

Student Perceptions of Mobile Learning of High frequency Vocabulary Using the “Memrise” App.

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Abstract

This study compares two groups of EFL Japanese university students studying the vocabulary from the New General Service List (NGSL) using a spaced repetition mobile application called “Memrise.” One of the groups studied with the original English definitions of the words, while the other used Japanese translations. Participants’ amount of time studied, reactions, and comments were analyzed through time sheets, questionnaires, and follow-up interviews. Special attention was paid to spaced repetition and principles of gamification in the discussion, and participants’ statements also showed that competition was a large factor in desire to continue to use the application.

It has been claimed that vocabulary is a fundamental, yet often overlooked element of SLA (Folse, 2004). Particularly in the case of high-frequency vocabulary, many academic and pedagogically-oriented sources state that deliberate attention to the most frequent 2000-3000 English words allows students to handle a wide range of written and spoken texts. Furthermore, the intentional, rather than incidental, learning of these words, through approaches such as word cards incorporating L1 translations, provides learners with a highly time-efficient method of initially acquiring the basic meanings of these important lexical items (Nation, 2013).

Mobile-assisted language learning (MALL) offers students a convenient and approach to the intentional study of high-frequency words that can incorporate a range of theoretically sound study methods such as automated spaced learning, computer adaptive flashcards, and receptive/productive quizzing. (Zhang, Song & Burston, 2011). Usage of mobile technology is now commonplace worldwide and word- card applications on smartphones or tablets offer L2 learners an opportunity to greatly increase their vocabulary size outside of the classroom. These applications are often designed with scientifically-supported study methods such as spaced repetition, the utilization of graphics or mnemonics, and scheduled quizzes to encourage retrieval (Nakata, 2011; Zhang, Song & Burston, 2011). Furthermore, technology has the potential to introduce game-like elements or attractive interfaces to make the sometimes grueling or tedious process of word-card study more motivationally or affectively robust (Kapp, 2012; Abrams & Walsh, 2014).

This study aims to analyse and evaluate the use of MALL in studying high-frequency vocabulary taken from the NGSL (New General Service List). The New General Service List (1.0) is a 2818 word high-frequency word list that offers more than 90% coverage of general English texts that is based on a 273 million word subsection of the Cambridge English Corpus (Browne, Culligan & Phillips, 2013). Memrise is a free online spaced-repetition flashcard app that allows users to create and study flashcard sets for over 200 languages. In this study, students were divided into two groups studying either an English-English or English-Japanese NGSL flashcard course.

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An example of a English-Japanese flashcard

Student progress in the word card sets was tracked via student self-report time sheets and informal monitoring of students' individual Memrise leaderboard point totals. Subsequently, questionnaire and interview data were used to investigate university students' impressions of the word- card software. Through the analysis of these data sources, this study hopes to provide insight into the pedagogical potential that MALL provides for intentional vocabulary learning within a balanced curriculum.

Literature Review

The practice of studying vocabulary through word cards or lists is contentious (Folse, 2004, 35-45), and further concerns have been raised when L1 definitions are used in the construction of such intentional approaches to vocabulary study (Ali, 2012). This is partly due to some teachers feeling that they need to 'stomp out' L1 use completely so as to discourage students from reverting to its use in class. However, despite these concerns, an intentional approach to vocabulary study allows students to raise their initial awareness of a large number of words in a very short time in comparison to the characteristically time-inefficient incidental vocabulary learning approaches (Nation, 2013).

Given that research has shown that students need to recognize 95% (minimal) or 98% (optimal) of the words in a given text in order to read without assistance (Laufer & Ravenhorst- Kalovski, 2010), many researchers insist that intentional vocabulary learning does indeed have a valuable role in complementing incidental learning within a balanced curriculum. Despite many teachers' reservations regarding its use, past research has suggested the inclusion of L1 definitions does, in fact, benefit the learning of L2 words (Laufer & Shmueli, 1997).

Computer-assisted language learning (CALL) and MALL present new opportunities for intentional vocabulary learning via online word card sites or apps. In a study by White and Mills (2015), the inclusion of smart phones and tablets for study in a classroom EFL setting was met with mixed results by Japanese students. Surveys of university students studying EFL were carried out canvassing relating to their attitudes towards smartphone technology and its use in language learning. It was found that, during their research in 2012, although 85% of students surveyed owned a smartphone, only 7% of students used their phone for studying. On a more positive note, however, it was also reported that 78% of students believed smartphones would be "helpful" or "very helpful" in their language learning (White and Mills, 2015, p. 9-10). Another study on the use of mobile phones for vocabulary learning in a Chinese university found that MALL provided a convenient way for students to attend to vocabulary study and review whenever they had brief periods of free time during their daily lives (Zhang, Song & Burston, 2011).

Modern word card apps such as Quizlet and Memrise also offer students automatic spaced-repetition scheduling and expanded rehearsal of vocabulary items. In other words, users of such apps can review the words many times. This has been shown to have strong beneficial effects on long-term memory and vocabulary acquisition in a range of studies (Bjork et al., 2013; Mondria & Mondria-deVries, 1994).

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Many word card apps also feature a quiz function in which learners are given regular quizzes on previously-learnt items rather than simply confirming recall. Regular quizzing rather than relying on learner intuition about the degree of word knowledge has been claimed to be beneficial as it reinforces both receptive and productive knowledge (Nakata, 2011) Furthermore, it creates a 'testing effect' where it has been found that testing enhances long-term retention of material to an even greater extent than additional study sessions (Butler & Roediger, 2007), and additionally provides a high number of encounters with words. It also avoids ineffective study practices such as cramming, overestimation of understanding, and judgement errors caused by learner intuition (Bjork et al., 2013). Furthermore, because word cards are reviewed randomly with word card software, it lowers the chance of vocabulary being grouped together into semantically similar sets (such as "smart" and "studious"), which can lower the effectiveness of the vocabulary learning" (Nation, 2013).

A feature often present in word card software is gamified elements. Gamification is the inclusion of "game-like" elements in non-game activities and environments. Score leaderboards, points, status badges and rewards are all examples of gamified elements that could be applied to an educational program (Kapp, 2012). In a study of university students in Hong Kong, Yip and Kwan (2006) found that students using online games to study vocabulary, when compared with a control group engaged in activity-based lessons, performed statistically better in post-tests that measured receptive and productive knowledge of vocabulary items featured on two selected websites. Furthermore, although drawing attention to the need for teacher support supplementing an online gamified approach, questionnaire and interview data showed that both students and teachers had mostly positive reactions to this form of online vocabulary study.

In a more recent U.S.- based study, Abrams and Walsh (2014) investigated high school students using an online vocabulary study program called “The Challenge” in order to learn words in SAT support sessions. “The Challenge” featured a number of gamified elements such as points and player statuses that could be earned through study. The researchers reported that some students were engaged and motivated by statuses that they earned as well as by being able to refer to records showing how many words they had learnt.

Competitiveness also appeared as a factor in the sustained use of the software. One participant joked that she had achieved a higher status badge than her roommate had, and that she intended to achieve an even higher status in the future. Although some students were found to be uninterested in the software and were largely apathetic towards the points and achievements, this study claimed that gamified software like “The Challenge” offered most students “opportunities to become motivated, self-directed learners” (Abrams & Walsh, 2014, p. 57).

Research Questions

The research questions addressed in this study are as follows:

1. What are student perceptions between the two study conditions (i.e. English-English and English-Japanese) in regards to motivation to use the app?
2. What are the potential pedagogical benefits of MALL for deliberate vocabulary learning?

Methodology

Participants

27 students (Male = 5; Female = 22) from two different classes at a private university in Japan specializing in foreign-language education volunteered to participate in the study. All of the participants were native Japanese speakers in their first year, majoring in English as a Foreign Language, and were between the ages of 18 and 20 years old. The proficiency of students attending the university is measured by an in-house test, the results of which are used to stream them into three different tiers (low, mid, and high). Participants in the present study were taken from one class of low and one class of mid tiers. The group that utilized the English-Japanese list were comprised of students from the low tier class, while the group studying the English-English list was taken from the mid-tier class. All participants were given a small one time monetary compensation for completing the 16 week long study, and additional remuneration was awarded for the four participants who were selected for the interview.

Materials

To take part in the study, each participant used their personal iPad and downloaded the “Memrise” application. “Memrise” was chosen on the basis of the researchers’ personal experience using the app. for language study as well as the relative lack of studies undergone using it. One of the two vocabulary lists used in the study (English-English or English-Japanese) was manually uploaded into each participant’s iPad by the researchers before the study began.

To obtain qualitative data, a weekly self-report time sheet and a questionnaire were made, and four participants who used the app the most were selected for a follow-up interview, which was recorded. A time sheet was given to participants at the beginning of each week, and they were asked to fill in both the number of minutes

studied each day and to mark the same onto a line graph. Due to having no report function in “Memrise,” the logs were used primarily to give the researchers insight into total study time, but it also allowed the participants both a numerical and a visual representation of how much time they were putting into studying. Because of the teacher-student relationship between the participants and the primary researcher, directly encouraging studying with the app could have had an effect on the results. In other words, by diligently filling out the time-sheets and submitting them each week, the participants gave themselves feedback on their progress nullifying the risk of influencing the results through direct intervention.

The questionnaire was comprised of a series of questions concerning: 1) the participants’ background in English language learning and the types of media to which they expose themselves mostly, 2) competition and the leaderboard, and 3) general dispositions concerning use of the app. and its potential for learning vocabulary. The items on the questionnaire were devised and edited based on the input of fellow qualitative researchers at the institution where the study took place. The voluntary interviews lasted between twenty and thirty minutes, and comprised of questions about the same topics as the questionnaire. Said interviews were transcribed. The interviews were undergone to enrich the data collected with Details about how the questionnaire and interviews were conducted and used during the course of the study follows.)

Procedure

The 27 participants were first placed into two different groups: one using the English-English standard NGSL, and one using the translated English-Japanese version. Groups were divided based on which class they were in at the university because freshman students at this particular university very rarely if ever mix with other freshman classes. In this way, participants could freely talk with one another about their

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own group’s study conditions, but would be unlikely to do so with the other group. This was done to ensure that each group had a truly unique condition for easier comparison.

Students were given their first time sheet and told that they could begin to study the NGSL in their free time. Participants were instructed to record how many minutes they studied each day on the timesheet in both numeric and line graph forms. Each week, participants would exchange their time sheet for a new one and were asked to continue like this until the end of the study period of 16 weeks.

At the end of the study period, the questionnaires were administered. Based on the questionnaire and time sheets data, four follow-up interviews were scheduled and recorded for four of the participants. Interview participants were selected based on whether they had experienced overall positive or negative affect (one of both from each group) and finally how much time they had dedicated to studying the list. Participants who spent less than the average amount of time studying with the app as determined by the average of the total times reported on the weekly time-sheets were excluded from the interview selection process.

Results

Data from the questionnaires revealed many potential avenues of inquiry, but the most interesting comments pertained to affordances of each learning condition, competition/game elements, and opinions about the features of “Memrise” such as spaced repetition.

Based on the questionnaires and time-sheets, the researchers were able to broadly categorize participants into two groups: those with positive affect and those with negative. We defined positive affect in the following manner: The participant wrote mostly positive comments about their use of “Memrise” in the questionnaire and, if conducted, confirmed the same in a follow-up interview. Further, the participants must

have actually used “Memrise” as evidenced by the self-report time sheets to a degree that would reasonably warrant indexing them as having positive affect (i.e. equal to or greater than the average time studied). A participant with negative affect was defined as the opposite; either the participant hardly used “Memrise” at all, or used it but did not express desire to use it for the most part, or felt that “Memrise” was not useful for their vocabulary learning.

Overall, student questionnaire and interview data suggested that “Memrise” could have been a positive factor across both study conditions. Of 14 participants in the English-Japanese group, 11 (78 percent) of them reported the sense that their vocabulary had improved. The English-English group was more mixed with 8 of 13 participants (61 percent) reporting the same. While a majority of the participants in both study conditions felt that their vocabulary improved, there were a greater number of participants categorized as “negative affect” in the English-English group than the English-Japanese group.

	English-English	English-Japanese
Positive Affect	6	9
Negative Affect	7	5

Table two: Number of participants categorized as “positive” and “negative” affect in each condition.

The major reason for dominant negative affect in the English-English group was due to participants not continuing to study the NGSL with “Memrise” on a regular basis. On the other hand, the main reason from the English-Japanese group was that they

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already knew the core meaning of the words as evidenced by their responses and interviews.

Both study conditions afforded different kinds of learning opportunities. Questionnaires from the English-English group revealed that the definitions of the target words allowed access to a deeper, more nuanced understanding of the words. This is because the definition of the words often contain synonyms of the target word, which is part of the ‘word associations’ category of Nation’s word knowledge paradigm (2013). Several mentioned that this made learning each individual word time-consuming because of the cognitive demand involved in processing the definitions themselves.

English-Japanese group participants often mentioned spelling as a positive element of the NGSL. Questionnaires stated that spelling was something that often gets forgotten, especially on words that were presumably first introduced very early on in their English studies. In other words, the NGSL may have given these participants the opportunity to hone their knowledge of vocabulary form.

Further, both conditions’ participants brought up the spaced-repetition aspect of “Memrise” and thought it to be useful for remembering the meanings of the words. For instance, “Coco,” said the following during a follow-up interview:

J. Reed	What did you like about it the most?
Coco	We can learn the word again and again . So, if I can remember, but few days ago.. few days later, we can learn again , the word.

Bold type added by researchers for emphasis

Finally, participants were asked whether or not they noticed the leaderboard at the end of each study session which ranked their username against the usernames of others

using the list. If they did notice this, to what degree did they have feelings of competitiveness? Analysis of the data in the questionnaires found that competitiveness was potentially linked with positive affect across both groups and non-competitiveness with negative affect with 22 of the 27 participants matching this pattern. This facet of the research is expounded upon in the discussion below.

Discussion

This research, though broad, addressed several major concerns in vocabulary learning including student affect regarding extra-curricular use of the Memrise app and the role of first and second language in vocabulary learning and study. The findings will be discussed, and the paper will close with an outline of further potential research and pedagogical implications.

Learning the NGSL with “Memrise”

As mentioned in the results section, both lists provided participants with different learning opportunities. The English-English list allowed participants to access deeper knowledge of vocabulary by familiarizing themselves with word associations (Nation, 2013). For example, the word ‘accept’ is defined as “to receive or take something that is offered,” whereas the same item in the English-Japanese list gives the core meaning of the word only (i.e. *ukeireru* ; *uketoru*). The English-Japanese list, on the other hand, made word *form* (i.e. spelling) more salient because the meaning was immediately clear in the students’ L1.

Moreover, both lists were used with the “Memrise” app, which is built with spaced repetition of vocabulary items and gamification in mind. The benefits underlying both spaced repetition and gamification are cognitive rather than linguistic, and therefore both lists afford these regardless of the language used.

Gamification and Competition

“Memrise” contains gamified features that several participants responded to positively. For instance, “Seri” stated in an interview that although she did not learn much from using the app, she enjoyed the visual “growth” icon accompanying each vocabulary item. With each correct review, the “growth” icon will sprout from a seed into a small plant, and then into a flower, and so on until it is fully blooming. Seri continues: “It is easy for me to see that my vocabulary is ‘growing.’”

Other than the flower icons, the leaderboard points are based on how much a user reviews and learns the words in a given list and the accuracy of their responses during the review stage. Educational games researcher Karl Kapp, in discussing motivating factors within games, mentions leaderboards as one of an array of potential tools for gamification of education (Kapp, 2012, p. 33-35). The caveat Kapp offers is that the points on a leaderboard should not be random, but should be directly tied to the activity within the game in order to encourage that activity. Kapp derives this notion from the behaviourist B.F. Skinner’s work on operant conditioning (Kapp, 2012, p. 59-63). While behaviourism has largely been replaced by cognitive theory in the last 60 years and has been critiqued in the literature for not accounting for the generativity associated with natural language production, neither “Memrise” nor Kapp contend that students are acquiring language on account of the rewards themselves. Rather, the gamification elements such as points, aesthetics, and recognition on a leaderboard (i.e. competition) serve to motivate use of the app, which, using sound principles of language acquisition and learning in general such as spaced repetition (Mondria & Mondria-De Vries, 1994), may promote second language acquisition. While it could be argued that intrinsic motivation trumps extrinsic motivation, the latter can potentially support the former. In other words, elements of gamification in “Memrise” indirectly promote learning by encouraging participants to *want* to learn in a facilitative manner.

In this study, a majority of participants who noticed the leaderboard and felt competitive with others on the list claimed that it increased their motivation to study. Below are two excerpts from targeted interviews illustrating this point:

Excerpt one

Ryota	[referring to someone else on the leaderboard] Maybe this person is competitive to me, but she lost [laughter]
J. Reed	Did you look at this person a lot?
Ryota	Yes! It help my motivation.

Bold type added by researchers for emphasis

Excerpt two

Coco	When I see the ranking, and I lose the other member, I think I have to study more, and I can learn more, so ranking is good for me.
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Bold type added by researchers for emphasis

It is worth mentioning that both of the excerpts above are from participants categorized as “positive affect.” Most with “negative affect,” again, did not find the app to be motivating for them in any specific or general sense.

Conclusion and Pedagogical Implications

This study is unable to make any strong claim quantitatively about the efficacy of “Memrise” or spaced repetition. However, based on the overwhelmingly positive qualitative feedback received from participants in the study, it can be argued that “Memrise” can at least be a motivating factor for vocabulary acquisition with certain

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students. Competitiveness especially was found to be potentially linked with the desire to learn more words in the app.

Secondly, student responses in the English-English group confirmed our suspicion that, when being introduced to words for the first time, a Japanese meaning may be easier to learn for a Japanese learner than a much longer English definition. On the other hand, students aspiring for deeper, more complete knowledge of words already encountered and learned may have something to gain from seeing the target word defined in English. Finally, autonomous use of an app like “Memrise” outside of class time can only serve to increase the amount of exposure that students have to the language, thereby giving them increased practice and opportunities for learning or acquisition.

The current study limited its scope to examining affective response amongst university English majors studying with “Memrise” outside of the classroom. Future research focusing on MALL might instead look at whether or not there is a difference in affect between majors and non-majors of English Language studies, or compare autonomous and classroom-oriented study. Finally, the question as to why learners studying vocabulary with L2-L2 definitions might have greater negative affect versus those who study vocabulary using L1 meanings is a topic that merits further investigation.

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Interview Questions

1. Is vocabulary learning important to you?
2. What would you change to make it more enjoyable / to finish the list?
3. What was the most difficult point for you?
4. What did you like about it the most?
5. What is your impression of the other list?
6. Would you have rather used the other one?

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