

# Shared Identities: Our Interweaving Threads



## Testing high frequency vocabulary online

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### Reference Data

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This paper describes a web-based testing system for evaluating student knowledge of high frequency vocabulary words. The researchers developed a database of 2,750 test questions and imported them into a course content management system that allowed first and second year university students to take quizzes online using an Internet browser. The system automatically scores tests, gives immediate feedback to learners, and provides teachers with student grades. In order to determine how students perceived this system, researchers surveyed students after they had used it for three academic terms. The results of questionnaires and interviews encouraged teachers to continue developing and improving the web-based language testing system.

この小論は、頻出単語(2)の語彙力をテストするオンラインアプリケーションについて説明している。このシステムの構築にあたっては、まず選択された2750語がテスト問題として作られ、それがMoodleにインポートされた。よって学生は、Moodleにログインした後、オンラインでテストを受けることができるようになった。学生がテストを終えると自動的に採点がされ、その結果がすぐ学生と教員に明らかにされた。こうして三学期間オンライン単語テストを実施した後、利用した学生の感想を得るため、アンケートとインタビューを行った。本論には学生たちのフィードバックと、今後のシステム改善のための示唆を含んでいる。

Reading language educators have claimed, and a growing body of research shows, that extensive reading and systematic vocabulary study are vital for successful language teaching programs (Day, 1992; Nation, 1997; Waring, 2006; Nation, 2002). Applying these ideas requires significant changes to any language curriculum. Regarding the program discussed in this paper, teachers made an extensive graded reading (EGR) program that served as the primary curricular engine for required integrated skills courses. EGR gave learners large amounts of comprehensible input and provided ample materials for discussion inside the classroom. Teachers also developed a systematic approach for students to learn the

top 2,750 high frequency vocabulary items. In this way, the curriculum required learners to give primary attention to high frequency vocabulary and extensive graded reading.

This language curriculum serves first and second year Japanese undergraduate university students whose proficiency levels range from beginning to advanced. Two full series of graded readers easily met their language learning needs for reading at their language levels. Finding an appropriate system for grammar study for each of these levels was also easy because a level-based grammar system already existed. Deines, DeLaet, and Tuzi (1997) had developed a multi-tier grammar learning and teaching system for teaching grammar in a multilevel program. Their grammar system consisted of the major syntactic components such as the 12 tenses, clauses, prepositions, etc. and was divided into levels of difficulty and frequency of use. The simpler and more often used elements comprised the beginner level, and the more difficult and less used elements comprised the upper levels. This grammar component fit nicely with the learning program, but more importantly for this project, researchers used these grammar levels when they wrote questions for the different levels of the vocabulary testing system as well. Thus, grammar and vocabulary was adjusted to student proficiency levels in the vocabulary testing system.

Teachers and curriculum developers might complain that setting up an EGR program is complicated and challenging, but in the case of this program, setting up the vocabulary system was much more difficult. Over the past five years, this approach to teaching and testing vocabulary has gone through a number of low-tech and analog permutations,

using paper-based testing. The current version is digital and online, and setting it up required a lot of work in creating the 2,750 vocabulary questions. It also required a certain amount of technical expertise that included setting up the online system and importing the data into it. However, the new version now works well for both students and teachers, even though it still has plenty of room for improvement.

The current approach includes several components. First of all, the students needed an appropriate list of vocabulary for their reading level. Current vocabulary acquisition researchers suggest general language learning programs use a frequency based vocabulary list (Cobb, 2004). The two primary lists being used today include the General Service List (GSL) and the Academic Word List (AWL). Because this language program primarily serves learners who are studying theology in the context of the liberal arts, additional words appropriate to this focus were also added. The total of these lists was 2,750 words.

After selecting the words to focus on in the program, the teachers then divided the list into four groups (750, 700, 700, 600) which correspond to the four course levels in this program. Thus, these students now had a frequency-based list that corresponded to their language level. At the beginning of each semester, students received their word list, and they began learning the words on their list. Over the year, teachers used a number of activities for students to learn the vocabulary on their lists. For example, students made flashcards, played word games, made practice sentences, developed stories and plays, performed tasks, and verbally quizzed each other in class.

## Building the vocabulary system

Different teachers and learners used different ways to learn vocabulary, but all testing was done online using the same system and questions for all students. Developing this digital testing tool as part of a systematic vocabulary learning system itself required a systematic process. Having lists for the courses was the first step. Next, the teachers developed guidelines for creating the vocabulary questions to assure they were made in a reliable and systematic manner. Finally, all of these questions needed a web-based database from which students could take tests. The most logical tool for storing data for testing purposes is a course content management system (CCMS). The CCMS used in this project was Moodle (<http://www.moodle.org>).

Using the frequency-based vocabulary lists and grammar lists as a guide, the researchers wrote vocabulary questions for each level in the program (D-beginners, C-intermediate, B-high-intermediate, A-advanced). In other words, B-level vocabulary test questions were written with B-level grammar and vocabulary elements (and below). Thus, as mentioned above, vocabulary questions for each level do not include the more difficult grammar and vocabulary assigned to the higher levels.

It was also necessary to develop question formation guidelines to make the vocabulary questions consistent. The questions were originally written in a spreadsheet using the format depicted in figure 1. Each question required three

distractors and one answer. The answer had to be some derivation of the head word. Here is a sample question for testing the headword “comment.”

The final component needed for this web-based testing system was creating the CCMS in Moodle. After properly formatting and exporting the 2,750 questions out of the spreadsheet, they were imported into Moodle and placed into 4 different categories that correspond to the four language level groups in this program.

The CCMS now held a bank of 2,750 vocabulary test questions. From that bank, the teachers could choose a number of items, 25-50 for example, and create small tests for the students. Individual teachers decided how many tests to give during one semester and how many questions would be on one test. When the system was completed, students and teachers could receive immediate results from the tests, and the automated correcting of these tests freed teachers to focus on other activities, and having the tests online provided students the opportunity to review previous tests and to study for cumulative vocabulary tests.

## Methodology

As this system greatly simplified the testing process, teachers sought to investigate the impact this system had on the students. Their primary interests included the following questions:

Head	Freq #	Stem	Option1	Option2	Option3	Ans
comment		The teacher made a few _____ about the student's report.	Vows	dampers	diamonds	comments

Figure 1. Descriptors on the spreadsheet.

1. Did learners like this automated system?
2. Did this testing system help learners master vocabulary?
3. What were their impressions and preferences about this system?

In order to answer these questions, the teachers surveyed and interviewed students.

### Participants

The participants in this study included 40 first and second year college students at a four year college in the Tokyo area. Their language abilities ranged from beginning to advanced. Most of the students were between 18 and 24 years old. All of the students had sufficient computer knowledge to perform the activities in this study.

### Procedures

After three semesters of taking online quizzes, the students participated in online questionnaires and face-to-face interviews so that the teachers could learn about their impressions. The students participated in the questionnaire online using the university's CCMS. The questionnaire was written in English and Japanese. Only students with proper access could take the questionnaire and could only take the questionnaire one time.

The interviews were conducted during the school semester, before, during and after class sessions. The interviews were primarily conducted in Japanese.

### The questionnaire results

Of the 40 students who participated in the study, 35 completed the questionnaire. The student interviews took place during in-class sessions when students were engaged in independent activities. The results of the questionnaire, listed in Table 1, revealed some interesting data.

**Table 1. Questionnaire response totals**

		Agree+	Unsure	Disagree	NA
#1	The frequency of vocabulary quizzes online (ex. 5 OR 10 quizzes a semester) is just right.	25	2	7	1
#2	Vocabulary quizzes online help me learn how new words are used in context.	21	9	5	0
#3	I understand what to prepare for vocabulary quizzes online.	25	7	3	0
#4	I prefer vocabulary quizzes online to paper-based quizzes.	22	7	6	0
#5	I can review high frequency vocabulary by taking the final exam.	11	19	2	3
#6	I like vocabulary quizzes online since I can see the test results right away.	34	0	1	0

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#7	I feel I'm learning better with vocabulary quizzes online.	3	13	8	0
#8	The vocabulary quizzes online motivates me to learn new words.	3	8	13	0
#9	I study for _____ minutes a week for a quiz	90 (4)	45 (3)	30 (11)	15 (14)
#10	The vocabulary quizzes are _____	Easy (0)	Just Right (21)	Hard (9)	Too hard (1)
#11	The vocabulary quizzes online is cumbersome.	5	4	26	0
#12	The vocabulary quizzes online do not require basic computer literacy.	14	4	17	0
#13	I like paper and pencil quizzes better than vocabulary quizzes online.	7	8	20	0
#14	I prefer quizzes that ask for spelling and meaning of the words.	9	8	17	1
#15	I don't know how much I should prepare for vocabulary quizzes online.	6	6	22	1
#16	The vocabulary quizzes online are more helpful if they're bilingual.	9	17	8	1

#17	I want to see more clearly how much I've made progress.	26	4	5	0
#18	The online vocabulary quizzes help me focus my study.	10	12	13	0
#19	The vocabulary quizzes do not help me learn new words.	5	4	26	0
#20	It takes too long to prepare for the vocabulary quizzes.	5	9	21	0

More than 60% of the students believed that the number of tests given were appropriate; they also knew how to prepare for the quizzes and believed that the preparation time was not overly burdening. Most students spent between 15 to 30 minutes a week preparing for the online quizzes. Additionally most students (60%) preferred web-based quizzes to paper and pencil versions of tests. Nearly all students (97%) liked the immediacy of feedback from an online system.

Although 35 students participated in the questionnaire, only about 20 students were interviewed. The students answered three basic questions:

- 1- What do you like about the online vocabulary quizzing system?
- 2- What do you not like about the online vocabulary quizzing system?
- 3- What are some things we should do to make the online vocabulary quizzing system better?

The main reasons for liking the online vocabulary quizzing system were the typical responses that students offer when using a CCMS (Warschauer, 1997; Tuzi, 2004). Specifically, students appreciated the time and place independence of the system; students took the tests in class, but could access their grades, and class information anytime. They also mentioned that the tests were “just the right size.” A few students indicated that the online testing helped them to concentrate and learn new words.

Although students appreciated various aspects of this testing system, they also indicated a number of things that bothered them. Technical glitches became one of the main reasons why some learners disliked the online vocabulary system. At times computers freeze, or students forget their passwords and cannot log on to the system. A few times the CCMS was not accessible due to network problems. A few students indicated that they had not grown up with computers and therefore preferred paper-based tests. For some, the online tests were more cumbersome and constantly viewing the screens was hard on their eyes. Finally some of the interviewees mentioned that the quizzes were too easy. Some of the questions included distractors that did not come from the list that students studied to prepare for the test. Students could, therefore, quickly eliminate those options, which made it easier for them to select the correct answer.

The interviewees made a number of interesting recommendations to make the system more appealing and effective. Several students recommended making changes to the system to make testing more difficult, that is, more effective. A few students recommended making the format of the test questions more varied, such as having to fill in

questions and questions about word families. A few of the higher level students wanted the list to be expanded to the 4,000 word list level. One student asked that the questions be augmented with audio.

## Discussion

### *Caveats*

Besides the real benefits already discussed that the teachers experienced from this system, it is nevertheless a work in progress. There are a number of ways to improve this current system. First, there are a few assumptions that must be addressed. It is assumed that upper level students already know the words below their assigned band. But this may not be the case. There are many words in the lower bands that they may not know. Therefore, the system needs to include a way for students to cumulatively study the lower bands and help them fill in their gaps of lexical knowledge. This is one of the biggest challenges of online high frequency vocabulary testing – giving learners the words that they do not know.

Second, for a given period, students study a subset of words and then take an online quiz for those words. Each question has four choices, and sometimes only one of those choices was in the subset that students studied before this quiz; those questions may be too easy because they only need to choose words that they studied before the quiz. That is, they could theoretically answer correctly without even looking at the stem, by just choosing the one word among the four choices that they studied before the test. This may not be a very serious problem because in spite of it, the

system still works and learners state that they get a real educational benefit from it. Nevertheless, questions need to be revised to eliminate this flaw by improving distractors.

Third, by using this system the researchers have a treasury of data for future research that is still untapped. That is, all test scores, and every response given for every test item is recorded in the system. Future studies can use this data to check for the reliability and validity of test items, and thereby improve the question database and the program overall. It can also give us difficulty data for words that students may have trouble with, and from this we could generate a list of the hardest words in our database of 2,750 words. This list of hardest words could be very helpful, as we could focus on it and give students extra help with the most difficult words.

### Conclusion

Making this system required a lot of time and effort. It was not technically difficult to write questions in a spreadsheet that can be exported into a database. However, importing this data into the CCMS (Moodle) did require a fair amount of technical expertise; fortunately, one of the researchers had extensive knowledge of computer systems. As with many things that take time and effort, many more benefits from this system have emerged from this experience. Moreover, this language program now has a testing tool for evaluating this systematic approach to teaching vocabulary. The CCMS administers and grades the tests, and it stores these grades automatically in Moodle. In short, this automation provides a great benefit for the actual testing, grading and totaling of students' scores. Obviously, this greatly benefits teachers by

automating the work of testing. At the same time, our survey and interviews reveal that learners appreciate this system, and they view it positively. Learners also generally pass their vocabulary quizzes, so it appears that they are learning. However, research needs to be done on how this approach compares with more traditional methods and whether it actually helps learners master vocabulary more efficiently and effectively.

Of particular concern is that the students are focusing only on the top 2,750 words. The current pool of words that this system currently includes does not begin to satisfy the needs that academically inclined second language learners need. Schmitt emphasized that current graded readers do not go beyond the 3,000 or so word level, but students bound for English speaking colleges need between 600 to 9,000 word families (2009). Additionally, since students need multiple exposures to words to effectively move them from short term memory to long term memory (Nation, 1990), students require more exposure than this online testing system can currently provide. A more robust online system that includes opportunities for vocabulary exposure and production in written/spoken activities is essential for students to increase their vocabulary learning retention.

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### Appendix 1

#### The online questionnaire

1. The frequency of vocabulary quiz online (ex. 5 quizzes a semester OR 10 quizzes a semester) is just right.
2. Vocabulary quiz online helps me learn how new words are used in context.
3. I understand what to prepare for vocabulary quiz online.
4. I prefer vocabulary quiz online to paper-based quizzes.
5. I can review high frequency vocabulary by taking the final exam.

6. I like vocabulary quiz online since I can see the test results right away.
7. I feel I'm learning better with vocabulary quiz online.
8. The vocabulary quiz online motivates me to learn new words.
9. I study for \_\_\_\_\_ minutes a week for a quiz
10. The vocabulary quizzes are \_\_\_\_\_
11. The vocabulary quiz online is cumbersome.
12. The vocabulary quiz online requires basic computer literacy.
13. I like paper and pencil quizzes better than vocabulary quiz online.
14. I prefer quizzes that ask for spelling and meaning of the words.
15. I don't know how much should I prepare for vocabulary quiz online.
16. The vocabulary quiz online is more helpful if it's bilingual.
17. I want to see more clearly how much I've made progress.
18. The online vocabulary quizzes help me focus my study.
19. The vocabulary quizzes help me learn new words.
20. It takes too long to prepare for the vocabulary quizzes.

## Appendix 2

### *The interview questions*

1. What do you like about the online vocabulary quizzing system?
2. What do you not like about the online vocabulary quizzing system?
3. What is good about the online vocabulary quizzing system?
4. What are some bad things about the online vocabulary quizzing system?
5. What are some things we should do to make the online vocabulary quizzing system better?