Virtual Cards: An Action Research Project Exploring How Far Online Flashcards Can Invigorate Vocabulary Learning for Students

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Abstract

This action research project explored how vocabulary flashcard websites can help learners who lack motivation and strategies for vocabulary learning. Vocabulary flashcard websites allow users to practice drills using 'virtual flashcards' and games. The aim of this research was to explore the extent to which these websites could invigorate vocabulary learning for students studying ESL at Toyo Gakuen University. Three websites were trialled over a ten week period in nine different classes, and their impact monitored through observation, student feedback, and quiz scores. Data indicated that students found this an enjoyable and effective way of learning. A number of recommendations are made as to how teachers may take advantage of these websites.

1. Introduction

Demotivation is a well documented problem among Japanese university students and has been linked to the volume of vocabulary study that is demanded of them in high school (Falout & Maruyama, 2004). At our university, English learning in general has been characterized by low levels of motivation, with some students failing to engage in activities. Recent tests using the *Lexxica* online vocabulary testing tool suggest that some of the students may only know 500 of the 2000 most frequently used English words. Yet, most students did not seem to enjoy vocabulary learning and were attaining low scores even in vocabulary tests which counted towards their grades. This action research project set out to tackle this issue.

Vocabulary learning is an area that is often neglected. Oxford and Scarcella (1994) found low levels of vocabulary recycling in textbooks and also that teachers often leave vocabulary learning to students, rarely teaching vocabulary learning techniques. There is a need for teachers to spend class time helping learners to cope. We can break vocabulary learning down into two stages (Waring, 2001). The first stage involves simply connecting the meaning and the form of the word, with deeper word knowledge achieved at the second stage. Our students are struggling at

the first stage. Waring recommends rote memorization, with the use of vocabulary cards as a quick and effective method. Nation (2001) suggests that this strategy becomes more effective when combined with L1 translation. Nation defends the use of L1 translation:

> Although there are frequent criticisms raised of learning L1-L2 word pairs, these criticisms are not supported by research. The research shows the opposite, the direct learning of L2 vocabulary using word cards with their L1 translations is a very effective method of learning. (2002:4)

Research strongly supports the use of L1. In Ko's (1995) study on the effects of glosses on vocabulary learning, L1 glosses were more effective than L2 glosses. Aizawa's (1998) study also showed that groups with L1 glosses scored higher on vocabulary tests than those without, and Luppescu and Day (1993) found that using bilingual dictionaries led to more vocabulary learning than English-English dictionaries.

We had been using paper flashcards to help the lowest level students with sight reading and vocabulary retention. This approach was successful and the students showed enthusiasm. However, it was time consuming to make the cards. Desk space was a problem in some classrooms and the cards were not durable. We felt that there may be advantages to using the Internet for flashcard drills in terms of motivation, practicality and flexibility. There are a number of popular websites which allow learners to practice drills using 'virtual flashcards,' many of which offer a range of vocabulary learning features in addition to the basic drill function. These websites allow users to input or upload a list of lexical items, along with definitions or translations, or to study a list uploaded by another user. We felt these sites would appeal to our students.

Warschauer (1996) argues that 'a computer is ideal for carrying out repeated drills.' This is because students can work at their own pace and computer use can be 'intrinsically motivating' (Moras, 2001). Johnson suggests that the power of computer games to captivate is related to 'their ability to tap into the brain's natural reward circuitry' (2005:34). Computer games can place users in "flow states" (Bowman, 1982). Csikszentmihalyi defines flow states as:

> A negentropic state of consciousness-high concentration and involvement, clarity of goals and feedback, and intrinsic motivation, all made possible by a balance between perceived challenges and personal skills (1988:60)

Yip and Kwan (2006) found that not only did their students prefer learning vocabulary through online games but that they retained the vocabulary longer. There are clear indications that online flashcards have the potential to invigorate vocabulary learning for our students.

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2. The Project

2.1 Research Questions

This project is a loosely collaborative action research project in which the researchers used several online websites over a ten week period. We formulated the following research questions:

● Can the use of online flashcards help our students learn vocabulary?

● How can we make vocabulary learning more engaging and enjoyable for our students?

● How can we motivate our students to study vocabulary outside of class time?

● Which is the best online flashcard website for our students?

We selected three sites which we felt might meet the needs of our students.

2.2 Websites

The three sites we selected were *StudyStack, Quizlet* and *WordChamp*. Table 2.2.1 provides a summary of each site's features and limitations.

Table 2.2.1 Virtual Flashcard Website Features

Website	Can upload a list	Audio	Game(s)	Flashcards can be embedded on a webpage	Has tests	Can track progress	Can print out a word list	Discussion Forum
StudyStack	○	×	○ (many)	○	×	×	○	×
Quizlet	○	×	○ (one)	×	○	×	○	×
WordChamp	○	○	×	×	○	○	○	○

The virtual cards used in this project had English on one side and Japanese on the reverse (see the screenshot, figure 2.2.1) and there were typically 20-40 lexical items in a deck. Vocabulary lists were fixed by the teacher in some cases and student generated in others. The cards were largely produced by the teachers, and students accessed the virtual decks via links from their class webpage. A portion of class time was spent on drills, games and other activities. Figure 2.2.2 is an example of one of the games.
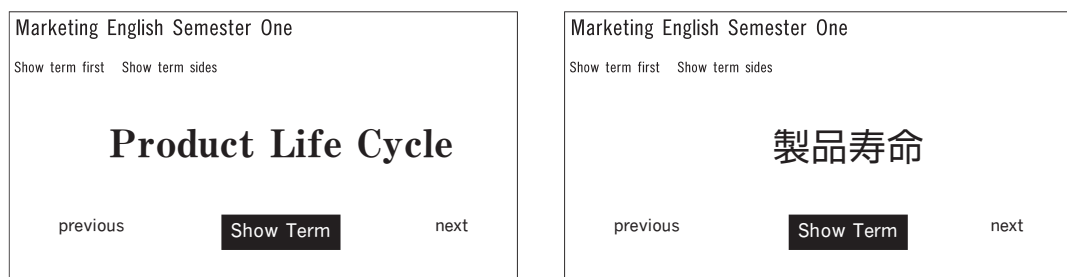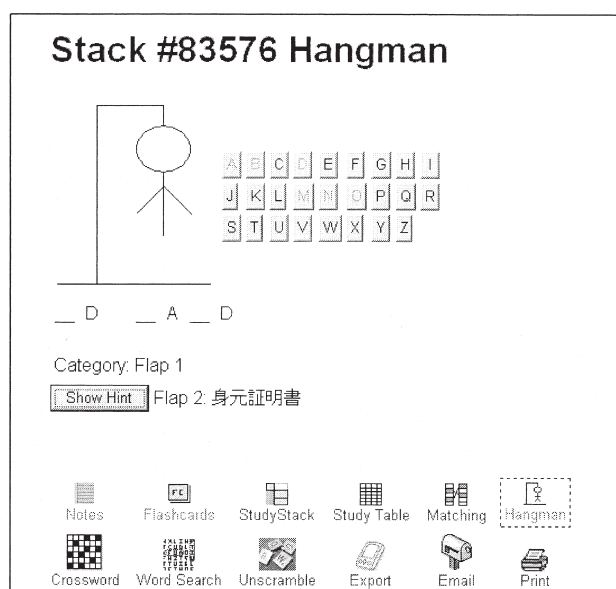
Marketing English Semester One	Marketing English Semester One
Show term first Show term sides	Show term first Show term sides
Product Life Cycle	製品寿命
previous Show Term next	previous Show Term next

Figure 2.2.1 Virtual Card (*Quizlet*)

Fig. 2.2.2 Vocabulary Game (*StudyStack*)

2.3 Participants

As the project unfolded, other faculty members became involved and began to experiment with the websites in their own classes. The class requirements and facilities varied (see table 2. 3.1), but data collection methods were similar. Teachers observed their classes and kept field notes and sought feedback from students via written comment forms or online surveys.

Table 2.3.1 Participating Classes

Year	Course	Website(s) Used	Data Collection	Facilities
1st	General English (5 Classes)	*StudyStack*	Observation Written feedback	Most lessons in regular classroom with one notebook computer
2nd	English Through Music (2 classes)	*StudyStack* *WordChamp* *Quizlet*	Observation Online Survey	CALL room
3rd	Office English (1 class)	*StudyStack* *WordChamp* *Quizlet*	Observation Online Survey	Computer Room (no headsets)
4th	Marketing English (1 class)	*Quizlet*	Observation Written feedback	CALL room

3. Results and Discussion

3.1 Motivation and Enjoyment

Overall, students found the flashcards engaging. The learners were observed playing 'enthusiastically' (field notes, 2nd year: Music) and were reluctant to stop:

Students were asked to close the WordChamp window and given another task to do. Later, I noticed S furtively continuing the drill. I asked if she had become addicted. S replied with feeling, 'I'm addicted!' (field notes, 4th year: Office)

Student feedback also indicated that the activity was enjoyable and stimulating:

● I studied English enjoying the game (4th year: Office)
● I was very sleepy but flashcards were very interesting (1st year: GE)
● I was surprised a lot of functions (1st year: GE)
● 遊びながら学べて楽しかったです、もっとやりたい ［It was fun to study through play. I want to do more.］ (1st year: GE)

However, fatigue was observed and reported if the sets were too large (over 30 cards).

The amount of social interaction generated by the activity was greater than expected. Students approached the websites in a variety of ways: 'Some were playing individually, some collaboratively' (field notes 2nd year: Music). In some cases there appeared to be a competitive element:

StudyStack was set up in the corner of the classroom with the page displayed on a TV screen. After finishing a task set from the textbook, S, N, H & S left their desks independently to use StudyStack. S called to T, K & F to join him. The four students raced each other to call out answers. The activity maintained the attention of these motivated students while others in the class were finishing the task. The flashcards are useful for the teacher as a classroom management tool. (field notes, 1st year: GE)

Feedback showed that students valued spending class time on this kind of activity:

● みんなで楽しくやりたいです ［I want to enjoy studying with everyone.］ (4th year: Office)
● 授業内で使いたい ［I want to use these in class.］ (3rd Year: Music)
● I want to use this in class (1st year: GE)

Despite this enthusiasm, out of class use rates were disappointing. 62% of 2nd years surveyed responded that they had spent no time using the sites outside of the class over the ten week period. 30% had used the sites for just 30 minutes, 12% had used the site for one hour and none for more than an hour. Of the 4th year students, 5% had not used the websites outside of class at all. 33% had used the sites for 30 minutes, 33% for one hour, 10% for two hours and 19% for three hours or more. These results were a little more promising, although they may merely reflect the fact that 4th year students were under more pressure to pass vocabulary tests in order to graduate. Another contributing factor may be that the teacher was monitoring their study time and results using the tracking feature of WordChamp. It is not clear how far this out-of-class use relates to intrinsic motivation.

There are some indications that the flashcards encouraged learner autonomy, with some students beginning to take charge of their own learning outside class time and showing signs of becoming genuinely engaged. Students, for example, were observed engaging in flashcard drills

before class (field notes, 1st year: GE) and expressed determination in their feedback comments:

● I want to use it alone in class and outside class. (4th year: Office)
● I want to use *StudyStack* to study conjugations (1st year: GE)
● It's good study to myself. (2nd year: Music)
● I want to use the flashcard page at home (1st year: GE)

Students showed particularly high levels of concentration, dedication and independence when given the opportunity to create their own cards, and demonstrated increasing confidence in using online dictionaries and vocabulary resources. The data clearly supports the use of online flashcards to invigorate vocabulary learning in our teaching context, and that it is well worth dedicating class time to flashcard activities.

3.2 Progress

Whilst the focus of this project was primarily on motivation, we also hoped to ascertain how effective the flashcard drills and games were in helping the students to learn. Did the use of the flashcards lead to actual learning taking place? Did the students find the online flashcards an effective way of learning?

To encourage regular study, students in elective classes were required to take short vocabulary quizzes at approximately 3-4 week intervals, the first taking place before the students were introduced to the flashcard websites. However, the data from these quiz scores may not tell us a great deal about the effectiveness of the flashcard drills and activities. As action research, this project did not set out to control all variables and isolate the impact of this method of learning. Many factors will have affected the results. Where vocabulary lists were student generated, for example, test difficulty was not consistent. Some students were absent for some classes and tests. There were also different levels of pressure to do well in tests at different stages in the semester. In all elective classes, small gains were observed for most students after they were introduced to the sites, and dramatic gains were observed in the final quizzes. However, it is likely that students realized that they were at risk of not reaching the average score required for attaining the credit for the course, and were under more pressure to study. This is particularly true for fourth year students who required the credit to graduate. Nevertheless, this data does suggest that learning occurred. Teachers even noticed students using phrases from the flashcards outside of class:

After class in conversation, one student used one of the phrases from the flashcard ("He left me"). (field notes, 2nd year: Music)

It seems the flashcards made some positive contribution to the students' progress.

We did notice that many students preferred to use the vocabulary learning techniques they were familiar with. Students were observed copying words from flashcards onto notepaper, and printing out lists to read and memorize, although most students seemed to be using the flashcards

in addition to these techniques. By their final year of university, students may be quite fixed in their study habits and this is understandable. The aim of this project was to empower students by introducing them to additional resources, rather than to force them to adopt one method. The fact that students did seem to be incorporating online flashcards into their repertoire of vocabulary learning strategies suggests that they found them helpful. Feedback confirmed that the students perceived that learning took place.

- It is easy for me to remember words (4th year: Office)
- [The websites were] very useful (1st year: GE, 2nd year: Music)

These kinds of comments, found in the data for every class, show that a considerable number of students found this an effective and successful way of learning.

3.3   Selecting the best flashcard website

At the outset of this project we thought we may be able to identify a single website which best meets the needs of our students. However, we found there was no ideal match and each of the three websites had strengths and weaknesses.

Despite the fact that younger students in particular enjoyed playing the many games, and appeared to find the website easy to use, *StudyStack* was in some ways disappointing. *StudyStack* advertises that flashcards can be downloaded onto a cell phone or PDA. However, neither students or staff at our university were able to download the required software. There were also issues of stability. *Quizlet* and *WordChamp* are both very stable, but *StudyStack* froze on two separate occasions whilst the class was in progress, and the activity had to be abandoned.

Quizlet and *WordChamp* met most of the criteria that our students indicated were 'important' for them in a flashcard website. Both sites allow students to test themselves on what they have learned. 98% of students checked that this was 'important' or 'very important' for them. Layout was considered 'important' or 'very important' by almost all students surveyed. *Quizlet* has a very clean design and pleasant interface, and *WordChamp* is also attractive, although the pages can seem a little 'busy.' The *StudyStack* page is cluttered by advertisements.

Ease of use was the most important factor for students. Most fourth years found *WordChamp* easiest to use. Second years found *Quizlet* easiest to use, although teachers noted that students used *StudyStack* more independently than the other two sites. When asked which site helped them learn the most, 62% of fourth years chose *WordChamp*, 25% chose *StudyStack* and 14% chose *Quizlet*. Of the second years 42% chose *Quizlet*, 23% chose *StudyStack* and 35% chose *WordChamp*. Students seemed to be influenced by the degree of familiarity they had with the website, and clearly preferences vary from individual to individual.

Students favour different websites according to their learning styles. Many students are

kinaesthethic learners and most students surveyed felt that physically typing in the words was very important. There were a large number of comments reflecting this in the student feedback.

● キーボードで打ったほうが単語が覚えやすかった。
 ［It was easy to remember words when typing them on the keyboard］ (2nd year: Music)
● By typing the word it is easier to learn the words (1st year: GE)

Quizlet and *WordChamp* allow students to key in items and check their answers. *StudyStack* does not, and so is less appealing for learners who like to touch. Only *WordChamp* caters for learners with auditory preferences. This is a factor that we must take into consideration; according to the survey data, half of all students felt that it was 'very important' to be able to hear the words and only 10% felt that this was 'not important'. Students also commented on the audio function:

● 発音があるととてもべんきょうになります。よみ方もわかるしうれしい！
 ［I could study well when I could hear the pronunciation. I was happy to hear the way the word sounds.］ (2nd year: Music)

Where headphones are available, it may be preferable to select a flashcard website with audio capabilities.

Learner needs and wants go beyond visual, auditory and kinaesthetic preferences. *WordChamp* accommodates all learning modalities, but the absence of games and the visual complexity of the page design made it an unappealing choice for some of our learners. None of the three websites alone could span the diverse learning styles and preferences of our students.

4. Recommendations and Conclusions

In conclusion, we found that online flashcards did invigorate vocabulary learning, and that it was valuable to spend class time utilizing these websites. Students demonstrated vocabulary gains, felt that they were making progress, and clearly enjoyed the opportunity to learn vocabulary in this way, both collaboratively and individually.

We conclude that there is at present no 'ideal site' for our students. Of the three websites we trialled, *Quizlet* meets most of the students criteria and was very popular, but the lack of audio support means that it can not meet an important need. *WordChamp* is versatile and sophisticated, yet for some students a little 'dry'. We feel the best course of action is to introduce our students to a range of flashcard websites, so that students can choose the one that most suits their learning style. This need not entail a great deal of additional work for the teacher. The same word-processed vocabulary list can be uploaded to all of the sites, for example, to offer the students a choice.

Familiarity with a website seems to have led to positive associations and more hours invested in vocabulary learning outside of class. Thus, we feel it is important to provide our students with regular, extended practice.

One concern was that, on the whole, students were not taking advantage of the websites outside of class. Before bringing this project to a close, we need to examine the reasons behind this low take-up rate. Limited access to computer facilities may be part of the problem. In the near future our students may be able to access these websites easily on their cell phones. This is likely to improve the situation. In the meantime, the next cycle of this piece of action research could explore the effects of setting students the task of creating their own flashcard sets. It is possible that students may feel an increased sense of ownership of the resources, which may lead to more investment in the learning process.

Acknowledgements

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