

## Is mobile-assisted language learning really useful? An examination of recall automatization and learner autonomy

Takeshi Sato<sup>1</sup>, Fumiko Murase<sup>2</sup>, and Tyler Burden<sup>3</sup>

**Abstract.** The aim of this study is to examine the advantages of Mobile-Assisted Language Learning (MALL), especially vocabulary learning of English as a foreign or second language (L2) in terms of the two strands: automatization and learner autonomy. Previous studies articulate that technology-enhanced L2 learning could bring about some positive effects. The use of technological functions in a mobile device, for example, might activate learning processes, resulting in the easier recall of the target vocabulary. In addition to this, mobile-assisted L2 learning could also facilitate learners' agency or autonomous learning in that successful MALL should rely largely on the agency (Pachler, Bachmair, & Cook, 2010) as an autonomous learner. While engaging in L2 learning with mobile devices, L2 learners should be expected to be autonomous agents not only by receiving knowledge and messages from peers and teachers but also by responding to them. These processes differ from those such as passively listening to the teacher and receiving knowledge from the teacher. From this standpoint, empirical and questionnaire studies are conducted to verify that MALL could enhance the recall of the target phrases for L2 writing and also learners' autonomy, in comparison with paper-based vocabulary learning.

**Keywords:** mobile assisted language learning, vocabulary recall, writing, learner autonomy.

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1. Tokyo University of Agriculture and Technology, Japan; [tsato@cc.tuat.ac.jp](mailto:tsato@cc.tuat.ac.jp)

2. Tokyo University of Agriculture and Technology, Japan; [fmurase@cc.tuat.ac.jp](mailto:fmurase@cc.tuat.ac.jp)

3. Meisei University, Japan; [burden.tyler@meisei-u.ac.jp](mailto:burden.tyler@meisei-u.ac.jp)

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## 1. Introduction

A previous study (Sato, Matsunuma, & Suzuki, 2013) revealed that using mobile devices to learn L2 vocabulary could enhance the automatization of vocabulary recall, which can save on cognitive resources, allowing them to be reapplied toward reading activities and thus successful L2 reading comprehension. Those findings supported the assertion of the efficacy of L2 learning using multimodal functions, like many other previous studies that argue that the convergence of technologies in learning resources will improve L2 learners' performance (e.g. Sato & Suzuki 2010, 2012; Yeh & Wang, 2003). Along with the findings in computer-assisted L2 learning, studies on mobile-assisted language learning seem to focus mainly on the benefits of specific technological advances in discussing the advantage of MALL.

However, in order to make more robust claims about the advantages of mobile-assisted L2 learning, the agency (Pachler et al., 2010) or autonomy (Holec, 1981) of learners should also be considered. L2 learning with a mobile device might involve carrying out tasks by receiving learning resources online, as well as sending information such as texts, sounds, photos or movies via one's devices, no matter when and no matter where one may be. To carry out such activities, L2 learners are expected to be autonomous agents, not like those who passively listen to their teachers and receive knowledge from them. Furthermore, the use of a mobile device would allow wider access to authentic L2 resources and enable learners to actively search for resources for the purpose of their own learning, which can be seen as an important quality of autonomous learners who take control over learning content (Benson, 2001).

This study, therefore, hypothesizes that successful mobile-assisted L2 vocabulary learning through the technologically advanced representation of knowledge would enhance learner autonomy, as well as the automatization of vocabulary recall. Based on this hypothesis, this study verifies the effectiveness of MALL in a setting that differs from the one described in Sato et al. (2013), focusing on phrases for academic writing. While developing mobile-based material to learn the phrases that are required to write an academic essay consisting of several paragraphs, empirical research was conducted to examine the following two research questions:

- Does learning the phrases with an application available on mobile devices facilitate the recall of target vocabulary before and during a writing activity?
- Do L2 learners get motivated enough to function as autonomous agents by using a mobile application as a learning tool?

In addition to the experimental research, a questionnaire survey was conducted before and after the implementation of the mobile learning practice. In the following section, the details of this experimental and questionnaire research are described.

## **2. Method**

### **2.1. Participants**

Ninety-seven undergraduate students participated in this research, almost all of which were sophomores from the faculty of engineering in a Japanese university, where some of the authors of this paper are teaching English as a foreign language. Students' majors, which include life science, chemical science, physics and electrical engineering, are not related to English studies, yet their English language skills are sufficient to compose several English sentences by themselves. Participants were divided into two groups: a control group and an experimental group. As the groups were divided according to their English writing classes within their respective departments, the level of their language skills was expected to be equivalent, although no test was conducted to corroborate this assumption.

### **2.2. Target vocabulary**

The participants were asked to learn one hundred phrases frequently used in academic writing. The phrases were extracted from several textbooks and reference books for L2 learners. They consisted mainly of expressions that clarify the logic flow of an essay such as "in the first place" or "provided that". To confirm the difficulty level of the phrases for the participants, a questionnaire survey was conducted prior to the research; the participants were asked to answer whether or not they already knew each phrase.

### **2.3. Treatment**

The control group was asked to memorize the aforementioned phrases with their corresponding Japanese translations in a paper-based vocabulary list. The experimental group, on the other hand, was asked to learn the phrases on their smartphone. To do so, learning materials were developed using Quizlet, a free online learning tool to generate vocabulary learning resources, which are then available on mobile devices such as iPhone and Android. As shown in Figure 1 and Figure 2, the online resource provides different kinds of quizzes for the phrases, for instance matching, and fill in the blanks. These quizzes are available anytime and anywhere as long as students can access the Internet with their smartphone. After

being provided with instructions on how to install, register and use the resource on their own mobile device, the experimental group was asked to learn the phrases outside the classroom. To encourage learning in each treatment, the instructors announced that the test for the phrases would be held three weeks after, and the scores would count towards one of their grades for the writing class.

Figure 1. An example of the quizzes developed by Quizlet (matching)



Figure 2. Another example of the quizzes developed by Quizlet (fill in the blanks)



## 2.4. Procedure

Just after the introduction of the learning materials, all participants were asked to answer an Internet-based questionnaire about their attitudes and views toward learning English, which is designed to measure the technical and psychological dimensions of learner autonomy (Murase, 2015). Students accessed the website and answered the questionnaire items outside the classroom via their mobile devices or PCs.

The test and an essay writing task were conducted three weeks after the introduction of the materials, for a duration of ninety minutes in total. Within the first ten minutes, the participants were asked to answer twenty fill-in-the-blank questions created from the phrases. The questions were selected from the results of the questionnaire carried out before the introduction of the materials. They were selected on the basis of being the phrases that the participants had the least prior knowledge of. They were also asked to write the time they had finished answering at on their answer sheet. After the test, a timed essay writing task was given. The participants were asked to pick out one of the four topics which were given by the instructors and to then write an essay consisting of at least three paragraphs with their opinions. Although they were not allowed to refer to any dictionaries, several key words of the topics were given by the instructors.

After finishing the writing task, they were asked to answer the Internet-based questionnaire again within a few days.

## 3. Results and discussion

The data collected in this research were analysed to find out the differences between the control and experimental groups. First of all, the score and termination time of the fill-in-the-blank test were compared. In the control group ( $N=45$ ), the average score of the test was 6.18 ( $SD=6.02$ ), and its average termination time was 539 seconds ( $SD=119$ ). The average score and termination time of the experimental group ( $N=52$ ) were 9.14 ( $SD=6.43$ ) and 532 seconds ( $SD=110$ ), respectively. A  $t$ -test showed significant differences between groups with respect to average score ( $t(95)=-2.33, p<.05$ ), but no significant differences with regard to termination time between the groups ( $t(95)=0.28, p>.05$ ).

The results of the Internet-based questionnaire about learner autonomy, which were administered before the treatment (pre-test) and after the treatment (post-test), were also compared. As for the pre-test, no significant difference was

observed between the control group ( $N=33$ ) and the experimental group ( $N=33$ ). In the post-test, there was no significant difference between the control group ( $N=46$ ) and the experimental group ( $N=30$ ), except for two items concerning taking notes while learning, for which the control group marked higher scores. On the other hand, when comparing the results of the pre-test and the post-test, both groups marked higher scores (suggesting a higher autonomy) in the post-test. However, there was no significant difference between the scores in the two tests.

Another section with questions about vocabulary learning experiences was added in the post-test. A  $t$ -test was performed and, while no significant difference was found between the control group ( $N=46$ ) and the experimental group ( $N=30$ ) in the frequency of their learning during the three weeks ( $t(74)=-.702, p>.05$ ), there was a significant difference concerning their motivation towards vocabulary learning ( $t(74)=-2.01, p<.05$ ). This indicates that students in the experimental group ( $M=2.93, SD=.640$ ) felt higher motivation towards vocabulary learning on mobile devices than those who used the traditional paper-based list ( $M=2.63, SD=.645$ ).

#### 4. Conclusions

This study has discussed the advantage of MALL from two perspectives: automatization and autonomy, and set out to explore whether the utilization of mobile devices in L2 learning would not only facilitate the recall of the target vocabulary, but also stimulate learner autonomy. To this end, an experimental study was conducted, whereby students were assigned to two different groups (control vs. experimental) and tested after learning the target vocabulary with the help of paper-based vocabulary lists vs. MALL-based learning materials. In addition, the students participating in the study were asked to compile a questionnaire on learner autonomy. The findings of the study show that the advantage of MALL can be found in enhancing the recall of the target language. Meanwhile, although the questionnaire study did not show any statistically significant effects of MALL on the development of learner autonomy, the data indicated that students in both groups showed a slightly higher level of learner autonomy after the study and also that MALL seemed to contribute to higher motivation towards L2 vocabulary learning. These findings appear to imply that L2 learning with advanced technology should be examined not merely in terms of L2 learning gains, but also motivational effect, which would make the use of mobile devices for L2 learning more effective. Nevertheless, a longer-term study would be necessary to see more meaningful changes in learner autonomy.

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