	Std. Deviation	Std. Error Mean	t value	Sig. (2-tailed)	Sig. (1-tailed)	WordCard	FlashCard	ChineseAssonance	Imagery	All
All	20	32.50	41.60	19.05	4.26	-2.14	0.046	0.023*	36.05	23.97	16.12	23.85	100
Visual	12	34.17	46.83	20.44	5.9	-2.15	0.055	0.028*	35.08	27.62	16.47	20.83	100
Auditory	13	36.31	46.77	20.51	5.69	-2.19	0.049	0.025*	33.16	24.94	16.50	25.40	100
Kinesthetic	16	33.25	42.13	19.38	4.84	-1.83	0.087	0.044*	31.62	25.12	17.20	26.05	100
Tactile	16	32.63	41.88	19.42	4.85	-1.91	0.076	0.038*	31.99	27.53	15.12	25.35	100
Group	15	31.47	39.73	19.75	5.1	-1.62	0.127	0.064	32.88	25.14	16.78	25.20	100
Individual	7	37.43	43.43	23.49	8.89	-0.676	0.524	0.262	42.07	20.43	18.60	18.90	100

To analyze the data collected from the tests, a paired *t*-test was performed to determine whether the pre-test and post-test yielded a significant difference in learning achievement (at the 95% confidence level). The statistical analysis showed a significant difference between the pre-test and post-test (t = -2.14, p = 0.023<0.05) with a score of 32.50 for the pre-test and 41.60 for the post-test. The overall VLS usage rates across the six different learning styles were WordCard (36.05 %), followed by Flash Card (23.97%), Imagery (23.85%), and Chinese Assonance (16.12%), respectively. Six different preferred learning styles according to the results of PLSPQ (N of Visual = 12, N of Auditory = 13, N of Kinesthetic = 16, N of Tactile = 16, N of Group = 15, N of Individual = 7) as well as the usage rate of four VLSs were identified (see Table 1). The *t*-test results revealed that there were significant differences between the pre-test and post-test (p = 0.028, p = 0.025, p = 0.044, p = 0.038, individually) for learners identified as having Visual, Auditory, Kinesthetic, and Tactile preferred learning styles; however, no significant difference in learning outcomes (p = 0.064, p = 0.262, individually) was identified for learners with either the Group or Individual preferred learning style. The results also indicated that the participants with different preferred learning styles had different VLS usage preferences.

Based on the findings, the researchers conclude that this study, combining learning strategies and preferred learning styles with the goal of improving student vocabulary learning via a mobile phone, was a successful one. The students did make improvements in their vocabulary acquisition. The students appreciated it the most when the vocabulary was accompanied with sounds and example sentences. The overall design of this study was more successful for students with Visual, Auditory, Kinesthetic and Tactile learning styles, as compared to learners whose preferred learning style was Group or Individual. These findings may not be generalizable due to the small sample size. The researchers intend to conduct a future study with an enlarged sample size and with improved MyEVA features, based on the current findings.

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