Differential Effects of Comprehension Strategy and Grammar Instruction on Second Language Reading Comprehension*

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Ⅰ. Introduction

Reading ability is probably one of the most important and fundamental skills for any college students. It is also true that acquiring second or additional language (L2) reading ability is as important as having reading skills in their mother tongue. They frequently find themselves in situations where they need to read, and learn from, a variety of texts written in English. Therefore, it is important for faculty members and/or administrators in charge of college-level English education to be well informed about how reading ability develops, and more importantly, ways to help students improve their reading skills in English as a second or foreign language (ES/FL) in an effective and efficient way.

Like many other schools in Korea, the university where the participants of the study were recruited requires all incoming freshmen to take two mandatory English courses, one in their first year, and the other in their second year. Although efforts were made to align the level of the first course with the majority of incoming students' English proficiency, there were always some students who lagged far behind their peers. Thus, it has become a major programmatic issue to provide instructional help for these low proficiency EFL learners. To address that issue, a remedial course was proposed. The purpose of the course was to enable the learners to successfully take the first-year mandatory English course by boosting their English proficiency, particularly, reading ability. For this, a group of instructors with years of experience in EFL teaching were selected and asked to provide a curriculum of the course. As a result, grammar-based curriculum was proposed and then implemented a year ago. The logic behind this curriculum was simple and straightforward: The main

reason for students' lower general English proficiency was their lack of knowledge of English grammar. Therefore, the best way to help them improve their English would be to teach them English grammar among other skills. An assumption was made that teaching English grammar would lead to the advancement of English reading skills which in turn was believed to help students be better prepared for taking the first-year English course, which was mainly reading-based.

After the first trial semester of the grammar-based curriculum, an evaluation session was held during which various aspects of the course were discussed and evaluated. In the meantime, an alternative proposal was made for the remedial course, specifically the implementation of comprehension strategy instruction.[1] The logic behind this proposal was simple and clear, too. In order to help students improve their English proficiency, and particularly reading ability required for the first-year English course, a better approach would be to teach them how to read effectively and efficiently using comprehension strategies. Therefore, a need for an empirical study arose to test efficiency of strategy, as compared to grammar, instruction in enhancing L2 reading comprehension of students in remedial classes.

1) It should be mentioned that this alternative proposal was made not because the grammar-focused class had been found seriously flawed but rather as an exploratory endeavor seeking for a program that could better meet the needs of the students in remedial classes. Also, the decision-making process was more like a bottom-up style, which means, individual instructors in the curriculum committee were allowed to propose, and if approved, then implement a new curriculum.

Ⅱ. Grammar Instruction for L2 Reading Comprehension

There is no doubt that grammar knowledge is fundamental to language ability and language learning. L2 learning is not an exception. Research in L2 reading also indicates that grammar knowledge has been identified as one of the major predictors for L2 reading comprehension (Grabe, 2009). It has also been shown that there is a strong connection between L2 learners' grammar knowledge and overall proficiency in L2, on the one hand, and reading ability, on the other hand (Alderson, 2000; Gelderen, Schoonen, Glopper, Hulstijn, Simis, Snellings, & Stevenson, 2004; Grabe, 2004). Shiotsu and Weir (2007), for example, examined the relative contribution of syntactic knowledge, as compared to vocabulary knowledge, to L2 reading. They found that syntactic knowledge was a superior predictor over vocabulary knowledge for L2 learners' performance on a text comprehension test. In a more recent study, Trapman, Gelderen, Steensel, Schooten, and Hulstijn (2014) investigated the role of grammar knowledge, combined with vocabulary knowledge, along with fluency and meta-cognitive knowledge in Dutch reading comprehension of monolingual and bilingual adolescent academic low achievers in the Netherlands. They found that the knowledge factor, consisting of grammar, vocabulary and meta-cognitive knowledge, predicts the bilinguals' reading comprehension. Unfortunately, however, exclusive contribution of grammar knowledge to L2 reading comprehension was not investigated in their study. Therefore, it was not clear whether the significance of linguistic knowledge was due to grammar knowledge or vocabulary knowledge, or both. They contended, however, that "It therefore certainly seems worthwhile to pay special educational

attention to L2 vocabulary and grammar for the poorest readers in this group." (Trapman et al. 2014: 16)

A more conclusive evidence for the importance of L2 grammar knowledge to L2 reading comprehension comes from Jeon and Yamashita's (2014) meta-analysis which examined the overall correlation between L2 text comprehension and 10 key reading component skills identified in the literature during the last three decades. What they found was remarkable; L2 grammar knowledge emerged to be the strongest correlate (correlation coefficient r=.85) of L2 reading comprehension, followed by L2 vocabulary knowledge (r=.79), and L2 decoding (r=.56). In their study, grammar knowledge was conceptualized as knowledge about various morphosyntactic properties including tense, aspect, subject-verb agreement, word order, and articles. As shown thus far, it seems obvious that having a good grasp of L2 grammar is closely related to L2 reading comprehension. It is worth noting, however, that the relationship between L2 grammar knowledge and L2 reading comprehension is correlational, not causal. That means, increasing L2 grammar knowledge may lead to L2 reading comprehension enhancement but reversely, it may also be true that enhancing L2 reading comprehension would contribute to L2 grammar knowledge improvement.

When it comes to teaching grammar, it seems far from agreement on the issue of how to teach L2 grammar. In the literature, there is a long history of grammar-based L2 instruction (Ellis, 2002; Nassaji & Fotos, 2004; Spada, 1997; Wilkins, 1978). Ellis (1993), for example, proposed a structural syllabus consisting of teaching various grammatical items in a pre-determined way with the purpose of enhancing learners' awareness of how the target language's grammar works. Ellis (2002; Fotos & Ellis, 1991), however, pointed out the

problems of the assumption that awareness enhanced through explicit teaching of linguistic elements would automatically lead to the use of the items in a real-life situation. Indeed, current research on L2 teaching points to the direction that grammar can, and should, be taught in the context of meaning-oriented interaction (Long & Doughty, 2009; Williams, 2005). In L2 reading, however, studies on the effects of grammar instruction on L2 reading comprehension seem to be rare. Thus, it would be interesting to investigate them. As will be explained in detail in the Procedure section, grammar instruction in the current study was operationalized as explicit teaching of grammatical elements of the English language specifically designed for lower level EFL learners.

Ⅲ. Comprehension Strategies and Strategy Instruction

In this paper, comprehension strategy is defined as a plan or procedure a reader adopts to achieve the goal while reading a text, that is, text comprehension. The purpose of strategy instruction is to promote awareness and control of strategies by the reader so that he or she is able to use those strategies when necessary (Baker & Brown, 1984). In the literature, a wide variety of cognitive and metacognitive strategies have been identified and tested for effectiveness in developing reading comprehension skills by different groups of students for different purposes in different contexts (Dole, Duffy, Roehler, & Pearson, 1991; Lenhard, Baier, Endlich, Schneider, & Hoffmann, 2013; Pressley, Graham, & Harris, 2006). Ample evidence accumulated in L1 reading research suggests that explicit

strategy instruction leads to comprehension enhancement for elementary and secondary school students with or without learning disabilities (Dole, Nokes, & Drits, 2009; Gersten, Fuchs, Williams, & Baker, 2001; Jitendra, Burgess, & Gajria, 2011; Mason, 2004; Mastropieri & Scruggs, 1997; Pressley, Johnson, Symons, McGoldrick, & Kurita, 1989).

There seems to be no reason to believe that strategies proven effective for L1 readers may not be applied to L2 reading (Grabe, 2009). Indeed a large number of studies have identified various strategies used by L2 readers (Block, 1986; Davis & Bistodeau, 1993; Ghavamnia, Ketabi, & Tavakoli, 2013; Hosenfeld, 1977; Lee-Thompson, 2008) and investigated their effectiveness in facilitating L2 reading comprehension. For example, teaching text structure (Carrell, 1985), focusing attention to referential ties (Kitajima, 1997), summarization (Cordero-Ponce, 2000), and semantic mapping and ETR (experience-text-relationship) training (Carrell, Pharis, & Liberto, 1989) have been shown to be effective in enhancing L2 reading comprehension. Also, teaching a group of strategies together including paraphrasing, making inferences, comprehension monitoring, integrating, elaborating, and summarizing has been known to effective in promoting L2 reading comprehension (Aghaie & Zhang, 2012; Akkakoson, 2013; Fitzgerald, 1995; Knight, Padron, & Waxman, 1985; Padron & Waxman, 1988). One interesting point to be noted from the research is that there seemed to be differences in strategy use between proficient and less proficient L2 readers. In Block's (1986) study, for example, more proficient ESL readers in remedial classes in an American college were found to integrate information, be frequently aware of text structure, effectively use general knowledge, personal experience, and association for comprehension, and monitor

their comprehension consistently and effectively. The less-proficient readers, on the other hand, relied more on their personal experiences to comprehend the text, and made fewer attempts to integrate textual ideas. In a more recent study, Zhang, Gu, and Hu (2008) showed that high proficiency L2 learners in an EFL setting used significantly more both metacognitive, for example, self-initiating, planning, and monitoring, reading strategies, and cognitive strategies like making inferences and prediction than low proficiency L2 learners who in turn were overwhelmingly occupied with decoding using up their attentional resources for lower-level, bottom-up processing (for example, Eskey, 1998). Similarly, Ghavamnia et al. (2013) reported that less-proficient Iranian EFL readers predominantly used translation strategy among many others whereas proficient readers utilized metacognitive strategies like self-evaluation and planning more frequently than the less-proficient readers.[2)]

Despite such differences in strategy use between proficient and less-proficient readers described above, it is likely that strategy instruction actually benefits less-proficient readers to a greater degree than it does proficient readers. Kern (1989), for example, showed that American college students learning French as a foreign language trained in using various strategies outperformed those untrained. Those strategies included word analysis, sentence analysis focusing on cohesive devices like connectives, discourse analysis

2) In Block (1986) and Zhang et al.'s (2008) study, think-aloud method was used. Verbal protocols like think-aloud have proved useful, despite some concerns, as an online measure of comprehension processes in reading and learning research (Bereiter & Bird, 1985; Davis & Bistodeau, 1993; Ericsson & Simon, 1998; Johns, 1985; Suh & Trabasso, 1993; Whitney & Budd, 1996). Think-aloud protocols were also used in the current study. For more information about use of verbal protocols in both L1 and L2 research, refer to Gass and Mackey (2000) and Pressley and Afflerbach (1995).

focusing students' attention on cohesion and signaling cues, inference of word meaning, prediction, identifying main ideas, and mapping and hierarchical outlining, as well as before-reading activities like skimming, scanning, or stylistic analysis. However, it was the low-ability group that benefited the most from strategy instruction. Following Palincsar and Brown (1984), M-J Song (1998) examined the effects of strategy instruction using summarizing, predicting, questioning, and clarifying strategies for Korean EFL university students. Results showed that strategy instruction was effective in enhancing EFL reading but interestingly, less-proficient readers benefited more from instruction than more-proficient readers. Moreover, strategy training led to a significant increase in the students' ability to grasp main ideas and make inferences.

In sum, it seems apparent that strategy instruction in various forms has proven effective in enhancing reading comprehension in both L1 and L2 by young and older students with or without learning disabilities, and in the case of L2 reading, more beneficial for less-proficient readers. Studies seem scarce, however, that have investigated effects of comprehension strategy, as compared to grammar-focused instruction, on L2 reading comprehension by low proficiency L2 readers, particularly, in terms of construction of the situation model, as well as the textbase, representation, which will be described further in detail below. Therefore, the current study attempted to fill in the gap in research on the instructional effects of comprehension strategies. The following section describes the levels of representation and how they could be affected by strategy instruction.

Ⅳ. Levels of Mental Representation and Strategy Instruction

Research in discourse comprehension has shown that readers construct a mental representation of text consisting of multiple levels of understanding as an outcome of reading comprehension, and the primary levels are the textbase and the situation model (Kintsch, 1988; Mulder & Sanders, 2012; van den Broek, 2010; van Dijk & Kintsch, 1983). The textbase is the reader's understanding of words and sentences explicitly provided in the text and the situation model is the reader's understanding of what the text is about, involving textual information and knowledge-based inferences. As the ultimate goal of reading comprehension is the construction of a coherent mental representation, that is, situation model, research on the construction of, and updating, situational model has drawn a lot of attention in text comprehension (Duke & Carlisle, 2011; Kintsch, 1998; van den Broek, 1994; Zwaan & Rapp, 2006). The reader can construct the situation model by engaging in active processing of text and integrating textual information with general or topic-related knowledge (Blanc, Kendeou, van den Broek, & Brouillet, 2008; Graesser, Singer, & Trabasso, 1994). Therefore, it is assumed that teaching certain types of strategies would promote active processing of text, which in turn would contribute to the construction of a situation model by helping readers engage in not only lower level, bottom-up processing but also higher level, top-down processing in an integrated manner (Caccamise, Snyder, & Kintsch, 2008; van den Broek, Rapp, & Kendeou, 2005).

Based on the review thus far and our own experience as EFL teachers at college-level in Korea, we chose the following seven

strategies that we believed would help our students in remedial classes improve their reading skills so that they could go beyond the superficial textbase level of understanding of a text and reach a deeper level of understanding of a text, that is, the situation model:

> Paraphrasing: Explain what the sentence in focus means in your own words. (NOT a direct translation word by word!)
>
> Monitoring comprehension: If any problem is detected, make sure that you 1) understand the contextual meaning of a word correctly; and 2) identify phrases and/or clauses syntactically correctly.
>
> Connecting text parts: Combine the meaning of the current sentence in focus with that of the previous ones.
>
> Making inferences: Generate inferences, whenever necessary, to connect text parts, particularly, those whose relationships are not explicitly expressed in the text.
>
> Summarizing: When a paragraph, or other longer sequence of text, ends, explain its overall meaning in your own words.
>
> Elaboration: Integrate what you learn from reading the current text with your prior knowledge, and explain it.
>
> Prediction: Make a guess as to what would come next, and then verify it later.

These seven strategies have proved themselves, or been suggested, either individually or collectively, as effective in enhancing reading comprehension, and more importantly, constructing a coherent representation of text (Dole, Nokes, & Drits, 2009; Jitendra, Burgess, & Gajria, 2011; King, 2007; Linderholm & Zhao, 2008; McNamara,Ozuru, Best, & O'Reilly, 2007). They would do so by promoting L2 readers' active processing of text through rephrasing what the text means in their own words, connecting information drawn

from different parts of the text, generating knowledge-based inferences, integrating textual information with prior knowledge, and monitoring comprehension. It was not our intention to assess the effectiveness of teaching individual strategies on L2 reading comprehension or to find out the most effective strategy/-ies for that matter but to see if there were combined effects of teaching seven strategies together on L2 reading comprehension, particularly, at the level of the situational understanding and the textbase as well. It is to be noted, however, that utilizing such higher-order comprehension skills is the hallmark of a competent reader, and thus it was expected to be a great challenge to teach the strategies to the participants in the study who were low proficiency EFL learners and poor L2 readers as well (Rapp, van den Broek, McMaster, Kendeou, & Espin, 2007).[3)]

The current study investigated the effects of comprehension strategy instruction (SI), as compared to grammar instruction (GI), on L2 reading comprehension by Korean EFL learners in remedial classes. It attempted to address the two research questions (RQ) specifically:

RQ1: What effects will SI, as compared to GI, have on low proficiency Korean EFL learners' reading comprehension at the level of textbase understanding?

RQ2: What effects will SI, as compared to GI, have on low proficiency Korean EFL learners' reading comprehension at the level of situational understanding?

It was assumed that both GI and SI would lead to the students'

3) There are some studies which favored such an approach. For example, Kern (1989, p. 144) argued that "explicit instruction and practice in using reading strategies can override the effect of language proficiency limitations on readers' use of effective reading strategies." He found that effects of strategy instruction were most pronounced among lower ability readers.

performance to more or less the same degree on the textbase measure which assesses sentence-level understanding of the text. Specifically, GI was assumed to promote sentence-level, syntactic processing by enhancing the students' awareness of syntactic properties of constituent structures of a sentence (Ellis, 2002; Nassaji & Fotos, 2004; Spada, 1997). Yet, SI was also assumed to help the students focus their attention on local processing at sentence level by monitoring comprehension and if problems occur, utilizing fix-up strategies such as identifying the contextual meaning of a word correctly and analyzing sentences into constituent structures like phrases and clauses correctly. On the other hand, SI, as compared to GI, would lead to the students' better performance on the situational measure which captures the deeper, and more global, understanding of the text because SI would promote not only local but also global and higher-level processing at discourse level (Pressley, Graham, & Harris, 2006; Rapp, van den Broek, McMaster, Kendeou, & Espin, 2007).

Ⅴ. Method

Ⅴ.ⅰ. Participants

Originally 72 students from a Korean university in Seoul participated in the study as a course requirement but it turned out to be 47 students (28 male, 19 female; 19-27 years old) participating in the posttest due to some students' withdrawals and others' absence on the test-day. They were from three intact remedial classes specially intended for those whose English proficiency was lower than 400

TOEIC score or Level 3 of the Korean College Scholastic Aptitude Test-English score, which was a requirement for the regular mandatory English course for freshmen. Three classes were formed as a result of student registration, and one class was assigned for SI and the other two for GI due to the availability of the instructor for SI. All the students in the SI class (n=11) were from the Electronics, Energy & Bio (n=3) and Sports (n=8) majors whereas the students in one GI class (GI 1, n=17) were from the Electronics & Information Telecommunication Media (n=16) and Arts (n=1) majors, and those in the other GI class (GI 2, n=19) were 18 Arts & Design majors and 1 Mechanical Engineering major.

Ⅴ.ⅱ. Measures

At the beginning of the semester, all participants took a researcher-developed L2 reading comprehension test. It was constructed as a measure of the participants' overall English reading comprehension ability ranging from lexical to grammatical knowledge, to identifying factual information, choosing the best title of the passage, unscrambling sentences, and to making inferences. The test consisted of reading an English passage and answering 15 multiple-choice comprehension questions. Each question bore 1 point totaling 15 points. The passage consisting of 5 paragraphs and 274 words was about two women pirates in England and China in the 1970s and 1980s, taken from the textbook which the SI students would use (Reading Explorer 1, Nancy Douglas, Heinle, 2009, p. 127). The specific passage had never been studied by the SI students either before or during the semester. Difficulty of the text was measured by Flesch Reading Ease (70.7) and Flesch-Kincaid Grade Level (6.1),

which shows that the text was fairly easy and corresponding to the grade level of 6.

A researcher-developed reading comprehension test consisting of a passage and 13 open-ended questions was administered at the end of the semester. The test was developed as a measure of the participants' English reading comprehension at the levels of situational as well as textbase understanding. The reason two different reading tests were used as pre- and posttests was that the purpose of the pretest was to assess the students' reading ability in general, whereas that of the posttest was to measure the students' differential levels of understanding of text after reading. Besides, the pretest was to be administered to a larger sample of students in a prompt way while the posttest was supposed to assess the students' reading comprehension in a more sophisticated and open-ended way without limiting their comprehension processes and product with four choices given.

The passage which was about shark attacks was unfamiliar to not only GI but also SI students since it was drawn from Reading Explorer 2 (Nancy Douglas, Heinle, 2010, pp. 82-83), which was in the same series as, and one level above, the textbook for SI. Therefore, the test was more like a transfer test for SI students as it tested whether they could apply the strategy use skills they would have acquired to a new text with challenging content. It consisted of 440 words in 6 paragraphs, and its difficulty was measured by Flesch Reading Ease (71.3) and Flesch-Kincaid Grade Level (6.9), showing that the text was fairly easy and roughly corresponding to the grade level of 6-7. Students answered the questions in Korean.

All of the 13 questions could be divided into four different types corresponding to the levels of understanding they were designed to measure, that is, text-based (n=4) as a measure of the textbase

understanding, and local bridging (n=4), global bridging (n=4), and knowledge-based (n=1) as measures of the situational understanding. Each question bore 2 points totaling 26 points. Partially correct answers were given a partial point, for example, 1 point. Text-based questions were designed in a way that their answers could be found in a single sentence whereas local and global bridging questions could be solved only when the student connected two sentences that were adjacent or apart from each other by more than two sentences, respectively, through inference. The knowledge-based question could be solved only when the student utilized relevant background knowledge, or logic or reasoning, if such knowledge was not available. It is regrettable that due to the limited length and content of the passage, only one knowledge-based question was allowed to be constructed. Among the three situational measures, the local bridging questions were expected to require the relatively lower level of processing load whereas the knowledge-based questions were to require higher level of processing load with the global bridging questions in between.

Verbal protocols of three students' think-alouds while reading were also collected to provide more in-depth analysis in an attempt to understand how students process a text using the strategies. Three students from the SI class were chosen based on their pretest scores, one from the higher scorers, one from the intermediate, and one from the lower scorers. Their verbal protocols were collected twice through self-explanation in Korean in the beginning and the end of the semester to see if their think-alouds had changed and if yes, how they changed presumably due to the instruction. In the beginning of the semester, the first researcher met them individually and conducted the think aloud protocols in a room. The students were briefly

informed of the purpose of the study and the definition of the seven strategies before they practiced thinking aloud while reading a short, five-sentence-long, passage. They were then asked to read another passage sentence by sentence and think aloud after reading each sentence. Their think-alouds were audio-recorded and the whole process took about 15 minutes. In the end of the semester, the first researcher met them again individually and conducted the verbal protocols. All the process was the same except that there was no practice in the second session. It turned out to be only two of them responded actively to the task prompt, leading to the exclusion of one student's verbal protocols from further analysis. Thus the two students' protocols will be analyzed and reported. Both students were female and Student 1's (science major) pretest score (.6 out of 1.0) indicated her reading proficiency was a bit above the class average (.57), whereas Student 2's (sports major) pretest score (.07) was extremely low but she was chosen for the purpose of seeing if strategy instruction would affect such a low proficiency reader.

Ⅴ.iii. Design and Procedure

The current study employed 2 between-subjects (strategy vs. grammar instruction) x 2 within-subjects (textbase vs. situational understanding with the latter further subdivided into three including local bridging, global bridging, and knowledge-based) design. Thus, the instructional type (n=2) was independent variable and the level of understanding (n=2) was dependent variable with the situational understanding further subdivided into three (thus, n=4).

At the beginning of the semester, 72 students' English reading skills were pretested in their regular classes. All three classes met once a

week for 100 minutes. Although the contents and procedures of SI and GI were quite different from each other, the ultimate goal of instruction was the same, that is, to help students improve their English proficiency, particularly, reading ability, so that they could take the mandatory English course for freshmen. The instruction lasted 12 weeks. The SI class was taught by the first researcher, and the two GI classes by two other instructors, female for GI 1 and male for GI 2, respectively. All of them had more than three years of college-level teaching experience. Classroom instruction and activities were conducted in Korean in all classes throughout the semester. Consultations with the SI and two GI instructors before, during, and after the instructional period assured that they closely followed their syllabus in their teaching with enthusiasm and flexibility as well with clear understanding of their class goal.

Although GI was implemented in two classes, the curriculum was exactly the same. They used the same textbook (Basic Grammar in Use with Answers, Raymond Murphy with William R. Smalzer, 2001, Cambridge, Korean Version) and syllabus as well as the same tests and grading criteria. Basically, the whole curriculum was centered around the textbook with students studying English grammar for ESL learners (for example, basic sentence structure, tense, aspect, voice, auxiliary verbs, adjectives, adverbs, pronouns, articles, prepositions, comparatives, phrases, if-conditional sentences, and so on) and doing exercises provided in the book. The teacher's role was to provide explanations and help students solve problems. In the beginning of class, the teacher introduced the grammar points to be covered and explained them with examples provided in the textbook. Then, the students worked together or individually on exercises and received teacher feedback. The teacher sometimes provided summary notes

highlighting grammar points in which the teacher saw room for improvement of the students. The teacher made efforts to help the students understand the grammar points clearly and apply them in solving problems in the text. It should be pointed out that grammatical elements in focus were always introduced as constituent structures of sentences so the students' attention was focused on the elements and the sentence which included them as well since the students had to process the sentence in order to understand how the grammar point worked in it. In other words, the GI students had plenty of opportunities to read English sentences though not at discourse level.

On the other hand, SI was embedded in a conventional reading-based curriculum in which students read textbook passages and presented the outcome of comprehension followed by teacher feedback including clarifying questions, corrections, and explanations. In the first three weeks of instruction, students were taught the seven strategies, including what they are, and when, how, and why to use them. The teacher demonstrated use of the strategies through self-explanation while reading a passage in the textbook. After reading a sentence, for example, the teacher explained how it was connected to previous sentences by highlighting some linguistic cues like pronouns, or nouns/noun phrases corresponding to the same concept/idea, or noting relationships between the two sentences such as causal, co-referential, etc. Sometimes, the teacher asked questions to see if the students could identify the strategy the teacher had just used. Students then formed small groups of four to six and practiced using the strategies while reading, taking turns to read the text sentence by sentence and self-explaining what each sentence meant using the strategies. Some groups were asked to demonstrate strategy use through self-explanation in front of the class. Throughout the

whole process of training and practice, the teacher continued to give feedback and support as well as ask questions for clarification. Three weeks were by no means long enough to ensure that students used the strategies independently, but the constraints of the class schedule did not allow further extension. From that point on, the students formed small groups and each group was assigned a reading passage in a chapter of the textbook. They were asked to read the passage for comprehension using the strategies in advance and then present the outcome of comprehension, or what and how they had come to understand, to the class. The teacher closely monitored the presentation, which usually lasted about 40 minutes, and asked questions to see if the students understood a specific part of the text correctly or the text as a whole when necessary. At the end of the semester, all the students took the reading comprehension test.[4)]

V.iv. Data Analysis

Analysis of variance (ANOVA) was conducted, using SPSS 2.0, to see if there were any differences among the students from the three classes. Scoring of the pretest was simple and straightforward as the test was multiple-choice. Scoring of the post-test was conducted as follows: Answer sheet was prepared before scoring was conducted. If a correct answer consisted of more than one idea unit, or piece of information, each unit was given a partial point, for example, 1 point

4) The GI students took the grammar test twice, one as their midterm exam (20 items) and one as their final exam (25 items). The SI students took the same tests all at once (45 items) at the end of the semester and the result showed that the GI students' scores were statistically higher than the SI students' (t=2.665, p<0.05, df=45). Lack of the pretest scores, however, made it impossible to determine whether the difference was due to the instruction or pre-existing difference, or both.

for each unit when the answer had two idea units. The first researcher and a second rater independently scored a randomly selected 10% of the participants' answers. The agreement ratio between the two raters was 74 % and all discrepancies were resolved through discussion resulting in 98% agreement. The remaining answers were scored by the first researcher. The two students' verbal protocols were transcribed and analyzed for strategy use.

Ⅵ. Results

Ⅵ. ⅰ. L2 Reading Pretest

As mentioned earlier, originally 72 students participated in the study. The mean score was 7.76 (sd = 3.3). The range of test scores was 14−0. The reliability of the pretest was 0.7 (KR 21), which was a bit low. One explanation for this would be the number of test items was small and/or the quality of items might be questionable. However, it turned out that 47 students took the posttest. As a result, 47 students' scores were analyzed (see Table 1 for descriptive statistics). Analysis of variance (ANOVA) was conducted to see if there were any differences among the mean scores of the students from the three classes. It shows that there were no differences among the three, $F(2, 44)=0.339$ (p = 0.714), indicating the students in the three classes were not statistically different from one another in their L2 reading skills at the outset of the study.

<Table 1> Means and Standard Deviations of the L2 Reading Pretest Scores (Proportion in Parentheses)

	N	Mean	SD
SI	11	8.82 (.59)	3.16
GI 1	17	8.35 (.56)	3.06
GI 2	19	7.89 (.53)	2.85
Total	47	8.28 (.55)	2.95

SI: Strategy Instruction, GI 1 or 2: Grammar Instruction (class 1 or 2)

Ⅵ. ⅱ. Posttest

Since the pretest scores of the students in the GI 1 and 2 classes were shown to be statistically not different from each other, they were combined into one group for subsequent analyses. Results of the reading comprehension post-test are shown in Table 2. The test was divided into four question types, text-based (TB), local bridging (LB), global bridging (GB), and knowledge-based (KB). The mean scores of the SI students were higher than those of the GI group across the four measures (Table 2). Interestingly, the mean scores (proportion) of the SI students were almost identical across the four measures, 0.55~0.59, whereas the scores of the GI group varied from 0.42 on both the TB and LB, to 0.29 on the GB measures, and plummeted to 0.07 on the KB measure.[5)]

It is noteworthy that the scores dropped by a large amount as the

5) The mean scores in Tables 1 and 2 cannot be compared directly because the pretest was a multiple-choice test whereas the posttest was open-ended based on productive behavior on the part of the student, and designed to measure deeper level of understanding of the text, thus making the test cognitively more challenging. The text for the posttest was also shown to be more difficult than that for the pretest, which would also have contributed to lower scores on the posttest.

focus of measurement moved from local to global connection, and reliance on inference grew larger. GI (and SI as well) seemed to be effective in developing the students' comprehension at the sentence level whereas SI was very effective in enhancing the students' comprehension at the deeper and more global level. T-tests were conducted to see if those differences between the two classes were statistically significant. Table 2 shows that the differences were significant by all the measures except the TB[6] although the difference approached a significance level, p=0.068.

<Table 2> Means and Standard Deviations of the Reading Comprehension Scores and Results of T-tests (Proportion in Parentheses)

		N	M	SD	t	p (two-tailed)
TB	SI	11	4.59 (.57)	1.45	1.871	0.068
	GI-combined	36	3.38 (.42)	1.99		
LB	SI	11	4.55 (.57)	1.21	2.334	0.027*
	GI-combined	36	3.38 (.42)	2.06		
GB	SI	11	4.36 (.55)	1.7	2.958	0.005**
	GI-combined	36	2.32 (.29)	2.08		
KB	SI	11	1.18 (.59)	1.18	3.398	0.006**
	GI-combined	36	.14 (.07)	.49		

TB: Textbase, LB: Local Bridging, GB: Global Bridging, KB: Knowledge-based

6) Since different tests were used as pre- and posttests, it would be difficult to say that there was a significant *gain* from the instruction. Nonetheless, it could still be argued that the differences between the scores on the post-measures were to some degree, if not entirely, due to different types of instruction. There might have been some confounding factors like intervention fidelity, students' motivation, and task on-/off-time during instruction. They were, however, uncontrollable if the study employed intact classes to secure ecological validity as the current study did.

SI: Strategy Instruction, GI-combined: Grammar Instruction (combined class)
*: p<0.05, **: p<0.01

Correlations among the measures are displayed in Table 3. Scores on the textbase measure are shown to correlate significantly with those on the other three measures including the local bridging (r=.47, p<.01), global bridging (r=.59, p<.01), and knowledge-based measures (r=.36, p<.05). The correlation between the scores on the local bridging and global bridging measures is also shown to be statistically significant (r=.53, p<.01) as well as the correlation between the global bridging and knowledge-based measures (r=.42, p<.01).

<Table 3> Correlation Coefficients between the Measures (Pearson's r)

	TB	LB	GB	KB
TB		.47**	.59**	.36*
LB			.53**	.14
GB				.42**
KB				

*: p<.05 (two-tailed), **: p<.01 (two-tailed)

Ⅵ.iii. Use of Strategies by Students in the SI Class

Although various strategies were explicitly taught by the instructor in the SI class with examples, modelling, and guided practice in the beginning of the course, it seemed that the instruction did not lead to the change of the students' reading behavior immediately. Overall, almost all of the students seemed to solely rely on the direct translation strategy in that they simply read a sentence and translated

into their L1, and then moved on to the next sentence and did the same thing until they finished their assigned part. They seldom paraphrased or connected text parts. Nor did they make inferences unless they were specifically asked to do so. That prompted the teacher to ask questions, or provide cues, such as "So what does that mean?" "Why did … happen/do …?" "How does/can … relate to … (in the previous texts)?" "What is implied here?" etc. Despite the teacher's continuous encouragement and guidance, many students appeared to be passive in using the strategies throughout the semester although some did appreciate them.

Ⅵ.iv. Verbal Protocols

Analysis of the two students' verbal protocols provided informal but important information about their online processing of text. In the beginning of instruction, their think-aloud data showed that Student 1 solely relied on direct translation with virtually no use of the other strategies although she had already been introduced to the strategies, had practiced their use in a previous class, and had also been given a brief reminder of the strategies and their use right before the verbal protocol session. Student 2 had problems with word recognition. She had such a hard time reading or recognizing most of the words in the text that she could not even finish reading one sentence let alone demonstrate comprehension. At the end of instruction, however, their verbal protocols showed a big difference.[7] Student 1's verbal protocol

7) It can be pointed out that there is a possibility that students were able to use strategies even if they had not been given strategy instruction. To verify whether any effect was the result of strategy instruction or not, GI students should also have been asked to do verbal protocols, which regrettably did not happen.

collected in the end of the semester is described in Table 4 which shows that she actually used all seven strategies with paraphrasing and connecting text parts most often.

<Table 4> Verbal Protocols of Student 1

Text in Sentences	Verbal Protocols Translated in English	Strategies Used
Who Built Giza's Pyramids	Who made Giza's pyramids? As far as I know, Giza is a certain district.	Direct Translation (DT)/Paraphrasing Activating background knowledge
For centuries, the pyramids of Giza have been timeless symbols of Egyptian culture.	For centuries, Giza's pyramids have been thought as Egyptian's cultural symbols.	Paraphrasing
But who actually built them?	But who actually made these pyramids in Gaza district? Now, (I) can predict the next content will be about who made pyramids.	Pronoun resolution Prediction
For years, we did not know for sure.	For years, we were not sure about this. So, that means, we didn't know who had made them.	Paraphrasing Local Bridging (LB)
But archeologists recently discovered an ancient village near the pyramids.	But archeologists recently discovered an ancient village near these pyramids. So, that means, the village found … (the next) would probably be that in the village found, (people) made pyramids.	DT Paraphrasing Prediction/(Part of confirmation of the previous prediction)

Close by, there was also a cemetery where pyramid builders were buried.	Umm. (I) don't know well of the word "*cemetery*" .. (Researcher: "*cemetery*" in Korean) Then, close, close .. I guess (cemetery) is close by this village. umm. Close by the village.. there was a cemetery.. In the cemetery, pyramid builders were buried, maybe these people found that, I think. (I mean) the archeologists.	Monitoring comprehension Making inference LB LB Making inference
From studying these places, archeologists can now confirm that the pyramids were not built by slaves or foreigners (or space aliens!).	These places. That means, about this village and cemetery, through investigation, archeologists can confirm that pyramids were not built by slaves, foreigners, or aliens.	LB & Global Bridging Paraphrasing
Ordinary Egyptians built them.	Now (they) became to know that ordinary Egyptians made pyramids. So, to summarize these into one paragraph, (we) haven't known who built pyramids thus far, archeologists … came to realize that pyramids were made by ordinary people, and next, (I can learn that) in the past, (archeologists) just assumed that slaves or foreigners made them.	DT/Paraphrasing Summarizing Elaboration Making inference

Student 2's verbal protocol, on the other hand, generally consisted of translated words in a discrete manner with lots of stops, pauses, repetitions, or expressions of uncertainty about the meaning of words, or monitoring comprehension, for example, saying a word with rising intonation, "I don't know much about this," "Is .. right?" "What's this?" "What's the meaning of …? etc. Unlike her first verbal protocol,

however, the second one showed that she did continue her efforts to comprehend the text. Besides monitoring comprehension, she made inferences a couple of times even though she did not know the meaning of a word. She also used her knowledge of how English spelling works in comprehending the sentence, "Ordinary Egyptians built them," by saying "When a big thing [i.e., a capital letter] comes first, (the word) represents a place or person's name, I was told." Actually, she disclosed that she did not understand the words "ordinary" and "Egyptians." Interestingly, she did summarizing at the end of the paragraph and her summary indicated that she did actually use some strategies including paraphrasing, elaboration, making inferences, and reasoning. In doing so, she seemed to be able to construct a representation of the text although it was not comprehensive or correct in many ways.[8)]

Ⅶ. Discussion and Conclusion

RQ1 was "What effects will SI, as compared to GI, have on low proficiency Korean EFL learners' reading comprehension at the level of textbase understanding?" It was assumed that GI and SI would lead to more or less the same degree of performance on the measure assessing textbase understanding. As assumed, SI led to the statistically-not-different, as compared to GI, performance on the textbase measure. One possible explanation for the SI students' equal performance to the GI group's would be the SI students had been

8) On the reading comprehension posttest, Student 2 didn't get any question correct although she made a good attempt to provide quite a long answer to many questions.

continually encouraged to use the comprehension monitoring strategy, and if any problem was detected, they were asked to use fix-up strategies by making efforts to understand the contextual meaning of words and identify phrases and/or clauses appropriately. Those strategies would probably have helped the student focus their attention on words, phrases, and clauses, and integrate their meanings in a sensible way. That might help the SI students perform on a par with their counterparts in the GI classes, who in turn had been trained to focus their attention on syntactic properties of constituent structures of a sentence.

RQ2 was "What effects will SI, as compared to GI, have on low proficiency Korean EFL learners' reading comprehension at the level of situational understanding?" Again, as assumed, it turned out to be that SI, as compared to GI, was more effective in furthering the students' comprehension beyond the sentence level as GI was. Specifically, SI was quite effective in helping the students engage in active and global processing by connecting two sentences, adjacent or distal, through inferences. Summarizing might also have contributed to global and active processing as well as elaboration and prediction had. Such ability has been suggested to be essential for successful comprehension (van den Broek, 1994) and a hallmark of a competent reader who engages in active, constructive processing while reading (Graesser et al., 1994).

On the other hand, one possible explanation for GI's ineffectiveness in promoting those important skills would be it had focused on lower-level processing of text like vocabulary and syntactic processing of phrasal or clausal units within a sentence while giving less attention to higher-order, integrating processes of reading. Alternatively, it could be said that grammatical knowledge the students

had acquired from GI was explicit in nature and a kind of declarative knowledge, that is, knowing that, which in turn had not been translated into procedural knowledge, that is, knowing how (Paris et al., 1984). In a similar vein, it can be said that grammar can best be taught not as a separate entity but part of comprehension process at the level of sentential understanding (Bernhardt & Kamil, 2006; Eskey, 2005; Gelderen, Schoonen, Stoel, Glopper, & Hulstijn, 2007; Grabe, 2009; Hudson, 2007). In other words, grammar can be viewed and thus taught as a tool for parsing, or analyzing sentences syntactically by assigning their constituent structures to their proper role, and connecting those structures within and across sentences.

There was one question in the test whose answer could be found nowhere in the passage, but had to be generated through knowledge-based inference on the part of the student.[9] As expected, SI proved to be far more effective, as compared to GI, in helping the students acquire such higher-order, knowledge-based inference skill, which also has been shown to be essential for the construction of a coherent mental representation of text, particularly, the situation model (Kintsch, 1988, 1998). One thing to be noted regarding knowledge-based inference generation is that SI students had not been taught in a way that helped them gain any specific or general knowledge about sharks or any other topic, nor trained in logical thinking or reasoning. Therefore, there is no reason to think that they might have had more knowledge of the topic of the test passage or reasoning skills than their peers in the GI classes. Rather, it is likely

9) The one-item knowledge-based measure could be problematic as the big difference between the two groups' scores might have to do with the one-item measure. Although the scores did show a tendency, the result should be interpreted with caution until future research employing a larger number of knowledge-based items sheds more light on this issue.

that SI helped students become active readers by encouraging them to explain what they understood from the text in their own words, and also helped them to connect ideas drawn from text parts using inference. Therefore, their superior performance on the measures reflecting higher-order skills using inferences could, or should, have been attributed to active processing which would have pushed them to go beyond literal understanding of individual sentences and construct a mental representation at the level of the situation model by connecting textual information, local and global, using inference. It corroborates what McNamara (2004, p. 5) said, namely that "reading strategy training may help the low-knowledge reader to use general knowledge, or logic, rather than domain-relevant prior knowledge to fill in conceptual gaps. That is, improved reading skills may compensate for a reader's knowledge gaps. … the reader may be able to "work harder" to understand the text by generating more logic-based and text-based inferences."

The two students' verbal protocols described earlier provided firm evidence for what has been said about effectiveness of SI thus far. Student 1's self-explanation clearly showed that she did make extra effort to construct a coherent and more comprehensive representation of the text by paraphrasing what she read, connecting text parts, making inferences, predicting, monitoring comprehension, elaborating, or summarizing. SI doubtlessly seemed to help her utilize various strategies while reading, which would have resulted in active processing and thus led to deeper and global understanding of the text. Student 2's self-explanation also lent more support for SI. Although her English proficiency was very low, her verbal protocol indicated that she certainly was able to go beyond word-level processing and end up summarizing what she had read in her own words by

paraphrasing, making inferences, or activating background knowledge. In doing so, she seemed to have constructed a representation of the text, albeit in a somewhat incomplete form, which otherwise she could not have made.

Findings of the current study have some pedagogical implications. Grammar knowledge is important and perhaps necessary for successful L2 learning, but not sufficient. When it comes to reading, teaching grammar may help students with lower-level processing of text within sentences by letting them focus their attention on syntactic features of words in sentences, and their relationships with one another. Although this kind of sentence-level, analytical processing may be important and necessary, the students need much more than that. They may have to connect textual information across sentences, or integrate it with prior knowledge, often through inference in order to comprehend the text properly, or construct a coherent mental representation of the text. Teaching higher-order reading skills may not need to be halted until students' L2 proficiency reaches a certain level, for example, mastering basic knowledge of grammar, but instead, teaching lower-level, sentence processing skills and higher-order reading skills can go hand in hand from an earlier stage of reading (Rapp et al., 2007). Therefore, there seems no reason to wait until students' L2 proficiency reaches a certain level of mastery in terms of grammatical knowledge, and then teach how to comprehend a text hoping that the grammatical knowledge be translated into reading ability.

In conclusion, GI and SI had differential effects on the low proficiency Korean EFL learners' reading comprehension. GI helped improve students' sentential comprehension skills. On the other hand, the seven strategies, when taught in a concerted manner, helped the students not only make sense of individual sentences, but also

integrate those sentences with each other or with general knowledge using inference or logic, thus contributing to the construction of a coherent mental representation of the text at the level of the situation model. These skills are no doubt essential for students' successful performance at the next level of the school curriculum and beyond.

The study, however, has some limitations and its results should be interpreted with caution because of their preliminary nature in that little research has been done in the past on the topic of the current study. Grammar instruction, its nature and delivery, could have been designed to better accommodate current research findings if intact classes were not used. There was no grammar test administered prior to the instruction, so we're not sure whether the posttest result was due to the instruction. Two different reading tests were used as pre- and posttest, thus making it difficult to measure a gain from instruction. As mentioned earlier, there seemed to be a tradeoff between securing ecological validity through using intact classes and uncontrollable confounding factors like instructional fidelity, students' motivation, or task on/off time allotment during class. Also, the imbalance of the numbers of students and their academic backgrounds within the SI and GI classes occurred due to convenience sampling. The number of knowledge-based questions was too small. Some measures were shown to have weak psychometric quality, that is, low pretest reliability and statistically different variability in the two instructional types for the local bridging and knowledge-based measures. In addition, the sample size was small. Therefore, it would be fruitful if future research considered those issues, and furthermore, compared instructional effects of strategy vs. conventional reading-based instruction on the reading development of low proficiency L2 readers.

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Abstract

Differential Effects of Comprehension Strategy and Grammar Instruction on Second Language Reading Comprehension

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This study investigated the effects of two different types of instruction on second language reading comprehension by low proficiency Korean college students. Three intact remedial classes were assigned to either strategy or grammar instruction. Seven comprehension strategies aligning with theories of comprehension processes were identified and taught in a concerted manner under strategy instruction while a traditional type of grammar teaching was implemented under grammar instruction. Results showed that both types of instruction led to similar student performance on the textbase comprehension measure assessing sentence level understanding. However, students with strategy instruction outperformed those with grammar instruction on the measures assessing deeper level understanding of a text, which required the students to connect text parts across sentences or paragraphs, or use knowledge-based inferences. Students' think-aloud reports were also used to provide depth analysis.

Key Words: Second language reading, second language reading comprehension, comprehension strategy, strategy instruction,

grammar instruction
제2언어 읽기, 제2언어 읽기 이해, 이해전략, 전략 교수, 문법교수

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