

Development of EFL University Students' Vocabulary Size and Reading Comprehension Using Online Multimedia-based Extensive Reading

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ABSTRACT

The objectives of this study were: 1) to investigate the effects of online multimedia-based extensive reading activities on students' vocabulary size; 2) to investigate the effect of online multimedia-based extensive reading activities on students' reading comprehension, and 3) to investigate the relationship between vocabulary size and reading comprehension. The population of the study was EFL students at Nakhon Ratchasima Rajabhat University enrolling in the Reading Comprehension course, and the samples were 67 students from two classes who enrolled in the course in semester 1 of the academic year 2018. The classes were randomly assigned an experimental group and the other the controlled group. The study tools included pretest and posttest and the online multimedia-based extensive reading activities. The two groups undertook the same course instructions; however, the experimental group was assigned to do extensive reading activities, which included reading three different online news articles each week. Both groups took pretest and posttest for vocabulary size and reading comprehension. The results of the study can be summarized as follows. 1. The two groups had their posttest scores significantly higher than the pretest scores on both the vocabulary size and reading comprehension at the 0.05 level. However, comparisons between the scores of the two groups revealed no differences, neither on the pretest nor the posttest. 2. No differences were found between the pretest and the posttest scores on reading comprehension of the control group. However, the posttest scores on reading comprehension of the experimental group were significantly higher than those of the pretest at the 0.01 level. Additionally, the experimental group had significantly higher posttest scores than the control group at the 0.01 level. 3. The regression analysis revealed the coefficients of 20.981, t-Stat of 7.604 with the p-value = 0.000. This means that the vocabulary size factor can be a predictor of the reading comprehension factor at the 95% confidence level. The findings of this study suggest that online multimedia-based extensive reading activities can significantly improve both students' vocabulary size and reading comprehension. Moreover, vocabulary size also found to be a good predictor of reading comprehension. It can be concluded from the findings that the improved vocabulary size and reading comprehension were largely due to the effect of the online multimedia-based extensive reading activities which helped expand vocabulary size. More importantly, the activities supported students' reading in terms of translation, anywhere and anytime reading, as well as ways to find more vocabulary online, etc. This type of extensive reading is regarded as an effective method for improving students' reading comprehension through the expansion of their vocabulary size, which has to be considered not only at the classroom level by the instructors, but also at the course and curriculum levels by the course and curriculum designers or developers.

INTRODUCTION

Importance and Background of Research Problems

Reading Comprehension is an important and necessary skill for university study and study of English reading, particularly for students who study English as a foreign language (EFL). Therefore, developing reading comprehension skills is very important to the success of the program. It is also considered an important skill for learning

at the university level as well as learning from reading texts in English. Therefore, it is not overstated that reading comprehension skills are critical to the success of a university course.

Research studies have shown that the size of the English vocabulary is significantly related to the success of reading comprehension skills. That is to say, the size of the vocabulary is a key factor in success in developing reading comprehension skills. Therefore, to develop reading skills for better

understanding, learners must also develop the appropriate vocabulary size.

There are many ways to develop vocabulary sizes, such as learning directly from the classroom and studying key vocabulary characteristics, using dictionaries, and learning vocabulary from context. Besides, it can be learned by reading with emphasis on meaning from non-specific teaching, there are two ways, creating reading fluency, and increasing the size of vocabulary through external reading. Time (Hunt & Beglar, 2005).

Organizing intensive reading activities is recognized as an activity that can improve English vocabulary, especially the size of the vocabulary. (For example, Ghanbari and Marzban, 2013, Baleghizadeh and Golbin, 2010, Pigada and Schmitt, 2006, and Tiryaki and Tütüniş, 2012). The development of the size of vocabulary comes from acquiring vocabulary knowledge from various reading sources, either intentionally or accidentally, in a variety of formats, mostly from publications (paper-based texts), as well as online reading texts, especially in online multimedia-based texts. As intensive reading is considered critical to vocabulary improvement, and vocabulary size greatly influences reading comprehension, it is important that the most appropriate and effective type of text used for extensive reading.

In general, multimedia reading is accepted to be more effective than texts. This is due to the advancement in communication technology that makes learning outside of the classroom through online research from a variety of communication devices, including mobile devices such as smartphones or tablets, for example, to be more convenient. Importantly, online reading content is diverse and current. With the format of reading online, that is different from reading in this book. This comes to the point that the researcher was interested in investigating the effects of using intensive reading activities with online multimedia reading on the development of English vocabulary size and reading comprehension skills. The first aim was to identify the types of relationships this form of extensive reading has on the vocabulary size development and reading comprehension. The second aim was to further investigate whether vocabulary development helps improve students' reading comprehension. Namely, the differences between the types of reading texts on the development of English vocabulary knowledge and reading skills for comprehension still need to be confirmed with clear results.

Objectives of the Study

The objectives of this study were:

- 1) To study the effects of intensive reading activities from online multimedia reading on the development of English vocabulary.
- 2) To study the effects of intensive reading activities by reading online multimedia reading on developing reading comprehension skills.
- 3) To study the relationship between English vocabulary knowledge and reading comprehension skills.

Scope of the Research Project

This study investigated vocabulary size and reading comprehension of first-year students studying the Reading Comprehension course in the first semester of the academic year 2018.

Conceptual Framework

The conceptual framework of the research consists of 3 components, namely, intensive reading activities using online multimedia reading, English vocabulary size and reading comprehension, as shown in Figure 1.

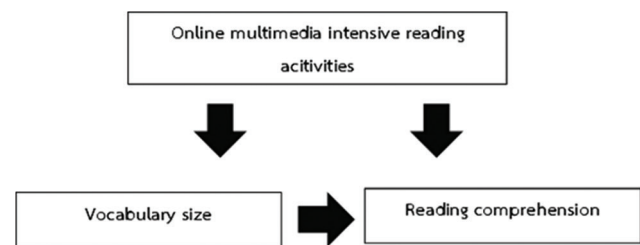


Figure 1. Conceptual Framework

Research Hypotheses

Three hypotheses were set up for this study.

- 1) The size of the English vocabulary of students is higher, mainly due to the study by intensive reading from online multimedia reading chapters and higher than the control group.
- 2) Reading skills for students' comprehension is higher, mainly due to the study using the intensive reading from online multimedia reading chapters and higher than the control group.
- 3) The size of the English vocabulary positively correlated with students' reading comprehension skills.

METHODOLOGY

Participants

Participants in this study included two classes of 67 first-year students, Nakhon Ratchasima Rajabhat University who were studying the Reading Comprehension course in the first semester of the academic year 2018.

Research Tools

There were three main tools used in this study.

- 1) The Bilingual English-Thai Version of Vocabulary Size Test (Nirattisai, 2016). It consists of a vocabulary scale measuring 5 levels of 10 items in total, 50 items in total, with 5 multiple choice options. Each question consists of vocabulary with sentences and an option with the exact meaning of the vocabulary in the sentence. The exam has a score of 1 point per item.
- 2) Reading Comprehension Test consists of 40 reading ability tests as 4 multiple choice options.
- 3) Intensive reading activities from online multimedia reading texts. Intensive reading activities were set as tasks

for individual learning. Each student chose to read two reading texts from online reading materials at an instructor-provided website. Each reading was accompanied by illustrations and audio for reading, which help students know how to read all the words. There were also explanations for difficult vocabularies with Thai meanings. At the end of the reading chapter, there was a list of about ten words from the reading texts with English explanations and their meanings in Thai. Students can make use of these vocabularies to understand the readable content.

Research Procedures

The study was conducted under the following procedures.

- 1) The samples were to take the Bilingual English-Thai Version of the Vocabulary Size Test and the Reading Comprehension Test.
- 2) The subjects in both groups studied reading comprehension activities, but the experimental group conducted intensive reading activities using online multimedia reading texts.
- 3) Intensive reading activities consisted of four sub-activities which were:

Activity 1. Read student articles. Read and understand the content by using the multimedia contained in each article, as an illustration, audio, reading, explaining vocabulary in articles and the vocabulary list.

Activity 2. Translation of chapters into Thai, which may be translated, summarized or expanded to show that the students understand the content they read in their language. The purpose of this activity was to increase the understanding of the students' reading that is expressed in a written form.

Activity 3. Students recorded audio reading Thai translation in Activity 1 by reading according to the Thai reading script written in the same way as the audio reading English reading script. This activity was for students to demonstrate an understanding of the content of the reading text in the form of speech.

Activity 4. Students search for synonyms and unknown words from the vocabulary list of each text from the thesaurus and online dictionaries. This activity aimed to help increase the vocabulary size from the context of each reading text.

Students submitted translations, audio transcripts, and synonyms to the online course of the course every week, three lessons per week, for eight weeks, for a total of 24 reading texts, with both easy and medium levels in equal or close proportions.
- 4) In the last week, both student groups took the Bilingual English-Thai Version of Vocabulary Size Test and Reading Comprehension Test.

Data Analysis Includes

Data were analyzed using the following statistical procedures.

- 1) Analyzing the test scores, measure the vocabulary of English vocabulary before studying, compare with the scores after studying by comparing the dependent t-test statistics of each group.

- 2) Analyzing the data of differences in scores before and after studying from the English vocabulary test. Comparison between control and experimental groups was done by using comparative statistics independent t-test.
- 3) Analyzing reading test scores for comprehension before learning compared to post-study scores by comparing the dependent t-test statistics of each group.
- 4) Analyzing the data of differences in scores before and after learning from reading comprehension tests Comparison between control and experimental groups by using comparative statistics independent t-test.
- 5) Using Regression Analysis to find the relationship between vocabulary size scores and reading comprehension scores after the study of the control group and the experimental group.

RESULTS AND DISCUSSION

Vocabulary Size

To examine the changes in vocabulary size, first, posttest scores of each group were compared against the pretest scores. Then, the vocabulary sizes of both groups were compared before and after the treatment.

Table 1 shows that the vocabulary scores of the controlled group increased from 27.46 to 28.69, which was significant at the .05 level. (p -value $< .05$). Likewise, the vocabulary scores of the experimental group increased significantly from 27.66 to 29.03, which was significant at the .05 level. (p -value $< .05$). In general, the vocabulary size of both groups increased significantly after learning.

To compare how the vocabulary sizes of the two groups are different, the following table presents comparison results.

Results from Table 2 show that before learning the vocabulary size of the controlled group and the experimental group is not different from that of the experimental group.

Table 1. Comparisons of vocabulary sizes before and after learning

Comparisons	Pre-test	Post-test	t-Stat	p-value
Controlled group				
Mean	27.46	28.69	-1.753	0.044
S.D.	4.06	4.38		
Experimental group				
Mean	27.66	29.03	-1.900	0.033
S.D.	5.28	5.48		

Table 2. Comparisons of vocabulary sizes between controlled group (CG) and experimental group (EG)

Comparisons	CG	EG	t-Stat	p-value
Pre-test				
Mean	27.46	27.66	-0.174	0.431
S.D.	4.06	5.28		
Post-test				
Mean	28.69	29.03	-0.286	0.388
S.D.	4.38	5.48		

That is, their pretest scores are 27.46 and 27.66, respectively, and the p-value of the t-test analysis was larger than .05 ($p > .05$). In the same way, vocabulary sizes of both groups were not different, with the post-test scores of the controlled group and experimental group of 28.69 and 29.03, respectively, and the p-value larger than .05 ($p > .05$).

In summary, results showed that the vocabulary sizes of students in both groups significantly increased after doing the online multimedia intensive reading activities. However, their vocabulary sizes after learning with this method did not statistically differ.

Reading Comprehension

Reading comprehension of students was presented and compared using reading comprehension scores. The study revealed the following results.

Results from Table 3 indicate that students in both controlled group and the experimental group significantly improved their comprehension scores, from 19.37 to 20.63, and from 17.71 to 24.54, respectively. The differences between pretest and post-test comprehension scores were significant at the .05 and .01 levels, correspondingly.

When comparing comprehension between groups, results show that while comprehension scores were not different before learning, post-test scores were different, with the experimental group having a significantly higher post-test score than that of the controlled group. Statistical results are shown in Table 4.

As shown in Table 4, pretest reading comprehension scores of both groups are not different (19.37 for the controlled group and 17.17 for the experimental group, and $p > .05$). However, the post-tests reading comprehension score of the experimental group was significantly higher than that of the controlled group (24.54 compared to 20.63) with the P-value less than .01.

Concerning reading comprehension, results indicated that although both groups increased their scores significantly after learning, the experimental group seemed to have greater improvement. Their reading comprehension was significantly higher than that of the controlled group at the .01 significance level.

Regression Analysis

To investigate the relationship between vocabulary size and reading comprehension, regression analysis was applied to the scores of the vocabulary tests and reading comprehension tests. Two analyses were performed: the relationship between vocabulary size and reading comprehension of the experimental group, and the relationship between post-test scores of the reading comprehension of the controlled group and the experimental group.

Regressive analysis results in Table 5 shows that the coefficient value of the relationship between vocabulary size and reading comprehension after reading was 20.981, with the t-Stat of 7.604 and p-value = 0.000. This indicates that the vocabulary can be a forecast variable of the reading comprehension variable at the 95% confidence.

To visualize the relationship between vocabulary size and reading comprehension, regression analysis was performed

to obtain the R-square value which describes the relationship direction, presented in Table 6 and Figure 2.

Figure 2 shows the graphical representation of the relationship between vocabulary size and reading comprehension.

Table 3. Comparisons of reading comprehension before and after learning

Comparisons	Pre-test	Post-test	t-Stat	p-value
Controlled group				
Mean	19.37	20.63	-1.475	0.076
S.D.	5.08	3.78		
Experimental group				
Mean	17.71	24.54	-4.624	0.000
S.D.	5.17	5.78		

Table 4. Comparison of reading comprehension between controlled group (CG) and experimental group (EG)

Comparisons	CG	EG	t-Stat	p-value
Pre-test				
Mean	19.37	17.71	1.183	0.121
S.D.	5.08	5.17		
Post-test				
Mean	20.63	24.54	-2.992	0.002
S.D.	3.78	5.78		

Table 5. Regression analysis between vocabulary size and reading comprehension after learning

	Coefficients	Standard error	t Stat	p-value
Intercept	20.981	2.759	7.604	0.000
Post Reading	0.357	0.120	2.966	0.005

Table 6. Regression analysis between vocabulary size and reading comprehension after learning

Regression statistics	
Multiple R	0.380
R Square	0.145
Adjusted R Square	0.128
Standard Error	4.479
Observations	54

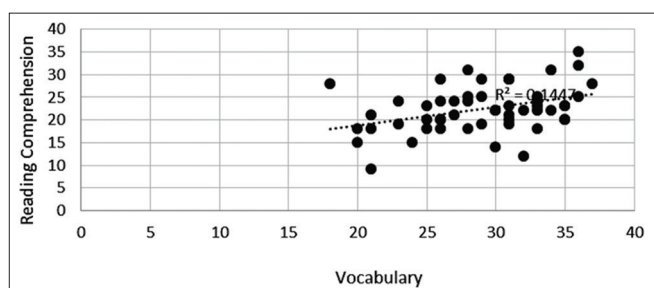


Figure 2. Coefficient of Determination (R^2) of vocabulary size and reading comprehension

The graph shows the positive relationship of the R^2 at 0.1447. This refers to the fact that reading comprehension increases as in the increase in vocabulary size.

DISCUSSIONS, CONCLUSION, AND RECOMMENDATION

Discussion

Study results can be discussed according to the research hypotheses.

Hypothesis 1: Vocabulary size of students learning with the online multimedia intensive reading is higher than students who did not learn through this method.

The study results indicated that the vocabulary size of both groups of students did not differ significantly, either before or after learning. This may be said that online multimedia extensive reading activity could improve vocabulary size in the same way as not learning this method.

Hypothesis 2: Reading comprehension of the group of students learning with online multimedia extensive reading activities is high than the controlled group.

About the study results, students in the experimental group increased their reading comprehension significantly after learning with the online multimedia extensive reading activities. Moreover, their post-test reading scores were significantly higher than that of the controlled group. This could be said that the increase in reading comprehension of the experimental group was partly the result of the learning method they took differently from the other group.

Similar results were found in the study by Baleghizadeh and Goblin (2010). Additionally, it may be explained that the online multimedia extensive reading activities provide students with various features of texts, including online text, multimedia, and different levels of difficulties.

Hypothesis 3: Vocabulary size has a positive relationship with reading comprehension.

Recall that the coefficient of determination (R^2) was 0.145, meaning that the students' reading comprehension tends to increase as the vocabulary size increase. In other words, vocabulary size is said to be the factor the causes the improvement of students' reading comprehension. This study result was consistent with Al-Nujidi (2003) who found that the vocabulary size of Saudi Arabian students had a positive relationship with reading comprehension. A similar result was also found in the study in Malaysian students by Ibrahim, et al (2016). The results of both studies showed that the positive relationships between vocabulary size and reading comprehension were significant at the level of $P < .01$. This emphasizes the importance of vocabulary size that has on improving reading comprehension.

Conclusion

Findings from this study confirmed that the types of text used for extensive reading influence vocabulary size differently. In this case, online multimedia reading text better

improves vocabulary size compared to the paper-based materials. Additionally, this type of extensive reading text greater improve students' reading comprehension. Moreover, the results reveal that improved vocabulary size does have some positive effect on reading comprehension. As this study was conducted with EFL university students, the results suggest that using online multimedia texts in the extensive reading activities help improve both vocabulary size and reading comprehension of the students. Also, improved reading comprehension is partly due to the increase in the vocabulary sized.

Recommendations

The researcher has the following suggestions:

1. Suggestions for teaching and learning consisted of considering the use of intensive reading activities in the form of online multimedia reading to help the learners have a higher vocabulary size, which can result in increased learning and reading comprehension, by applying contents from other websites of similar nature to match the context of the course and the learner.
2. Suggestions for research include the study of tools used to measure vocabulary sizes that are specific to the learner's context, in accordance with vocabulary development. Also, the comparative study of the use of articles from different sources should be conducted on the size of vocabulary and reading comprehension.

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