

Game-based Mobile Learning Companion for L2 Vocabulary Acquisition

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Abstract: With the emerging development of Digital Game-Based Learning (DGBL), a growing body of research has begun to explore the effectiveness of gamification of language learning. This paper introduces an evolving study which aims to explore the effectiveness of a mobile learning companion game, named “MyEVA (My English Vocabulary Assistant) Mobile”, which was originally developed by combining the metacognitive and cognitive strategies and mobile gaming technologies. In the current status of this study, the proposed system has finished development and continues to elaborate the usability according to the language experts and student suggestion. In the future, a mixed research will be conducted to investigate whether flow and enjoyment lead to improvement in L2 vocabulary learning.

Keywords: Digital game-based learning (DGBL), game-based language learning, L2 vocabulary learning

1. Introduction

Digital Game-Based Learning (DGBL) has become a new medium of reference in the language learning field over the past few years. Cornillie et al. (2012) explored learner perceptions of corrective feedback in an immersive game for English pragmatics. Miller and Hegelheimer (2006) employed a strategic life simulation video game, “The Sims”, with tree-condition experimental design (access mandatory supplemental materials / voluntary access to supplemental materials/ with no supplemental materials) in L2 courses. Ranalli (2008) replicated Miller and Hegelheimer’s (2006) research findings and also investigated whether structured play of The Sims, combined with specially designed support materials, could allow L2 learners of English not only to use the game but also to enhance their grammar and vocabulary knowledge. Rankin et al. (2006) utilized the massive multiplayer online role-playing game (MMORPG), “Ever Quest 2”, with a second language methodology to create an immersive virtual learning environment for second language acquisition (SLA). Cobb and Horst (2011) employed a video game for ESL vocabulary learning, “My Word Coach”, for the Nintendo DS or Wii, distributed commercially since late 2007.

Summarizing the literature, we find following research issues in the game-based language learning field: 1) There are only a few studies that utilize games for L2 vocabulary acquisition, 2) Most of current studies focus on using existing commercial games, which were originally created for entertainment and lack capability for vocabulary learning pedagogy, and 3) Most of the games used in language research are role-playing games (RPG) and they must be played at fixed locations (by video game console, TV, or computer).

This study describes a mobile learning companion game, named “MyEVA (My English Vocabulary Assistant) Mobile”, which was originally developed by combining the metacognitive and cognitive strategies and mobile gaming technologies. Different from the RPG games utilized by current body of research on game-based language learning, MyEVA Mobile has only a central virtual character, EVA

(English Vocabulary Assistant), who is capable of providing students with individual and useful information and helping them pass different vocabulary learning tasks. After completing different learning tasks and tests, the students can obtain virtual currency to buy variant items to dress up their EVA, or send virtual currency and items to their friends. We expect our game design of mobile learning companion to be helpful in developing a closer relationship between the students and the learning companion, which will further contribute to sustaining the students' participatory motivation. As a result, the gameplay will systematically help the students expand their L2 vocabulary.

2. System Modeling

In this study, we are developing a systematic approach to model MyEVA Mobile, called the Metacognitive and Cognitive Model of Interactivity (MCMI), as shown in the Figure 1. The MCMI describes the connection between metacognitive and cognitive processes, the types of interactivity, and the skills the students are expected to develop using MyEVA Mobile. The MCMI provides (1) A framework the developers should refer to, and (2) Interprets the users' behaviors in MyEVA Mobile. The MCMI will be useful when the researchers utilize EDM (Education Data Mining) techniques to identify the behavior patterns in MyEVA Mobile.

The MCMI is comprised of two types of interactivity that the users engage in while playing MyEVA Mobile: (1) *Game Playing*, i.e., purchasing items to enhance the EVA, and (2) *Solving Tasks*, i.e., solving different learning tasks to earn virtual currency and game experience. When the users play the game, they are expected to engage in two processes: (A) Item Information Seeking, i.e., finding a favorite item and acquiring its price, and (B) Find Solutions to Obtain Items, i.e., understanding the game rules and knowing how to obtain the items. (1) and (2) together represent the metacognitive strategies linked to Learning Companion Construction. To successfully execute metacognitive strategies, for which the users should correctly execute related cognitive processes. Searching Shopping Mall, for instance, represents a cognitive strategy the users can employ to obtain the item information; Shopping Mall Interface is a system function provided in MyEVA Mobile for the users to execute the cognitive strategy of Searching Shopping Mall.

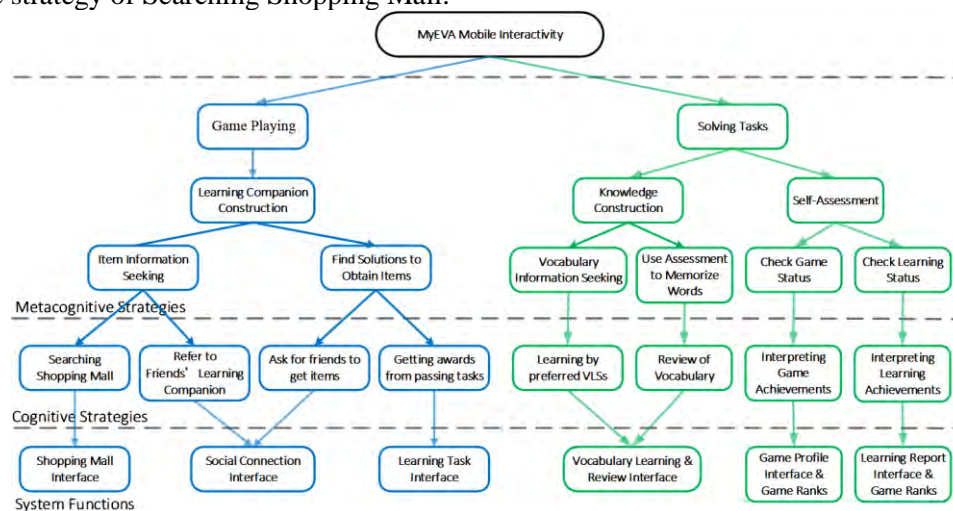


Figure 1. The Metacognitive and Cognitive Model of Interactivity

3. MyEVA Mobile

According to the MCMI, we developed MyEVA Mobile with five major functions: Vocabulary Learning & Review, Learning Task, Shopping Mall, Game Profile, and Game Ranks. System screenshots are shown in Figure 2. MyEVA has two main types of interactivity: *Game Playing* and *Solving Tasks*. The game design of MyEVA Mobile centralizes on dressing the user's virtual learning companion with various featured items, acquired by paying with virtual currency. The virtual currency of game can be obtained through completing different tasks in MyEVA Mobile. The *task* is the central

learning activity in MyEVA Mobile, requiring students to learn a number of words and pass a vocabulary proficiency test within the game. During a learning task, MyEVA Mobile provides six cognitive-oriented vocabulary learning strategies (VLS) to help students improve their vocabulary knowledge: Word Card Strategy, Flash Card Strategy, Imagery Strategy, Synonym strategy, Antonym strategy, and Example Sentence Strategy. The function of the Shopping Mall is the most charming characteristic of the game play. “Buying favorite items” will motivate the students to engage in solving different learning tasks to obtain more virtual currency. MyEVA Mobile provides over 300 items in the Shopping Mall. When the students identify their favorite items, they can purchase them for their EVAs, and the portrait of EVA will change instantly in the social community of MyEVA Mobile.



Figure 2. (A) Main interface (B) Shopping Mall interface (C) Learning Task interface

4. Conclusion and Future Work

This study describes a mobile learning companion game which is under on-going development, called MyEVA Mobile, which acts as a companion to the students during learning activities. In the current status of this study, development of the system has been completed. In the future, we aim to explore two research questions: (1) How does MyEVA Mobile improve the ESL students’ L2 vocabulary acquisition? (2) How does MyEVA Mobile affect the ESL students’ perceptions of learning, flow, and enjoyment in the game? A mixed research with vocabulary proficiency pre- and post-tests; a questionnaire survey of perceived learning, flow, and engagement (Barzilai & Blau, 2014); and EDM techniques will be conducted to explore the effectiveness and behavior patterns of MyEVA Mobile. The experimental results of this study are expected to provide insights for language teachers, curriculum designers, and, in particular, system developers of mobile-assisted language learning.

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References

- Barzilai, S., & Blau, I. (2014). Scaffolding game-based learning: Impact on learning achievements, perceived learning, and game experiences. *Computer & Education*, 70, 65-79.
- Cobb, T., & Horst, M. (2011). Does word coach coach words? *CALICO Journal*, 28(3), 639-661.
- Cornillie, F., Claebout, G., & Desmet, P. (2012). Between learning and playing? Exploring learners’ perceptions of corrective feedback in an immersive game for English pragmatics. *ReCALL*, 24, 257-278.
- Miller, M., & Hegelheimer, V. (2006). The SIMS meet ESL: Incorporating authentic computer simulation games into the language classroom. *International Journal of Interactive Technology and Smart Education*, 3(4), 311-328.
- Ranalli, J. (2008). Learning English with the Sims: Exploring authentic computer simulation games for second language learning. *Computer Assisted Language Learning*, 21(5), 441-455.
- Rankin, Y. A., Gold, R., & Gooch, B. (2006). 3D role-playing games as language learning tools. In , Vol. 25. Paper presented at the *EuroGraphics 2006*. Vienna: Austria. September 4-8, 2006