

# Vocabulary acquisition in L2: does CALL really help?

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**Abstract.** Language competence in various communicative activities in L2 largely depends on the learners' size of vocabulary. The target vocabulary of adult L2 learners should be between 2,000 high frequency words (a critical threshold) and 10,000 word families (for comprehension of university texts). For a TOEIC test, the threshold is estimated to be 3,000 - 4,000 words. The average English vocabulary size of most Japanese university students is significantly beyond these thresholds. Since incidental learning of English vocabulary in Japan is impossible due to the low exposure to the target language, vocabulary should be acquired through intentional learning. This paper reports on the outcomes of two different approaches to intentional vocabulary learning experienced in one Japanese university: using a Web-based vocabulary-learning tool *Word Engine* and non-electronic techniques of rote learning and memorization. During the period when independent vocabulary acquisition with *Word Engine* was included in course requirements, research revealed a significant improvement in mean scores in standardized TOEIC tests and course examinations for students of the equivalent cohorts, i.e. the same year of study and similar curriculum level and content, as well as general student satisfaction with the program and increased motivation towards independent deliberate vocabulary learning.

**Keywords:** intentional vocabulary acquisition, TOEIC, web-based vocabulary learning system, *Word Engine*.

## 1. Introduction

Language competence in L2 largely depends on the learners' size of vocabulary, and research has conclusively established the implicit relationship between

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vocabulary knowledge and other aspects of linguistic ability (Folse, 2004; Meara, 2002). The target vocabulary of L2 learners is estimated to be over 2,000 high frequency words, a critical threshold (Nation, 2008). In a TOEIC test, the most highly regarded independent means of English proficiency evaluation in corporate Japan, the lexical threshold is crucial, and research shows that a learner would need to know between 3,000 to 4,000 words to understand a current test (Kiyomi & Oghigian, 2009).

With most Japanese business university students involved in this study, there is a huge discrepancy between their average English vocabulary size (700-1500 headwords) and the threshold vocabulary necessary for adequate functioning on various tasks in English and achieving high TOEIC scores. Realizing that vocabulary size plays a significant role in TOEIC performance, two different approaches to boosting vocabulary learning were undertaken: non-electronic techniques of rote learning and memorization and implementation of a Web-based vocabulary-learning program *Word Engine*. The paper reports on the results of these methods by comparing standardized TOEIC test scores and *Intermediate Business English* final test scores for corresponding cohorts of students who used the online program for vocabulary acquisition and those who did not.

## 2. Method

Lexical research distinguishes between two main approaches to vocabulary learning in L2: explicit, or intentional, learning, when the focus is on the words to be learnt, and implicit, or incidental, when vocabulary learning occurs unconsciously through the other primary objective, such as reading comprehension or learning from context (Schmidt, 1994). Incidental vocabulary acquisition has proved effective for advanced L2 learners (Nagy, 1997) and only after repeated exposure (Waring & Takaki, 2003), e.g. extensive reading or listening. Since these conditions do not apply to our study population due to Japanese students' limited contact with English and insufficient lexicon for contextual deduction, vocabulary should be acquired mostly through intentional learning. A number of studies have recently addressed this problem (Folse, 2004; Nation, 2001) and various suggestions have been made as to the methods and practices to help students acquire more vocabulary both within the limited time in formal educational settings and through individual independent study.

At the time of the study, the university employed English language instructors with adequate educational background (PhD, mostly, or MA in Linguistics or TESOL) and sufficient teaching experience. So, it is assumed that, consistent with their

experience and objectives, teachers utilized various non-electronic methods of explicit vocabulary teaching. Teaching materials display activities related to the involvement-load hypothesis (Laufer & Hulstijn, 2001), such as making sentences, filling-in blanks, after-reading activities, words reviews, as well as integrated and isolated form-focused instruction (reading with marginal glosses, reading with a dictionary at one's disposal, etc.), and many other strategies aimed at maximizing vocabulary learning and retention.

However, instructors teaching TOEIC preparation courses recognized a vocabulary deficit as one of the main reasons preventing students from increasing their test scores, and after some research on possible ways to boost vocabulary, it was decided to implement a vocabulary-learning program based on *Word Engine* (Agawa, Black, & Herriman, 2011). In 2009, the university acquired a discount access to the *Lexica* site, and launched the on-line program *Vocabulary for TOEIC*, which incorporated several principles of high-speed effective rote learning. These included testing the learner's vocabulary ability and customizing the target vocabulary, which is to be learned through the use of flash cards and spaced repetition. Two years later, the *Business Vocabulary* program was introduced, with both core courses, *English for Testing* and *Intermediate Business English*, making independent vocabulary acquisition with *Word Engine* their course requirements. Students were asked to access the site in their spare time with their individual access codes several times each week, in conformity with the concept of spaced learning. Their progress was monitored by using the *Word Engine* "V-Admin" feature to export and store weekly reports with the following data: name, ID-number, course, coverage, location of words in process, total learned words, total time on-line and average time on task per access.

### 3. Discussion

The first experience of using *Word Engine* at the university was evaluated by correlation of the study population scores in the TOEIC examination in December 2009 (prior to the study period) and in June 2010 (following the 8-week "*Word Engine*" period) with the *Word Engine* data on students' progress in terms of individual word coverage, depth of word recycling and time-on-task. Comparison of the mean scores in December and June TOEIC tests taken at the end of the 1st year and the middle of the 2nd year by student cohorts in the English language program yielded the most statistically significant results. The participants in the study showed a total mean-score improvement of 55 points, which, compared to the average 26.9 points improvement of the equivalent cohort of the previous 11 years, is double the norm (Agawa, Black, & Herriman, 2011).

Two consecutive years of running the program (2010 and 2011) showed a noticeable increase in average TOEIC scores over the previous 5-year (2003-2008) average of 401 for all English department test-takers, with December 2011 TOEIC average being the highest (Table 1).

Table 1. TOEIC scores (test average scores and divergence from the pre-study average)

Test Date	Dec 2008	June 2009	Dec 2009	June 2010	Dec 2010	June 2011	Dec 2011	June 2012	Dec 2012	June 2013	Dec 2013	June 2014	Dec 2014	June 2015
Score	419	411	373	423	438	423	463	432	432	404	422	417	427	391
Div	+18	+10	-28	+22	+37	+22	+62	+31	+31	+3	+21	+16	+26	-10

This rise corresponds with the introduction of the second *Word Engine* program, *Business English*, parallel to the *TOEIC* one. Also, in December 2011, the TOEIC test-takers comprised three cohorts of students (2009, 2010 and 2011 entrants) who had had an experience of using *Word Engine* for independent study. These findings are reported in a study (Averianova, 2012) which addressed the influence of using the program on the dynamics of scores in the final tests of *Intermediate Business English*, a core course that integrated *Word Engine*. The average scores in the final exam of the year, when *Word Engine* was administered for *English for Testing* (2010), and the following year, when the on-line *Business English* program was introduced (2011), were significantly higher than the equivalent tests of the previous or subsequent years (Table 2).

Table 2. Mean scores in *Intermediate Business English* final test

Year	2008	2009	2010	2011	2012
Mean Score	67/110	65/110	73/110	80/110	69/110

Besides the objective factors measured by the formal test results, the subjective factors of student motivation and satisfaction with the program were also explored. All opinion surveys indicated a generally favourable response to using the system. The most relevant findings are presented in Table 3 for the percentages of answers “Agree” and “Strongly Agree” on the selected questions.

These numbers indicate broadly positive student perceptions of *Word Engine* as helping their language acquisition, with the lowest figures being in the “liking” category, which is not surprising since students in general are not enthusiastic about homework, which is “the sore thumb of tertiary education in Japan” (Takemoto,

2004). However, a much higher proportion of those who would like to continue using the program evinces their appreciation of its utility.

Table 3. *Word Engine* opinion survey

Question \ Year	2009	2010	2011
<i>Word Engine</i> helps me with English	84	82	79
<i>Word Engine</i> helps me with TOEIC	75	76	70
<i>Word Engine</i> helps me with Business English	n/a	n/a	67
<i>Word Engine</i> is a good way to study vocabulary	73	71	62
I like <i>Word Engine</i>	60	58	49
I would like to use <i>Word Engine</i> again next semester	n/a	69	65

#### 4. Conclusion

Research findings on student achievement in standardized TOEIC tests and *Business English* course tests have shown considerable improvement over the three-year period, when the on-line vocabulary building program *Word Engine* was included in the corresponding course requirements. The study also demonstrated a generally positive attitude of students towards the program as well as their notable motivation for independent structured vocabulary learning. However, in 2012, the university administration inexplicably terminated the official use of *Word Engine*, which coincided with a certain decline in the scores on all comparative tests.

This is not to say that *Word Engine* is a panacea for vocabulary deficiency, and there are certain limitations of this study, such as fluctuating levels of L2 competence in different cohorts, variability of teaching styles and qualifications, changing course loads over the years, and others. Also, further research is needed to better explore the correlation between TOEIC scores and some independent variables of the program, namely “time-on-task” or “word coverage.” However, it is still possible to conclude that structured and controlled intentional vocabulary acquisition with CALL tools, such as *Word Engine*, is a powerful asset in L2 learning.

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