

The Relationship Between the Total Number of Words Read and Test Scores in an Extensive Reading Program

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Abstract

This study attempted to explore the relationship between the total number of words read and test scores in an extensive reading program. The results of Pearson correlation coefficient confirmed that the total number of words read was related to test scores, and the outcome of a matched *t* test revealed that there were statistically significant gains in the means of test scores before and after extensive reading. A one-way analysis of variance demonstrated that a difference existed between groups into which 70 participants who were university students in Japan were divided based on the total number of words they read in the program. It was clarified in the following planned comparisons that the significant difference emerged from 6 groups where the total number of words read ranged from less than 20,000 to 70,000.

Keywords: extensive reading, the total number of words read, an analysis of variance, planned comparisons, TOEIC

Introduction

In this age of globalization, proficiency in English is crucial for job opportunity and advancement. The development and improvement of information technology has made the ability to read in English especially important since a vast amount of information is available in English. Reading has been the mainstream of English education at junior and senior high schools in Japan. However, it is more or less centered on translation, which Nuttall (1982) describes as an unsatisfactory task that leads students to understand the text in a passive way. Although translation is a method still employed by numerous Japanese teachers, changes in the educational guidelines issued by the Ministry of Education, Culture, Sports, Science and Technology have caused schools to modify their instructional methods to be somewhat more communicative (Sakurai, 2007, 2008). English education now varies from school to school more than before as the new policy encourages innovative programs to be implemented. One approach being used is the extensive reading program.

Extensive reading is one style of reading along with skimming, scanning and intensive reading (Day & Bamford, 1998) and is complementary to intensive reading (Nuttall, 1982). Most frequently

cited characteristics of extensive reading are by Day and Bamford (1998, pp. 7–8):

1. Students read as much as possible.
2. A variety of materials on a wide range of topics are available.
3. Students select what they want to read.
4. The purposes of reading are usually related to pleasure.
5. Reading is its own reward.
6. Reading materials are well within the linguistic competence of the students.
7. Reading is individual and silent.
8. Reading speed is usually faster rather than slower.
9. Teachers orient students to the goals of the program.
10. The teacher is a role model of a reader for students.

In sum, individual students choose and read a lot of easy books for enjoyment under the guidance of the instructor in extensive reading programs.

A great deal of studies report the positive impact of extensive reading on the aspects of the students' language, proficiency and motivation to learn English. Research on extensive reading with Japanese students has been conducted in recent years. Furukawa (2008), who owns and directs a private tutoring school where a distinctive extensive reading program has been implemented, presented that the scores of his junior high school students on the standardized exam for senior high school students called the Assessment of Communicative English Exam (ACE) exceeded the average scores of students throughout Japan. In other words, the 8th graders at his *juku*, who were reading English extensively, gained higher scores than average 10th graders nationwide did. The results of experiments carried out by Mason and Krashen (1997) also showed the remarkable effect of extensive reading. They reported that a group of Japanese college students who experienced extensive reading outperformed the control group by achieving statistically significant gains on a post-test. Another example is research by Nishizawa, Yoshioka, Itoh, Fukuda and Nagaoka (2009). Their engineering major students steadily and dramatically improved their TOEIC scores through Sustained Silent Reading during the four years at their technical college. It is evident that extensive reading can result in the improvement of English ability.

It is logical to consider that the significant influence of extensive reading is attributable to the amount of reading. Then, how should the amount of reading be measured and how much extensive reading should be done for its beneficial effect to be realized? The first principle of extensive reading provided by Day and Bamford (1998) states that students should read as much as possible, and they

explain further that the amount of time spent on reading is the most important (2002). Time does not seem to be the best measure to be taken in the Japanese context, however, as Japanese students cannot help being inclined to translate word by word and they accordingly tend to spend extra time on translating while reading English books. A lot of Japanese researchers focus on the total number of words students read instead of the time spent although some of them who care about reading speed do pay attention to it. Furukawa (2008) and Nishizawa et al. (2009) in the previously mentioned studies recorded the number of words their students read, utilized it as the representation of reading performance, and reported the distribution of test scores dependent on it. Yamashita (2004) who estimated the amount of reading from the average number of pages her students read admitted that the number of words read would have been more ideal. Thus, the total number of words read can be regarded as a more suitable indication of the amount of reading in Japan.

It is reasonable to propose that students should be encouraged to read more in extensive reading programs than the amount they have to read in intensive reading programs such as in English classes at junior and senior high schools. According to Hasegawa, Chujo and Nishigaki (2008), the most popular junior high school English textbook series, *New Horizon*, contains a total of 6,148 words, while there are 28,354 words on average for the five most often selected senior high school English textbook series, *Crown*, *Unicorn*, *Milestone*, *Sunshine* and *Mainstream*. This suggests that students read approximately 2,000 words a year at junior high school and 10,000 at senior high school. On the other end of the spectrum, books about extensive reading written for the general public, such as *Kaidoku 100 man go: Pepabakku heno michi* (Sakai, 2002), set a reading target of as much as one million words. One million words is too unattainable a goal in one semester or school year for most Japanese learners of English. It seems desirable to find a middle ground between 10,000 and one million words depending on the level of students and the length of the program when instructors determine the amount of reading to be achieved in extensive reading programs.

Setting a goal in extensive reading programs will become manageable if the relationship between the reading amount and its effects is revealed. Nishizawa et al. (2009) observed the reading attitude and performance of their students, and attempted to correspond it with the number of words read. Table 1 shows their view based on the accumulated data. As their students consecutively read extensively for four years at their college, they examined the data employing the unit of 100,000 words. This, however, does not mean that the effect of extensive reading cannot be guaranteed on students who read less than 100,000 words. Thus, this paper attempts to investigate whether the amount of reading not exceeding 100,000 words affects test scores favorably. It is assumed that reading ability does not develop as every single word is being read. It is more reasonable to speculate that the improvement is recognized in some stages after the certain number of words is read. It

Table 1 *The observed relationship between the total number of words read and the effects of extensive reading*
(Nishizawa et al., 2009)

Words read	Effect on students	Effect on test scores
100,000	Get accustomed to reading without translation	Gains in class average ACE scores
300,000	Acknowledge their own capability to read in English	Gains in class average TOEIC scores
1,000,000	Become able to select appropriate books independently	Gains in individual students' TOEIC scores
3,000,000	Possibly become able to achieve proficiency equivalent to people with one-year study abroad experience	

seems from the author's experience of facilitating extensive reading programs that the certain amount or one stage consists of roughly 10,000 words. Consequently, the research question posed for the present study is: In what stage(s) does the improvement of reading ability appear when the reading amount is less than 100,000 words?

Method

Participants

The subjects in this study were 70 freshmen in the faculty of law at a private university in Osaka, Japan. Students were required to take an oral communication course with a non-Japanese instructor once a week and a reading class with a Japanese lecturer that met twice a week. They were ability-grouped according to the results of TOEIC Bridge at the beginning of the school year. They took TOEIC IP toward the end of the year, the score of which were incorporated into their final grades of the reading course. The participants were composed of 21 elementary and 49 intermediate level students enrolled in the author's classes. There were originally 81 students in total, but due to some missing data and dropouts, the study was conducted on 70 students.

In-class and outside-the-classroom extensive reading

Although the curriculum of the reading class was coordinated with two assigned textbooks, the instructors had freedom to plan their own teaching. In the classes under study, 15 to 20 minutes of every lesson was allocated to extensive reading and the amount of reading was part of final grades.

Books were selected by the author depending on the interest, English level and reading speed of the students referring to *Eigo tadoku kanzen gaido bukku* (Furukawa, Kanda, Komatsu, Hatanaka & Nishizawa, 2005) and *Mezase 100 man go: Dokusho kiroku techo* (Furukawa, 2005) as summarized in

Table 2 *Series and levels mainly used in the extensive reading program*

Book types	The names of the series (levels)
Graded readers	Foundation Reading Library (1-5), Macmillan Readers (1), Oxford Bookworms (0), Penguin Readers (0-1), Cambridge English Readers (0-1), Fast Forward (6-10)
Leveled readers	All Aboard Reading (1-2), Step Into Reading (3), I Can Read (1-2), Scholastic Readers (1-2), Penguin Young Readers (1-2), Oxford Reading Tree (3-8), Rookie Read About Health, Rookie Read About Holidays, Rookie Read about Geography, Rookie Read About Biography, Cambridge Storybooks (2-4), Oxford Classic Tales (Beginner 1-2, Elementary 1)

Table 2. Students chose books that suit their interest from among those brought by the instructor to the classroom. They were assigned to complete reading record sheets with short comments on the books they read along with basic information such as the titles and the number of words the books contained in order to accumulate points for their grades. The instructor assisted the students as one of the ten principles by Day and Bamford (1998) suggested. In the first few introductory lessons, using very easy picture books and books with CDs, students were instructed to read smoothly without stopping, regressing or translating English into Japanese, to guess the meaning of unfamiliar words from storylines and pictures and to draw the pictures of stories in their minds as they read. Based on their reading speed and the results of EPER¹⁾ tests, they were advised on which levels of books they should read. They also discussed books with the instructor and were given individual counseling sessions while they were reading. Students were encouraged to read outside the classroom, and they were allowed to take books home or read books reserved in the library which were similar to the series they were reading in the classroom. While there were only a few who went to the library, a great deal of the students checked out books from the classroom and read them at home or on the way to and from school.

Questionnaires were administered in May and January in order to investigate the students' attitudes toward extensive reading as well as other factors which might influence their reading such as reading habits and previous reading experience. The results showed that the majority of the participants continued enjoying extensive reading throughout the year. It was also revealed that most of them had high instrumental motivation to learn English.

Procedure

The reading record sheets that the students completed in the spring and fall semesters were collected and examined. When all the necessary information was filled in and the short comment was satisfactory enough to prove that the book was read and understood, the number of words the

book contained was counted as points for the final grade. Data were input into Excel first, then transferred to SPSS (version 18.0). To ensure that there was a relationship between the total number of words read and test scores, Pearson correlation coefficient was computed. Then, a matched *t* test was run to see if there was a difference between test scores before and after extensive reading. The students were divided into ten groups based on the total number of words they read. The first group comprised those who read less than 20,000 words since there was no one who accumulated less than 10,000 words, and each additional 10,000 words made the next eight groups. The last group consisted of a few students whose reading amount was greater than 100,000 words. A one-way analysis of variance (ANOVA) was performed on SPSS followed by planned comparisons of the ten groups to discover where the differences were yielded.

Results and Discussion

As shown in Table 3, the students read 46,531 words ($SD = 23580.86$) on average throughout the year. The mean score of TOEIC they took toward the end of the year was 389 ($SD = 68.29$) and that of the reading section was 172 ($SD = 40.81$). The results of Pearson correlation coefficient confirmed that the total number of words read is significantly related to TOEIC scores ($r = .238, p < .05$) and the scores of the TOEIC reading section ($r = .248, p < .05$). The degree of the relationship of TOEIC scores and the scores of the TOEIC reading section with the total number of words read does not differ very much (Brown, 1988). Furthermore, some researchers have observed the facilitative influence of extensive reading on listening (Takase, 2010). Nevertheless, it is more plausible that the effect of extensive reading appears in the improvement in reading ability. Therefore, the students' scores on the TOEIC reading section are primarily used in the further analyses of the current study.

Table 4 shows the descriptive statistics of the converted scores of TOEIC Bridge²⁾ and TOEIC scores. The scores of TOEIC are compared in this analysis as the conversion of TOEIC Bridge is not available separately for listening and reading sections. Also, the number of subjects, mean and standard deviation of TOEIC scores slightly differ from those listed in Table 3. This is due to the unavailable scores of two students who failed to take TOEIC Bridge in April. The *t* test was applied on the scores of 68 students, therefore. There is a significant difference between the converted

Table 3 *The descriptive statistics of students' reading performance*

	N	M	SD
Total number of words read	70	46531.07	23580.86
TOEIC scores	70	389.00	68.29
Scores of reading section of TOEIC	70	172.29	40.81

Table 4 *The descriptive statistics of the converted scores of TOEIC Bridge and TOEIC scores*

	Time	N	M	SD	Gain
TOEIC Bridge (converted)	April, 2009	68	332.57	21.432	
TOEIC	November, 2009	68	389.71	69.087	57.14

Note. The mean and standard deviation were calculated on the scores of 68 students as the scores of TOEIC Bridge of two students were missing.

Table 5 *The descriptive statistics of ten groups*

Group	Total number of words read	N	Scores of TOEIC reading section	
			M	SD
1	-19,999	4	145.00	30.28
2	20,000-29,999	16	146.88	30.43
3	30,000-39,999	13	186.92	28.54
4	40,000-49,999	13	183.46	52.02
5	50,000-59,999	8	170.00	35.05
6	60,000-69,999	5	173.00	45.63
7	70,000-79,999	3	206.67	70.77
8	80,000-89,999	3	166.67	17.56
9	90,000-99,999	3	193.33	27.54
10	100,000-	2	195.00	56.57
Total		70	172.29	40.81

scores of TOEIC Bridge ($M = 332.57$, $SD = 21.432$) given prior to the extensive reading program and the scores of TOEIC ($M = 389.71$, $SD = 69.087$) administered later that year ($t(67) = -8.209$, $p < .05$). It should be noted that no control group existed in the present study and that the influence from other class work could not be avoided. Despite this fact, the gain in the mean (57.14 points) suggests an improvement in general English proficiency and it can be said that extensive reading has played a positive role rather than negative and contributed to the gain to some extent.

Table 5 reports the descriptive statistics of the ten groups utilized for ANOVA. As shown in Table 6, a one-way ANOVA yielded the effect of the total amount of words read on the scores of the TOEIC reading section ($F(9, 60) = 1.738$, $p < .05$). Table 7 summarizes the results of planned comparisons that followed ANOVA. The hypothesis of the present study is directional since the relationship between extensive reading and the improvement in English proficiency is positive as concluded in a lot of previous research. Therefore, a one-tailed test can be employed (Field, 2009). The significant results of the one-tailed test are in parentheses.³⁾

The results of ANOVA demonstrate that there is a significant difference in the means between the ten groups and the planned comparisons identify the difference emerging from comparisons #1 to #6. This indicates every 10,000 words read up to 69,999 can result in difference in test scores. Grabe

Table 6 *The results of ANOVA*

Source of variance	SS	df	MS	F
Between groups	23764.382	9	2640.487	1.738*
Within groups	91169.904	60	1519.498	
Total	114934.286	69		

* = $p < .05$ Table 7 *The results of planned comparisons*

Comparison	Groups	df	t
1	1 vs. 2-10	60	-1.722 (*)
2	1-2 vs. 3-10	60	-2.987*
3	1-3 vs. 4-10	60	-2.186*
4	1-4 vs. 5-10	60	-1.684 (*)
5	1-5 vs. 6-10	60	-1.736 (*)
6	1-6 vs. 7-10	60	-1.725 (*)
7	1-7 vs. 8-10	60	-.779
8	1-8 vs. 9-10	60	-1.166
9	1-9 vs. 10	60	-.772

* = $p < .05$

and Stroller (as cited in Yamashita, 2008) state that the positive impact of extensive reading is not recognized in a short period of time. However, the outcome of the current study suggests that extensive reading can affect test scores at a relatively early stage. Similarly, Yamashita (2008) reports that the reading ability of her students improved in a nine-week extensive reading program. She concludes that the improvement was perceived in general reading ability but not in linguistic ability. The same could be true with the participants in this study.

It can be argued that higher proficiency has caused students to read more. This hypothesis, however, needs to be rejected as the number of words read and reading ability do not correspond perfectly. The means of the ten groups do not show a complete linear positive trend. To be more specific, the means of group #8, #9 and #10 are lower than that of group #7. Also, research by Yamashita in 2004 and 2007 has proved that higher proficiency does not necessarily lead to more reading although learners with higher proficiency feel more comfortable reading in English than those with lower proficiency.

Another point that should be discussed is the distribution of the participants in this study. 59 students out of 70 cluster in groups #1 to #6 as shown in Table 6. This is where the difference is observed. Statistically significant results might have been found also in comparison #7 to #9 if there had been more students whose reading amount was large. In other words, the outcome of this study does not necessarily imply that reading more than 70,000 words does not foster reading ability or

does not contribute to the improvement in test scores.

Yamashita (2004, 2007) confirms that the affective domain of reading attitudes in L1 tends to be transferred to reading attitudes in L2. According to her, those who like reading in L1 are more likely to like reading in L2 regardless of L2 proficiency. This offers an explanation why the students in group #8 did not achieve higher scores and the means of groups #3 and #4 were relatively high. It is possible that the participants in group 8 liked reading in general no matter what language books were written in, while those in groups #3 and #4 did not.

Conclusion

The relationship between the total number of words read and the scores of the TOEIC reading section was analyzed in this study. First, correlation analysis was conducted to indicate that the number of words read was related to test scores. Then, a matched-*t* test was carried out to reveal gains in the means between test scores at the beginning and end of the school year. Finally, 70 participants were divided into ten groups depending on the total number of words they read for one academic year in an extensive reading program. A one-way analysis of variance was run followed by planned comparisons. The results yielded suggested that there was a significant difference between groups and that the difference emerged from the 6 groups where the participants read up to 69,999 words.

Some limitations that existed in the current study should be clarified. As mentioned already, there was no control group which was needed to assess the effects of extensive reading precisely, and extensive reading was not the only English learning that the participants were engaged in. This might have influenced test scores greatly. Moreover, there might have been students who did not bother to keep a perfect record of all the books they read on their reading record sheets as well as students who were careless enough to lose some sheets. The data might have been slightly more accurate if this situation had been somehow avoided.

It was hoped that the results obtained in this study implied that every 10,000 words read in an extensive reading program had a potential to be a reasonable measure to recognize the improvement in test scores, hence in reading ability. However, it is not clear whether what was found in this study can be applied to other groups of learners. Thus, it seems more appropriate to simply report that there was a significant difference than to discuss implications further. More research is needed to regard every 10,000 words read as a cause of improvement in reading proficiency.

Notes

- 1) EPER stands for Edinburgh Project on Extensive Reading. It is an extensive reading project launched in 1981 by the University of Edinburgh, and they have developed tests so that graded readers are systematically used (Yamashita, 2008).
- 2) The conversion of TOEIC Bridge to TOEIC scores utilized in the current study was available on the official website of Educational Testing Service. (http://www.toeic.or.jp/bridge/pdf/data/Comparison_BridgeandTOEIC.pdf)
- 3) It is said that one-tailed tests generally increase chances to obtain significant results (Oda, 2007). This was not the intention in the present study. Therefore, parentheses were used for the results of the one-tailed test to be precise.

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多読プログラムにおける総読書語数と テスト結果の関わりについて

桜 井 延 子

要 約

本研究は、多読プログラムにおける総読書語数とテスト結果の関わりを探るものである。ピアソンの相関係数から総読書語数とテスト結果には有意な相関があり、対応のあるサンプルの T 検定では多読開始前と開始後のテスト結果に有意な伸びがあることが明らかになった。被験者である日本の大学生 70 名は総読書語数により 10 グループに分けられ、一元配置の分散分析が行われた。グループ間に有意差が確認され、対比の検定によりその差は 2 万語以下から 7 万語までの 6 つのグループに起因していることが明らかになった。

キーワード：多読，総読書語数，一元配置の分散分析，対比の検定，トーマックテスト