EFL Learners' Reading Strategies: their Development and the Effect of Text Modification[1]

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Abstract

Although some studies have investigated the effects of text modifications on reading performance (e.g., Yano, Long, & Ross, 1994), no study has investigated what different reading processes language learners go through while reading either an original (baseline) or modified text. In addition, most studies focused on a development of reading strategies not in a second language (L2) but in a first language (L1), although there are some studies that have researched how learners develop their reading strategies. The present study thus investigated two issues: (a) the differences of the reading strategies employed by learners of English as a foreign language (EFL) while reading either baseline or modified texts, and (b) the development of the reading strategies employed by EFL learners. Participants were twelve Japanese university students who majored in English. Before and after the treatments with two kinds of texts, i.e., baseline and modified texts, think-aloud protocols and retrospective interviews were conducted. The results indicated no statistically significant differences in the reading strategies

that second language learners used while reading either baseline or modified texts, but the development of the reading strategies employed by the L2 learners were found.

1. Introduction

There are some studies that have investigated the effects of text modifications on reading performance (e.g., Yano, et al., 1994); however, no study has examined what reading processes language learners go through while reading either baseline or modified texts. In addition, although some studies have investigated reading strategies employed by good readers and poor readers, there are almost no studies that have investigated how learners develop them in L2. This study claims that more research should be conducted on these issues, thus investigating: (a) the differences of the reading strategies employed by EFL learners while reading either baseline or modified texts, and (b) the development of the reading strategies employed by EFL learners over time.

Some researchers have examined the effects of modified texts, e.g., graded readers, simplified texts and elaborated texts, on second language (L2) learners' reading comprehension (Oh, 2001; Yano, et al., 1994). Yano et al. conducted reading comprehension tests on almost 500 Japanese EFL learners using a baseline text and two modified texts (i.e., simplified and elaborated texts[2]). The results showed that the learners understood the simplified texts better than the baseline texts. There were, however, no significant differences in the comprehension rates between baseline and elaborated texts, and between simplified and elaborated texts. They claimed that the learners reading the elaborated texts had to read the texts faster

than those who read the other types of texts because the elaborated texts were longer and more difficult. Oh (2001) examined 325 Korean EFL learners in a manner similar to Yano et al. (1994), and investigated the effect of text modification in relation to learners' language proficiency. The results showed that simplified texts were effective in improving reading comprehension for intermediate learners, but not for beginners. Elaborated texts helped with comprehension skills of both intermediate and beginning learners. There was no significant difference in the comprehension rates between simplified texts and elaborated texts, although she supposed that elaborated texts would advance learners' reading comprehension better than the other types of texts. These studies indicated that modified texts had an effect on reading comprehension. However, to the best of my knowledge, no attempt has been made to give an explanation of the differences in the reading process of baseline and modified texts.

Reading strategies employed by L1 and L2 learners have been investigated from various viewpoints, e.g., strategic L1 use in L2 reading, strategies employed by good readers and poor readers, and their development (Anderson, 1991; Block, 1986; Bråten & Strømsø, 2003; Davis & Bistodeau, 1993; Kern, 1994; Pressley & Afflerbach, 1995; Upton, 1997; Upton & Lee-Thompson, 2001; Yamashita & Yokoyama, 2004a, 2004b). Upton (1997), and Upton and Lee-Thompson (2001) examined reading strategies while reading L2 texts with think-aloud protocols. These studies found that L2 learners use their L1, (a) to infer unknown words, (b) to confirm their comprehension, and (c) to integrate the contexts for the global understanding. Kern (1994) also pointed out the availability of learners' L1 while

reading L2 texts (mental translation), when they encountered unknown words, integrated new information into what they have understood, checked their comprehension (p. 455). Yamashita and Yokoyama (2004a) indicated that these strategies were very helpful for L2 learners, especially for beginning-level learners. They also suggested that those learners should practice L2 reading by integrating contexts in L1 for global understanding. Thus, translation to L1 fulfills an important role for beginning-level learners to read L2 texts. These studies, however, mentioned that word-by-word translation was ineffective, and as their L2 proficiency developed, L2 learners did not rely on translation. In terms of the characteristics of reading strategies employed by poor and good L2 readers, Anderson (1991) argued that good readers increased the number of strategies they used, but they employed the same types of strategies as the poor readers. He also pointed out that the good readers used one strategy in combination with others, which often led to the successful comprehension.

The longitudinal studies have been also conducted to investigate development of reading strategies in L1 reading (Bråten & Strømsø, 2003) and in L2 reading (Block, 1986; Yamashita & Yokoyama, 2004b). Block investigated the reading strategies employed by poor L1 and L2 readers. The results showed that there was no difference between L1 and L2 strategies employed. She, however, indicated that 'integrating' is an effective strategy for L1 and L2 readers in improving their reading proficiency. On the other hand, Yamashita and Yokoyama (2004b) investigated the development of L2 reading strategies by conducting think-aloud protocols on five EFL learners in a Japanese university. The results showed that the

learners, who came to employ the strategies employed by good readers (e.g., inference and integration), did not necessarily improve their reading proficiency (p. 78). Bråten and Strømsø (2003) also used think-aloud protocols to investigate the development of L1 reading strategies that Norwegian university students employed to read law textbooks. The results showed that the students came to use their background knowledge to comprehend the texts.

To summarize these studies, the characteristics of good L2 readers were clarified. First, good readers do not rely on their L1 while reading L2 (Kern, 1994; Upton, 1997; Upton & Lee-Thompson, 2001; Yamashita & Yokoyama, 2004a). They, however, sometimes employ translation, when encountering some problems (e.g., unknown words and complex structures), but do not translate word-by-word into their L1 (Kern, 1994). Second, good readers understand texts both locally and globally, while poor readers only locally focus on the texts (Block, 1986; Upton, 1997; Upton & Lee-Thompson, 2001; Yamashita & Yokoyama, 2004a). Third, good readers do not only try to comprehend texts locally but also use contexts for global understanding (Block, 1986; Kern, 1994; Yamashita & Yokoyama, 2004a). Fourth, good readers employ some specific reading strategies, for example, integration, inference and use of schema (Block, 1986; Bråten & Strømsø, 2003; Yamashita & Yokoyama, 2004a). However, not all readers who employed these strategies are good readers (Yamashita & Yokoyama, 2004b), implying that mere use of the strategies does not necessarily lead to successful comprehension (Anderson, 1991; Kadota and Noro, 2001).

Reading strategies that good readers prefer to use have been also investigated in relation to language proficiency. Block

(1986) suggests good readers employ 'integrating'[3] and improve their reading proficiency. Bråten & Strømsø (2003) mentions that they tend to use more background knowledge as they improve proficiency. Yamashita and Yokoyama (2004a) suggest that they employ 'inferring' strategy[4] to understand their unknown words or incomprehensible sentences

2. Research Questions

Many researchers have investigated reading strategies, but little is known about the following two issues. The first is the differences in reading process while reading either baseline or modified texts. Some studies examined the effects of text modification on reading comprehension, but no attempt has been made to investigate the process of reading baseline and modified texts. This study will attempt to investigate reading strategies that learners use in order to clarify the processes in reading different types of texts. The second is whether learners change their reading strategies when they have improved their reading proficiency. This will be clarified by investigation of reading strategies employed by learners who have improved reading proficiency.

Thus, this study attempts to answer the following two research questions as follows:

1) How does the modification of texts influence reading strategies employed by L2 learners?
2) When L2 learners develop their reading proficiency, do they come to employ reading strategies that good readers prefer?

3. Methods

3.1 Participants

Participants were 12 Japanese freshman and sophomore university students majoring in English education. To measure their reading proficiency, G-TELP Level 3 was conducted twice as a pretest and a posttest, in May and November, 2004 respectively. The mean score of the pretest was 54.8, and the standard deviation was 13.1. The mean score of the posttest was 56.3, and the standard deviation was 12.9. Table 1 shows that five participants improved, three did not or rarely change, and four lowered their test scores.

Table 1. *Reading Proficiency Improvement of the Participants*

Student No.	Pretest	Posttest	Difference
S01	79	67	-12
S02	67	67	0
S03	67	67	0
S04	58	67	9
S05	58	50	-8
S06	58	38	-20
S07	54	71	17
S08	54	42	-12
S09	46	58	12
S10	46	62	16
S11	42	54	12
S12	29	33	4
M	54.8	56.3	1.5
SD	13.1	12.9	12.3

3.2 Materials

Four essays which participants did not have much background knowledge about were selected for this study. To

investigate the effect of text modification on reading strategies, we prepared both baseline versions and modified versions.

To facilitate comprehension, all modified versions contained three types of modification:

(a) a word or a phrase was embedded (EW).

(b) a clause was embedded (EC)

(c) complex syntax was reformulated into simple syntax (RC).

Modification Sample:

1. Baseline version:
   They had dinner at the old restaurant, where they met for the first time, and enjoyed French cuisine.
2. Modified version:
   They had dinner at the old restaurant. They met there for the first time thirty years ago. They enjoyed French cuisine which was served at the restaurant.

Table 2. *The Number of Modification Types in the Four Modified Texts*

Modification Type	Material 1	Material 2	Material 3	Material 4
EW	8	8	7	7
EC	5	6	5	5
RC	3	3	4	4

Note. EW = embedding the words to make the low-frequency word or sentence clearly understandable, EC = embedding the clauses to make the low-frequency word or sentence clearly understandable, RC = Reformulating complex syntax into simple syntax.

In this sample, modifications were conducted for two

purposes. First, to reduce the syntactic complexity, a long sentence in the baseline version was divided into three sentences in the modified version to create a supporting context in which readers understand the text better; "thirty years ago" was added to specify when they met at the restaurant. Second, to help infer the meaning of "cuisine," the relative clause "which was served at the restaurant" was embedded (EC). The number of modification types in the four modified texts contained is shown in Table 2.

Table 3. *Length and Readability of the Baseline Versions*

Text	Words	Sentences	Fry's Readability
Material 1	448	35	7
Material 2	415	29	7
Material 3	392	29	7
Material 4	406	33	7
M	415.3	31.5	7

Table 4. *Length and Readability of the Modified Versions*

Text	Words	Sentences	Fry's Readability
Material 1	562	39	7
Material 2	494	32	7
Material 3	433	32	7
Material 4	448	38	7
M	484.3	35.3	7

Table 3 and 4 show the length and the readability of the two versions. The average number of words (M = 484.3) and sentences (M = 35.3) were larger in the modified versions than

that of words (M = 415.3) and sentences (M = 31.5) in the baseline versions. However, the readability[5] of both versions of the four texts was in the seventh grade level to exclude the effect of the readability on reading strategies.

3.3 Procedure

Based on the pretest, participants were divided into two groups, Group A and B (Table 5). The mean score of Group A was higher than that of Group B, and the standard deviation of Group A was lower than that of Group B, because Group B included S12 who got the much lowest score in the pretest.

Table 5. *Mean Score and Standard Deviation of G-TELP 1*

	M	*SD*
Group A (*N*= 6)	56.3	9.5
Group B (*N*= 6)	53.3	16.9

To investigate the reading processes, think-aloud protocols and retrospective interviews were conducted with both groups of participants, who read either baseline or modified texts, in July and October, 2004. Many studies (Kadota & Noro, 2001; Leow & Morgan-Short, 2004; Pressley & Afflerbach, 1995; Takanashi & Ushiro, 2000) recommended that two types of verbalizations, i.e., concurrent and retrospective verbalizations, be used, because only one type of verbalization is not able to make all cognitive processes displayed. Therefore, in this study, both think-aloud and retrospective interviews were conducted.

Before the experiment, participants were, first of all, asked to listen to the examples of think-aloud, and were then given a sample text to read. They were told that they should read at

their own pace. They were also reminded that it was important to keep saying everything they were thinking. For the experiment, they read two types of texts (Table 6), each with a multiple choice test they had to take after they finished reading the text. Right after each test, they took a retrospective interview.

Table 6. *Materials Used in the First Term and the Second Term*

	First term	Second term
Group A (N= 6)	Material 1 Baseline	Material 3 Baseline
	Material 2 Modified	Material 4 Modified
Group B (N= 6)	Material 2 Baseline	Material 4 Baseline
	Material 1 Modified	Material 3 Modified

Participants were also given reading exercises to do between the first term and second term to develop their reading proficiency. The reading exercises included 32 passages, and each passage from 80 to 150 words had some multiple-choice tests, which asked questions about the passages. Participants did all the exercises at home for two months. In this session, they were not provided with any instruction on reading strategies.

Both thinking-aloud and retrospective interviews were recorded with IC recorders, transcribed and categorized for the analysis. In this study, nine reading strategies were targeted, because these reading strategies were employed by many good readers and observed in relatively large numbers in the previous studies (e.g., Block, 1986; Kern, 1994; Yamashita & Yokoyama, 2004a, 2004b). The nine reading strategies and their definitions[6] are shown in Table 7.

Table 7. *Reading Strategies and their Definitions*

Reading Strategies	Definitions
Translating to infer unknown words	Translate English into their L1 to infer their unknown words.
Translating to confirm comprehension	Translate English into their L1 to confirm the comprehension.
Inferring from context	Infer their unknown word from the contexts.
Inferring from learners' knowledge	Infer their unknown word from their knowledge, e.g., word form and loan words.
Suspending inference of unknown words	Suspend inference of unknown words until they find a cue to infer them.
Stopping inference of unknown words	Stop inferring unknown words, when they think that they are not important.
Integrating	Integrate new information into what they have understood in the text.
Predicting	Predict what will be written in the next sentences and paragraph.
Using learners' background knowledge	Understand sentences or contents with their background knowledge.

In order to investigate the development of reading strategies (research question 2), participants were divided into two groups, i.e., group who improved proficiency (henceforth IP Group) and group who lowered proficiency (henceforth LP Group). IP group was composed of the participants who increased more than five points from G-TELP 1 to G-TELP 2,

while LP group was composed of those who decreased more than five points.

4. Results and Discussion

Research question 1 addresses the effects of text modification on the reading strategies.

Table 8. *Frequencies and Proportions of Reading Strategies Employed in the Baseline and the Modified Texts*

Reading Strategies	Baseline	Modified
	Frequency (%)	Frequency (%)
Translating to infer	3 (1.4%)	17 (7.0%)
Translating to confirm comprehension	35 (16.3%)	53 (21.7%)
Inferring from context	54 (25.1%)	57 (23.4%)
Inferring from knowledge	21 (9.8%)	22 (9.0%)
Suspending inference	10 (4.7%)	12 (4.9%)
Stopping inference	15 (7.0%)	13 (5.3%)
Integrating	58 (27.0%)	46 (18.9%)
Predicting	13 (6.0%)	12 (4.9%)
Using background knowledge	6 (2.8%)	12 (4.9%)
Total	215 (100.0%)	244 (100.0%)

Table 8 shows the proportional distribution of reading strategies. Two kinds of translation strategies, i.e., 'translating to infer unknown words' and 'translating to confirm comprehension,' constituted a large percentage of the strategies in reading the modified texts. Yano et al. (1994) mentioned that

sentences in modified texts become longer and more complex. Kern (1994) pointed out that sentence length and syntactic complexity in texts affect learners' reading process, causing them to translate. Thus, when text modifications made materials more difficult, learners must focus on translation strategies. On the other hand, 'integrating' constituted a larger proportion in baseline texts than in modified texts. This indicates that simpler grammatical structures in the baseline texts forced the learners to work more on the strategies.

Table 9. *Descriptive Statistics and T-test Results for the Scores on the Comprehension Tests in the Baseline and Modified Texts*

	Text Type	*M*	*SD*	*t*	*p*
First term	Baseline	3.8	1.7	0.522	0.612
	Modified	4.1	1.4		
Second term	Baseline	4.9	1.2	-0.394	0.701
	Modified	4.8	1.4		
Total	Baseline	8.8	2.7	0.129	0.900
	Modified	8.8	2.5		

Note. Maximum score = 10.

Table 9 shows that the text modification in this study did not contribute to the comprehension of the texts. This may have resulted in similarities in the use of reading strategies between the two types of texts. There was also a possibility that the modifications may have confused some learners, since the comprehension scores of the baseline version is 0.1 point higher than those of the modified versions. This result suggests that it is not simply modification but better comprehension that makes

a significant difference in the use of reading strategies.

To answer research question 2, which addresses development of reading strategies employed by the EFL learners, this study will compare reading strategies employed in the first think-aloud with those in the second think-aloud. There were some features of the reading strategies employed by some learners in IP group.

Learners in IP group showed a specific feature in the first think-aloud, when they employed 'inferring' strategies. All learners except for S07 in IP group employed 'integrating' strategies as well to infer the meanings of unknown words. They first understood a sentence containing an unknown word or phrase, and then inferred its meaning. Or when they could not understand the sentence containing an unknown word or phrase, they proceeded until they encountered a clue that helped understand the sentence that contained the unknown word or phrase. For example, in the retrospective interview of the first think-aloud, when they employed 'inferring' strategy, S04 and S09 in the IP Group commented below[7]:

> S04: I didn't know "they have a day off," but I understood that they went to various place instead of school, when I read below the text, so I thought that the meaning of "they have a day off" was they didn't go to school.
>
> S09: I didn't know the meaning of trader here, but I found it when I read the fifth paragraph.

This shows that they did not just employ 'inferring' strategies

but combined the 'inferring' and 'integrating' strategies. All learners in the LP Group, on the other hand, did not use this combination when they encountered unknown words or phrases.

> S05: I didn't know the meaning of "spectacles," but I thought it was a kind of a party. I also didn't know the meaning of "authorities," but I did not at all worry about it.

> S08: I was thinking how to read "equinox." I didn't know its meaning, either, but I didn't infer.

Language proficiency has another effect on the use of reading strategies. The learners in LP group tended to infer unknown words locally. They tried to look for a clue within a sentence that contained the word, and gave up, although the following sentences would help them infer its meaning. On the other hand, the learners in IP group tried to infer globally. For example, S07 in IP Group, who did not use the combination of the reading strategies in the first think-aloud, showed the combination after the second think-aloud.

> S07: First, I didn't know the meaning of "monk" and I couldn't understand it to the very end, but in the next sentence, I found "the monk decided," so I thought "monk" is a human or its name.

In this retrospective interview, S07 first could not infer the meaning of "monk," but she inferred it was a human from the verb "decided" in the next sentence. That is, some learners in IP

group eventually combined 'inferring' and 'integrating' strategies. No learners in LP group, however, showed the combination in the second think-aloud, either. In Yamashita and Yokoyama (2004b), no learners combined their reading strategies in the first think-aloud, and as a result, most of them lowered their reading proficiency though they employed good readers' strategies. Therefore, it is important for learners not only to employ 'inferring' or 'integrating' strategies but also to combine these strategies. Learners who are able to combine their reading strategies can possibly improve their reading proficiency.

There was, however, no difference in both frequencies and proportions in reading strategies employed in IP group in the first and second think-aloud, except for two 'inferring' strategies (See Table 11) and no combination of the reading strategies except for that of the 'inferring' and 'integrating' strategies were also shown. One plausible explanation comes from the linguistic threshold hypothesis (Clarke, 1980). Learners who do not attain a threshold level are not able to employ and combine various reading strategies in L2 reading (Yamashita & Yokoyama, 2004b). Learners in IP group, however, showed a considerable increase in five strategies, 'translating to infer,' two kinds of 'inferring,' 'integrating,' and 'predicting,' all of which are considered good readers' strategies (Block, 1986; Upton, 1997).

These results imply a drawback of reading strategy instruction, which some studies found an effective in improving learners' reading proficiency but some did not. That is, if learners acquire the individual reading strategies which good readers use, then they do not always improve their reading proficiency. The present study, therefore, suggests that in reading strategy instruction, the teachers should focus more on

good readers' strategies found empirically in the studies and the combinations of them for learners to develop good readers' strategies and improve their proficiency more effectively.

Table 11. *Frequencies and Proportions in the Reading Strategies Employed in IP Group in the First and Second Think-aloud*

Reading Strategies	First	Second
Translating to infer	0 (0%)	10 (7.90%)
Translating to confirm comprehension	24 (46.2%)	28 (22.20%)
Inferring from context	11 (21.2%)	31 (24.60%)
Inferring from knowledge	0 (0.0%)	10 (7.90%)
Suspending inference	4 (7.7%)	8 (6.30%)
Stopping inference	1 (1.9%)	3 (2.40%)
Integrating	11 (21.2%)	26 (20.60%)
Predicting	1 (1.9%)	8 (6.30%)
Using background knowledge	0 (0%)	2 (1.60%)
Total	52 (100%)	126 (100%)

However, according to the linguistic threshold hypothesis, the strategy instruction does not work well on all levels learners. Yamashita and Yokoyama (2004b) and Ikeda (2004a; 2004b) indicate that intermediate learners may benefit from the strategy instruction but beginners may not.

5. Conclusion

This study was designed to address two research questions.

As for the first research question, the results did not prove the assumption that text modification influenced the use of reading strategies employed by EFL learners. This may be due to the fact that the modification did not enhance the comprehension. On the contrary, the modification may have possibly interrupted their reading process. As for the second research question, there are two important findings in this study. First, there was a substantial increase in the number of reading strategies when the learners improved their proficiency. Second, not only employing but also combining 'inferring,' 'integrating,' and 'predicting' are important for learners to become good readers. Thus, critical to development of reading proficiency is not only acquisition of good readers' strategies but also how to use them (Anderson 1991).

There are some limitations in this study. First, we should reinvestigate the text modification used in this study to find out what will contribute to the better comprehension. Second, although this study showed some reading strategies which improve their reading proficiency, other reading strategies which were not targeted in this study may also have possibilities to improve reading proficiency. Third, there have been only a few studies designed to address the development of the reading strategies employed by L2 learners, so further research is needed which will sample a large number of subjects and observe them in a much longer period.

Note

[1] An earlier draft of this paper was presented at the 44th Annual convention of the Japan Association of College English Teachers, Tokyo, in September, 2005.

I would like to take this opportunity to acknowledge a number of people who helped me making my research possible. I wish to express my appreciation to Mr. Bozek, Christopher at Kitami Institute of Technology, who gave me intellectual and helpful advice.

[2] In simplified texts, lower-frequency vocabulary and linguistically difficult sentences are varied to more frequent words and simpler sentences in comparison with unmodified texts. On the other hand, in elaborated texts, complexity in both words and syntax in unmodified texts is maintained, but "some information is added by clarifying message content and structure and by adding redundancy" (Yano, et. al., 1994, p. 193).

[3] In Yamashita and Yokoyama (2004a), 'integrating' strategy was called 'summarizing a paragraph or an overall text.'

[4] In Yamashita and Yokoyama (2004a), 'inferring' strategy was called 'wrestling with word or phrase meaning' and 'wrestling with clause or sentence meaning.'

[5] The Fry readability formula was used to calculate a grade level score of English texts by Fry.

[6] Some previous studies included translation into reading strategy categories (Upton, 1997; Upton & Lee-Thompson, 2001 Yamashita & Yokoyama, 2004a, 2004b). Translation is, however, a dominant strategy in thinking aloud to reduce a load of learners' working memory, because thinking aloud increases it (Kern, 1994; Leow & Morgan-Short, 2004). This means that L2 learners who are conducting thinking aloud may employ more translation to reduce the burden than usual, even if they do not employ any translations. Namely, it is lower reliability to investigate how many translations learners employ with think-aloud protocols.

Moreover, the research question of this study is whether L2 learners come to employ reading strategies which good readers prefer. Thus, this study focuses on why readers employ translation strategy except for word-by-word translation (Kern, 1994).

[7] The retrospective interview was conducted in Japanese. Therefore, all the comments by participants were translated into English by authors.

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