

A Study of Korean University Students' Metacognitive Knowledge through Reading Strategy Instruction*

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This article reports significant changes of Korean university students' knowledge about cognition as a part of metacognitive knowledge in reading. This study was attempted to investigate the effects of explicit strategy instruction on Korean university learners' awareness and views in terms of strategy use in their own reading processes, and also to investigate whether those changes contribute to the enhancement of their reading performance. Four university students were selected for a qualitative analysis and trained for 15 weeks through strategy instruction employing think-aloud procedures as an instructional model based on CALLA. The results, based on interviews, reading conceptions questionnaires, reading comprehension tests, and think-aloud protocols, revealed that their descriptions of reading processes and actual use of strategies became clearer and more elaborate after intervention. In addition, they used larger, more sophisticated pools of strategies in accordance with metacognitive knowledge. It also provides insight that such training was effective in promoting learners' reading proficiency.

[metacognition/reading strategies/reading strategy instruction/
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I. INTRODUCTION

Successful reading refers to complete and accurate understanding of a text as well as the dynamic interrelationships between a reader and a text, especially in academic fields. It follows that acquiring knowledge of effective reading strategies is a prerequisite to successful reading (Grabe, 2009; Hudson, 2007). Strategy is defined as the actions that encompass purposeful control and deliberated direction of behavior to allow readers to create and maintain meaning and is concerned with a conscious and systematic plan (Afflerbach, Pearson, & Paris, 2008).

Recent studies show that it is not the quantity of the strategies used, but rather the quality that dictates the success of reading comprehension (Anderson 2003; Chamot, 2005; Grabe, 2009; Macaro & Erler, 2008; Schramm, 2008; Zhang, 2010). According to Macaro and Erler (2008), effective combination of strategies has been seen as the key factor in the construction of meaning. It is frequently noted that successful readers exhibit signs of metacognitive knowledge, which is identified as the ability to think of and control his or her own cognitive processes (Chamot, 2005).

Metacognitive knowledge has been recognized as an important area of academic and pedagogical inquiry in investigating the reading processes of L2 learners, and has been highlighted as a significant indicator of successful reading (Dhieb-Henia, 2003; Harris, Santangelo, & Graham, 2010; Koda, 2005; Macaro & Erler, 2008; McCormick, 2003; Phakiti, 2008; Paris & Winograd, 1990; Schraw & Dennison, 1994; Sperling, Howard, & Miller, 2002; Zhang, 2010). Metacognition has been defined in various academic fields in several ways, but Baker and Brown (1984) postulated that metacognitive knowledge comprises 'knowledge of cognition' and 'regulation of cognition' (p. 353). In other words, it encompasses 'the knowledge' and 'the control' that learners have over their own thinking and learning activities. Knowledge about cognition, such as learners' awareness and knowledge of learning processes (Baker & Brown, 1984), has been regarded as a vital element of metacognitive knowledge that promotes successful reading (Harris et al., 2010; Zhang, 2010).

Many studies have explored learners' awareness and cultivation of metacognitive knowledge through reading strategy instruction (Aghaie & Zhang, 2012; Carrell, Paris, & Liberto, 1989; Dreyer & Nel, 2003; Macaro & Erler, 2008). These studies indicated that explicit strategy instruction, combined with think-aloud procedures, was beneficial in the actual use of strategies and in reading fluency due to their enhanced metacognitive knowledge. In many cases, however, most of the analysis was primarily on the quantitative results or findings of the strategy use that learners employ. While such quantitative data offers great insights, there is still a lack of data about changes in learners' knowledge about cognition.

The objectives of the current study, therefore, are to examine (1) the changes in the knowledge about cognition of their own reading processes in terms of strategy use as part of metacognition, (2) the changes in the quantity of strategies, and (3) how reading performance is affected by explicit reading strategy instruction over a 15-week instructional period.

II. LITERATURE REVIEW

Strategic reading elicits metacognition since readers are required to have this knowledge in order to deploy strategies effectively (Paris, Wasik, & Turner, 1991). This indicates that the roles of metacognition in reading are necessary to be an effective reader. For example, Anderson (2008) argues that metacognition results in critical but wholesome reflection and evaluation of thinking. In this section, knowledge about cognition, as one of the constructs of metacognitive knowledge, is reviewed and discussed with an emphasis on its functions and impacts on reading. Next, there will be a focus on the effectiveness of reading strategy with think-aloud procedures. Finally, there will be an examination of how these instructions can be used to promote awareness in reading process and performance as well as reading development.

1. Knowledge about Cognition

Knowledge about cognition encompasses reflective aspects, such as what learners understand about their own cognitive resources, but also an operational perception of the ways that the understanding expedites comprehension (Koda, 2005). It is also important to note that a learner's awareness of his or her learning processes is a key aspect of metacognitive knowledge (Harris et al., 2010; Zhang, 2010), since such awareness can contribute not only to the senses of self-efficacy and satisfaction, but also to enhance flexibility and confidence in their problem solving attitudes (Paris & Winograd, 1990).

Under knowledge about cognition, there are three components: declarative knowledge, procedural knowledge, and conditional knowledge (Harris et al., 2010; McCormick, 2003; Schraw, 1998; Schraw & Dennison, 1994). In other words, it is the knowledge regarding what, how, when, and why to use strategies. Declarative knowledge deals with the 'what' knowledge, and it is the knowledge related to skills, strategies, and intellectual resources, including the factors which affect learning and abilities as a learner, that are employed by the learner (Hudson, 2007). Therefore, it will be necessary for a reader to understand what is involved in the reading processes, what may influence reading activities, various kinds of reading strategies for use, his or her own attitude toward reading, and preference of text

types.

The next component, procedural knowledge, is the ‘how’ knowledge, or knowing how efficiently a learner applies strategies. According to Pressley, Borkowski and Schneider (1987), a person with a high level of procedural knowledge tends to carry out a task automatically, or effortlessly, is more likely to have a larger pool of available strategies, and is liable to use them more effectively. Therefore, if learners increase their procedural knowledge with regards to strategy use, we can expect their strategy use to be more automatic, accurate and effective.

Conditional knowledge means knowing “when,” “where, and “why” to use the strategies, and enables learners to selectively choose a strategy or to adjust their strategy use according to the demands of the task. This knowledge about when and where to use strategies is considered to be an important aspect of metacognition and such knowledge is vital for proper use of strategies (Pressley & Harris, 2006). A high level of conditional knowledge assists readers to become more effortless and flexible in their strategy use (McCormick, 2003).

Zhang (2010) conducted an in-depth investigation into twenty Chinese students’ metacognitive knowledge system in his qualitative analysis of the interview data. He conceptualized metacognition as a set of dynamic systems, and focused on the learners’ declarative knowledge (person, task, strategy), which is based on Flavell’s (1979) classification, under metacognitive knowledge systems. As a result of his interview study, he was able to demonstrate a correlation between metacognition with a successful EFL reading comprehension ability. Specifically, he reported that successful learners are different from less successful learners in terms of the amount and the quality of metacognitive knowledge. For example, his successful readers believed that they could make a decision effectively about what to read, when to read, how to read, where to read, why to read, and when to read to accomplish the objectives of reading, which are the core elements of metacognitive knowledge. Zhang’s (2010) study successfully pointed out the importance of knowledge about cognition for successful reading.

2. The Effectiveness of Reading Strategy Instruction

Many studies have stressed the importance of learners’ awareness of metacognition or metacognitive knowledge, emphasizing that this type of knowledge can help teachers facilitate L2 learners’ language development (Chamot, 2005; Macaro & Erler, 2008; Wenden, 1998; Zhang, 2010). The purposes of strategy instruction are to assist readers through systematic and explicit instructions, to increase awareness of different kinds and roles of strategies that can be deployed, and to become effective and self-regulated learners in their learning processes. Successful strategy instruction should lead to learners utilizing

these strategies on the basis of metacognitive knowledge systems (Aghaie & Zhang, 2012; Carrell, et al., 1989; Dhieb-Henia, 2003; Dreyer & Nel, 2003; Macaro & Erler, 2008). This is evident in Chamot and O'Malley's (1994) five stages of CALLA model, and Paris and Winograd's (1990) four stages for an effective strategy training program. CALLA (The Cognitive Academic Language Learning Approach) was specifically developed on the basis of cognitive theory, and it aims to promote the academic language skills of ESL students. Through the five stages: preparation, presentation, practice, evaluation, and expansion, it was designed to offer opportunities for extensive practice, as well as practice for learner feedback as they participate in their own learning processes on a more autonomous level (O'Malley & Chamot, 1990).

Through the opportunities for strategy application in an efficient manner under such systematic instructional models, it is plausible that learners gradually take responsibility for their learning as most autonomous readers do. This increased responsibility, with the help of strategy training, has been shown to result in improvement in reading comprehension, and may lead to an increased fluency in the application of strategies through deliberate actions (Afflerbach et al., 2008).

Importantly, the reviews of instructional research indicate that explicit instructions are correlated with improvement in reading comprehension (Aghaie & Zhang, 2012; Ardasheva & Tretter, 2013; Dhieb-Henia, 2003; Dreyer & Nel, 2003; H. O. Kim, 2006; Macaro & Erler, 2008; M. Song, 1998; Taylor, Stevens, & Asher 2006). For example, Taylor et al. (2006) conducted a meta-analysis to investigate how effective the twenty-three studies of explicit reading strategy training were on L2 reading comprehension. 68% of the students who received the training outperformed the students who did not receive the training. In other words, their study shows that explicit strategy instruction may contribute to learners' cognitive development in reading.

In general, explicit explanation of a target strategy for increasing learners' awareness and motivation is followed by teacher modeling. In many cases, studies often employ think-aloud procedures for teacher modeling and their advantages are supported by numerous instruction studies (Aghaie & Zhang, 2012; Auerbach & Paxton, 1997; Bereiter & Bird, 1985; Kucan & Beck, 1997; McKeown & Gentilucci, 2007; Silven & Vaurus, 1992; M. Song, 1998). For example, the seminal work of Bereiter and Bird (1985) reveals the effectiveness of teacher modeling through thinking aloud, combined with explicit explanation of target strategies, when providing instructions.

When employing think-aloud procedures in general, researchers provide a reading text and ask participants to say out loud what comes to their mind while reading. Think-aloud procedures have been regarded as an appropriate method to provide a good indication of what is happening in learners' invisible cognitive processes while reading, especially in collecting data about their strategy use (Pressley & Afflerbach, 1995).

This study investigates Korean university students' metacognitive knowledge using think-aloud as an instructional tool. Three research questions are as follows.

1. How do the students develop knowledge about cognition in terms of strategy use with the help of reading strategy instruction over time?
2. Are there any changes in the learners' strategy use?
3. Are the changes in the learners' strategy use reflected in the learners' reading performance?

III. METHOD

1. Participants

The participants in the study are juniors in a university ($n=4$) in Korea majoring in Pre-Pharm-Medical Sciences. They have been studying for the Pharmacy Education Eligibility Test (PEET) for about two years, which is considered highly competitive and demanding. The students were all native speakers of Korean with no experience in learning English in other countries. The class met weekly for a period of three hours a week for 15 weeks. The class was divided into two halves: a general readings class for the first 90 minute half, and an explicit reading strategy instruction for the second 90 minute half.

The four participants in this study were selected through purposeful sampling (Dörnyei, 2007; Mirriam, 2009) based on their reading proficiency, motivation, and willingness to participate in the strategy instruction program. To make it more specific, the levels of their reading proficiency were treated as an important factor following the linguistic threshold hypothesis (Carrell, 1991; McKeown & Gentilucci, 2007) for effective use of reading strategies. Their levels were ranked as intermediate to high intermediate according to their TOEIC reading scores (495 total scores, see Table 1). Secondly, a high level of motivation was an essential prerequisite for the students since their consistent and active participation throughout the program was necessary for a 15-week strategy instruction. These four participants were motivated to learn English to obtain a high score in an internationally authorized English test, such as TOEIC or TEPS, in order to apply to a college of pharmacy or medical school. Lastly, they voluntarily joined the study. The four participants are Daehong, Youngsang, Mina, and Boyoung (all names are pseudonyms). Table 1 provides information about the participants.

Based on their interviews and conceptions questionnaires, some dominant traits of the participants in reading were found. Youngsang was identified as a reader who is good at connecting his background knowledge to construct more accurate reading comprehension.

TABLE 1
Descriptions of the Participants

Name	Gender / Age	TOEIC Reading Score
Youngsang	M / 24	395
Daehong	M / 23	390
Boyoung	F / 23	375
Mina	F / 27	295

As a merit as an L2 reader, he responded that he has a lot of background knowledge since he has interests in various areas. Daehong tries to look at the big picture of a text when reading a text both in English and Korean. He commented that he reads a text in a top-down manner at first to get the basic gist. Boyoung shows confidence in reading in English, even though she did not mention a lot about strategy use when reading. For example, according to her, reading English newspapers seem rather difficult. However, she answered that she is able to understand them by finding the meanings of unknown words with a dictionary if she has time. Lastly, Mina showed reluctance in reading in English. For her, she needs to understand perfectly for successful reading comprehension. She was not satisfied with her reading ability since there is a huge gap between her current level and her ideal goal.

2. Research Design and Data Collection

The study was conducted over a 15 week semester (see Figure 1) which included two test periods. The students had a 90 minute session once a week. At the beginning of the program, the participants answered conceptions questionnaires (Appendix 1) to show their views on reading in English. Then, they received general strategy instruction. The explanation about the reading tests and the questionnaires to be administered was offered at the first meeting.

In week 2, the participants had the first reading comprehension test. After the first data collection, the researcher provided specific strategy instruction along with an outline of the academic benefits of reading strategy use. The students were also provided with an introduction session to learn the think-aloud procedures so that they had a good understanding of how to apply the think aloud technique while reading, followed by sufficient opportunities to practice with short passages. They were guided to express what comes to their mind spontaneously when they read a text. After these sessions, the first individual interviews (Appendix 2) were conducted for approximately 35 minutes for each participant in Week 2 and 3. The main purpose of the interviews was to discover their

awareness about strategy use when engaged in reading a text as well as participants' views, experiences, and the attitudes toward reading a text in English.

From week 3, the actual strategy instruction commenced. In every lesson, participants were involved in individual reading practices with thinking-aloud procedures, teacher modeling, followed by pair discussions. The purpose of pair discussion was to learn from each other through discussion sessions (Zhang, 2008).



FIGURE 1 Flow Diagram of the Data Collection Procedures

In week 12 and 13, second interviews were conducted for about 50 minutes each. The third interview was additionally carried out to back up some missing information in week 14. At the end of the instruction, week 15, the participants had a post-reading comprehension test and completed a post-conceptions questionnaire.

3. Data Collection Instruments

Several instruments were employed to address the research questions, and the instruments are briefly described below. Importantly, triangulation of the data was intended through using various types of data.

1) Conceptions Questionnaires

The Conceptions Questionnaire (Appendix 1) was used from Auerbach and Paxton's (1997) study, which comprised four open-ended questions to elicit perspectives of reading English as a foreign language. They would provide insights on students' internal reading models.

2) Reading Comprehension Test

Regarding the reading comprehension test, the type of test and retest were chosen to judge individual students' current levels of reading proficiency, and assess the students' development as influenced by the strategy instruction. The type of test and retest was to avoid the issues of the discrepancies between the pre- and post-test in terms of the levels, the forms, and the content. It was decided that a 15-week distance was long enough to avoid any short-term memory effect that might influence the findings (M. Song, 1998).

The test was developed for this study, and consists of 15 short passages (paragraph length, with an average of 81 words) and 4 long texts (consisting of up to 4 paragraphs in a text, with an average of 227 words). Both kinds of texts were used in the reading class. It is composed of 26 multiple choice questions. The readability level of the reading comprehension test was decided according to Gunning's fog index which ranges from 5 - readable, 10 - hard, 15 - difficult, to 20 - very difficult (available at www.readabilityformulas.com). The readability of the texts ranged between 'fairly easy to read' to 'difficult to read'. This readability calculating system is also used in the recent study by Chu (2013).

3) Interviews

The researcher conducted two individual interviews with the participants and one supplementary interview in order to elicit information about their perspectives of reading and metacognitive awareness about strategy use (Appendix 2). Any changes in the participants over time with the reading strategy instruction were recorded. Interview questions were developed from the metacognitive strategy inventories of Schraw and Dennison (1994), Sperling et al. (2002), and Phakiti (2008), and the interview questions of Zhang (2010) since these studies delved into metacognitive knowledge in detail. Prior to recording the interviews, the researcher assured full disclosure to the interviewees, guaranteed that the interviews would be kept confidential, and explained the purpose for the interviews. This was done in order to motivate the participants to respond to interview questions actively (Dörnyei, 2007).

4) Think-aloud protocols

The students' think-alouds were transcribed verbatim and coded based on the reading strategy index of Phakiti (2008). It was regarded as the most suitable as this study also follows Baker and Brown's (1984) definition of metacognition. It listed two main categories; cognitive and metacognitive strategies. The first category involves strategies which belong to comprehending, memory, and retrieval; while the second encompasses strategies related to planning, monitoring, and evaluation. The strategy items of the questionnaire were validated twice with Thai university students. Cronbach's alpha reliability coefficients for time 1 was of .86 and .89 for metacognitive and cognitive strategies, respectively, and for time 2, .87 and .89, respectively.

In total, ten protocols of each participant were collected. However, the first two participants' think aloud protocols were not used for the analysis since the participants were not yet well-adjusted to think-aloud procedures, which may have affected the data. Therefore, a total of eight protocols from each participant were used. In order to see the changes in terms of the quantity of the students' strategy use, the first four protocols and the second four were grouped and analyzed.

5) Strategy instruction materials

The readability of the materials was checked using Gunning's fog index. Most of the materials were in the 'hard to read' category, scoring 11.9 in average. The topics were chosen from *Reading Spectrum*, a textbook used for the reading strategy instruction dealing with various ranges of topics from English newspapers, which were designed to motivate college level readers.

4. Explicit Reading Strategy Instruction

The strategy instruction in this study was conducted to help learners become more autonomous strategic readers (Baker, 2002). Therefore, it was to raise their awareness of metacognitive knowledge in terms of the strategy use (Bereiter & Bird, 1985; Carrell et al., 1989; Dhieb-Henia, 2003) and to broaden the pools of strategies used (Baker, 2002; Pressley & Afflerbach, 1995). The instruction was structured on the basis of the CALLA model (Chamot & O'Malley, 1994) which includes five sequential stages: presentation, preparation, practice, evaluation, and expansion.

The first stage, presentation, was designed to raise the students' awareness of strategies, and their motivation to use them. It was a preparatory stage for the participants to be more actively involved in the lessons. The class discussed what strategies could be useful to

facilitate comprehension based on the provided texts. Following the presentation stage, the learners were provided teachers' explanations about the topic strategies focusing the information about what, why, how, and when to use strategies which can raise students' metacognitive awareness in their reading process. The instructor's think-aloud modeling was provided after the explanations. At the practice stage, opportunities for individual practice with think-aloud procedures were offered. The students were advised to use other strategies along with the topic strategies to solve problems. After practicing, the students had a discussion in pairs about their reading processes focusing on the strategy use in evaluation stage. The discussions in evaluating their reading process focusing on the strategy use were thought to reveal and promote their metacognitive knowledge. At the last stage of the lesson, there were whole group discussions, through which the participants were encouraged to use the strategies based on their experience.

The strategy instruction was led by an instructor-researcher for 15 weeks, who all had more than 12 years of tertiary-education teaching experience. The reading strategies for the instruction were chosen through a literature review (Afflerbach et al., 2008; Baker & Brown, 1984; Baumann et al., 1992; Grabe, 2009; Jiang & Grabe, 2007; Nuttall, 1996). Overall 13 strategies were taught in this study: self-questioning, relating textual information using prior knowledge, predicting and verifying using prior knowledge, making inferences, guessing words, recognizing the structure of a paragraph, analyzing the text, recognizing patterns in the text structure, evaluating, backtracking and read on, paraphrasing, summarizing, and describing mental images.

5. Methods for Data Analysis

This study investigates the changes in knowledge about cognition which is one of the two elements under metacognitive knowledge (Baker & Brown, 1984), and encompasses the domains of declarative knowledge, procedural knowledge, and conditional knowledge under knowledge about cognition (McCormick, 2003; Schraw, 1998; Schraw & Dennison, 1994; Sperling et al., 2002). It also aims to see that the learners make improvements in their reading performance through explicit strategy instruction.

In order to answer the first research question, two levels of grounded theory were used to code the data from the interviews and conceptions questionnaires. First, an open coding was conducted as the basic level of conceptual analysis that was still abstract and conceptual. Afterwards, through integrating and grouping them into more inclusive notions in axial coding (Dörnyei, 2007), two emerging themes were identified. Reliability of the data was obtained through data analysis procedures checked by the second researcher.

A total of eight protocols for each participant were used for the analysis. For the analysis of the students' think-aloud protocols, strategies used during their reading processes were

coded and categorized into cognitive and metacognitive domains according to the reading strategy index of Phakiti (2008). For example, the students' thinking alouds while reading a text were first transcribed verbatim. Second, important parts of the transcriptions which indicated the students' strategy use were highlighted, such as a phrase from Daehong's think-aloud protocols, "He did 'slovenly' job... It says his reputation was not good in the rest of the passage. I guess the word, 'slovenly' has negative meaning." Third, the highlighted portions were compared with the strategy items of Phakiti's (2008) coding index. They were scrutinized to see whether they matched, and then, categorized. For instance, the example mentioned above was comparable to the item of from Phakiti's (2008), "I identify or guess meanings of unknown words using context clues". In his study, this item is categorized into 'Retrieval' under cognitive strategies. Accordingly, this strategy was also grouped as cognitive strategies. In order to maintain reliability, the analysis of the think-aloud protocols were subjected to peer checking by the second researcher of this study, in accordance with Dörnyei (2007). After identifying the strategies based on the coding index individually, the two sets of outcomes from the each researcher were compared. Disagreements were solved through discussions. The interrater agreement was 93%. Finally, the overall frequencies of the strategies used by the participants were tabulated.

IV. RESULTS

1. Changes in Knowledge about Cognition

Two emerging themes were identified through analyzing the data from the interviews and the conceptions questionnaires: (1) various options to address comprehension problems and (2) sophistication in strategy use. Within each category, the most frequently recurring themes and details were illustrated and discussed in the following section.

1) Various options to address comprehension problems

One of the objectives of the reading strategy instruction in this study was to broaden the pools of reading strategies. After the intervention, it showed that all of the four participants learned other alternatives to solve reading problems or to enhance their reading comprehension. According to their data, they experienced the usefulness and value of the new items. While they expressed some skepticism for the efficiency of new items at the beginning of the research, the results of data analysis indicated that they became aware that their reading goals could be reached more effectively by utilizing the strategies or

knowledge about the strategies that they learned. The following excerpt from Mina is an example of the case in point. In the first interview, she thought that the key elements for reading comprehension were vocabulary and grammatical competence at which she was poor. After the instruction, however, it is interesting to note that her view changed in some degree.

Excerpt 1

We, readers, should avoid focusing on detailed information of a text too much, since we can get ideas about what the text is talking about, looking at other parts, without relying on vocabulary and grammar... (For example,) other element, such as external one. I mean while vocabulary and grammar are needed to obtain detailed information, the knowledge about text structures can be used to grasp the global idea of a text. So we do not need to stick to such kinds of knowledge too much when reading. (Mina, Week 13)

As seen above, she believed that vocabulary and grammar were the most essential knowledge for successful reading comprehension despite her low confidence. However, it was interesting to see that such perception has been significantly altered after the instruction. In her second interview, she states other possible ways to gain meaning construction, for instance by activating the knowledge of text structures that she learned in the lesson. It is important to note how she illustrates the reading process, the two dimensions, such as the concept of internal and external level in a specific manner. It appears that she clearly understands the purposes and the reasons for a specific strategy use for a specific goal. This indicates that her declarative knowledge and conditional knowledge have been enhanced through the explicit strategy instruction.

In a similar fashion, Youngsang seemed to overemphasize the importance of sufficient vocabulary knowledge for successful reading in the first interview, although he did not list vocabulary as the most important knowledge for successful reading. In his first interview, he described discomfort a few times, such as feeling of withering and tension when he encounters unknown words while reading. As one example:

Excerpt 2

I am well aware of my weakness in vocabulary... (Therefore,) when I have to go for a reading section, I am easily tensed and suffer from imperative idea that I need to keep reading a text. (Youngsang, Week 2)

Obviously, it appeared that the instruction assisted him to approach reading differently. He mentioned that he did not need to cling to unknown words so much which negatively

affected his confidence while reading.

Excerpt 3

I think it (strategy training) helped me to reconsider what reading is. It provides an idea that we do not need to cling to words.... You (the instructor) have taught me how to guess the meaning of unknown words using other related parts, which suggests that we have to forget words. I mean you are trying to help us to understand that we can do (construct meaning) without having correct meanings of words. I think we can do that. In other words, you taught us to guess words that I don't know. This means that we can guess them with other sentences (context clues) or we can just pass a problematic passage, making up with (information from) other passages to obtain the entire comprehension of a text. Like we can survive even without rich vocabulary knowledge if we have the ability to elicit the meaning of an unknown word, using context clues. (Daehong, Week 12)

His previous statement describes his difficulties with vocabulary since he did not have sufficient vocabulary for all the words presented in a text. His lack of effort in seeking alternative ways to address these problems is also noted. After the instruction, he noticeably expressed not only the benefits of guessing unknown words, but also the benefits of employing various strategies effectively through context clues. Importantly, he now considers the use of the strategy as a part of his reading ability as well as a resource to compensate for his weakness.

2) Sophistication in strategy use

Sophistication in strategy use, a second emerging theme, was identified in all four participants' interview data. This theme encompasses the knowledge of how well and effectively the participants use strategies to obtain their reading goals. Notably, Schraw and Dennison (1994) listed the knowledge about effective strategy sequence in the reading process as an important category besides planning, monitoring, and evaluation. It can be considered an effective combination of strategies, and is often mentioned in studies (Anderson, 2003; Macaro & Erler, 2008). Useful combinations of strategies in a flexible manner on the basis of adequate strategy knowledge were noticed as another contributor to successful reading (Macaro & Erler, 2008). The four participants revealed the specific and positive changes in their strategy deployment. Additionally, it is noticeable that their competence to verbalize their strategy use as well as the awareness has been markedly increased. It is interesting to see how Daehong described his different approaches to a text in terms of meaning construction before and after the intervention.

Excerpt 4

With the text that we read today, for example, I would have set up a vague idea about the text through reading the title, 'Death' before (the strategy instruction). However, now, I predict the text in a more specific manner, questioning that "the impact" and "the death" may have a cause-and-effect relationship. (Daehong, Week 12)

Daehong mentioned that his prediction became more explicit with the help of strategy instruction. According to him, he uses predicting strategies often. When he was asked about the changes of his strategy use after the instruction, he stated that he is now capable of making more specific and precise predictions using the knowledge of text structures such as chronological order, cause and effect, compare and contrast, self-questioning, etc. For example, he looked for the answers triggered by a self-question about a text structure of the provided text, making logical relationships between the protests and death.

Similarly, Boyoung stated that she has developed effective and specific sequences of strategy use to produce correct prediction. As can be seen in excerpt 5, her illustration is specific and clear.

Excerpt 5

Nowadays, I start to look at how paragraphs consist of, read a title, and searching for the locations of conjunctions roughly in order to predict what this text is going to talk about, and then I begin to read. Before, I just read a text without considering effective ways for comprehension. After learning and trying to apply these (strategies), I found that they really worked well... I think the probability of my prediction to be correct is higher now than before, since I made the prediction from various cues hidden in a text. (Boyoung, Week 13)

It seems that her strategy use became more natural and precise through the opportunities to apply the instructions. She described the several strategies that she often uses in a more sophisticated manner to reach her reading goal. As is evident, she attempted to use the strategies in an effective orchestration or in a sequence. To be more specific, she cited that she employed the strategies related to text structures and background knowledge through using the title of a text, and searched for conjunctions for correct prediction as a safe starting ground for her reading comprehension.

To sum up, this study was to investigate how Korean university students' knowledge about cognition, which falls into the broader category of metacognitive knowledge, changes with the help of strategy instruction. The results indicate that the participants experienced positive developments in their knowledge about cognition, awareness and perceptions in their reading processes in terms of strategy use in at least two ways.

First, their repertoires of reading strategies appear to have broadened after the instruction (Dreyer & Nel, 2003). The results indicate that these readers approach to reading in a more flexible manner with more options in order to arrive at their reading goals. For example, it is noticeable that their views and attitudes toward the roles of the linguistic knowledge in reading, such as grammar and vocabulary, have been changed. As a positive and effective change, they realized that there were other alternative and useful strategy options available to them, apart from relying heavily on a few specific kinds of knowledge. This awareness is the consistent with the traits that are found in successful readers. In the study of Zhang (2010), for example, he noted that successful readers do not focus only on grammar or vocabulary for successful reading comprehension. Rather, those readers reported various ways to address their reading comprehension problems, such as guessing words with context clues or from common knowledge.

Second, their strategy use became more sophisticated and accurate after the instruction. Basically, all four students were able to describe their reading processes clearly and elaborately in terms of the utilities of strategies employed for successful meaning construction. This is indicated as one of the successful readers' traits (Chamot, 2005; Grabe & Stoller, 2002). Moreover, it appears that these readers became more aware of how they regulate their own reading processes. Students were able to operate strategies in more effective combination to reach reading goals which demonstrates that the students gained more procedural and conditional knowledge through the training. The application of strategies used by students during their reading processes became more fluent and effective from deliberate practice (Afflerbach et al., 2008) which allowed the students to be more autonomous—one of the stated goals of the instruction. .

These results suggest that the explicit strategy instruction was effective enough to raise the learners' awareness and understanding of their resources in terms of strategy use in reading. In addition, it was also able to provide these readers with the operational perceptions of the best possible ways to expedite their reading comprehension. Such changes reflect that the domains of knowledge about cognition have been clearly developed with the help of the intervention (Dhieb-Henia, 2003).

2. Changes in the Quantity of Strategies

The second research question was concerned with the number of strategies identified through think-aloud procedures. Overall, 373 strategies were identified for eight protocols (Table 2). There were 27 identified types of strategies based on the reading strategy index of Phakiti (2008). The combined frequency of strategies over time of each student is presented in Table 2. Daehong used the most number of strategies, compared to Mina who employed the least strategies.

When considering their reading test scores, which were in the similar range as an intermediate level, in connection with their frequencies of strategy use, this study confirms the previous studies' findings that the quantity of the strategies employed while reading does not directly relate to the success of reading comprehension abilities (Anderson, 2003; Grabe, 2009; Macaro & Erler, 2008; Schramm, 2008).

TABLE 2
The Numbers of Strategies Used by the Four Participants

Name	Youngsang	Daehong	Boyoung	Mina	Total
No. of Strategies	93	142	72	66	373

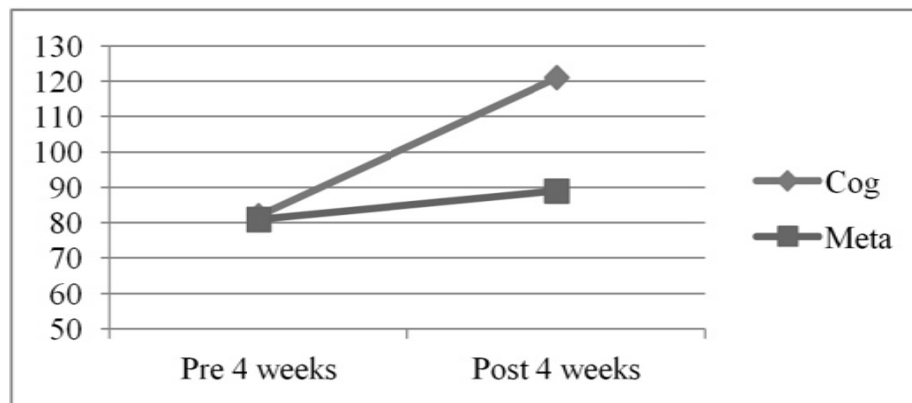


FIGURE 2 The Combined Frequency of Strategies over Time

It is worth noting that there has been an increase in the quantity of the strategies the students employed from 163 for pre-four weeks to 210 for post-four weeks. To be more specific, the increases in both numbers of cognitive and metacognitive strategies were identified from 82 to 121 and from 81 to 89, respectively (Figure 2). The most frequent strategy used by the students was 'Try to understand the relationships between ideas in the text', followed by 'Relate the information from the reading to my prior knowledge or experience', 'Notice when and where I am confused in the text', and 'Summarize the main information in the text'. The students were able to use strategies more frequently after the instruction. Especially in cognitive strategies, there was a noticeable increase in their use of strategies, which indicates the effect of strategy training.

3. Changes in Reading Performance

The third research question was related to whether the above changes are reflected in the students' reading performances. In order to see the changes, the test scores of the four participants before and after the instruction were compared. The results are provided in Figure 3. Their scores were presented as a percentage. As seen below, all four students' reading test scores have been increased after strategy training. For example, Youngsang has shown the most improvement among the four students—more than 19 % increase in the post-test—, whereas Boyoung obtained the least development—more than 7.5% increase—, making an overall average increase of 14.4% for the four students' scores after the instruction. The current study confirms research findings on reading strategies in that explicit instruction contributes to students' reading proficiency (Aghaie & Zhang, 2012; Macaro & Erler, 2008; Dhieb-Henia, 2003; Dreyer& Nel, 2003).

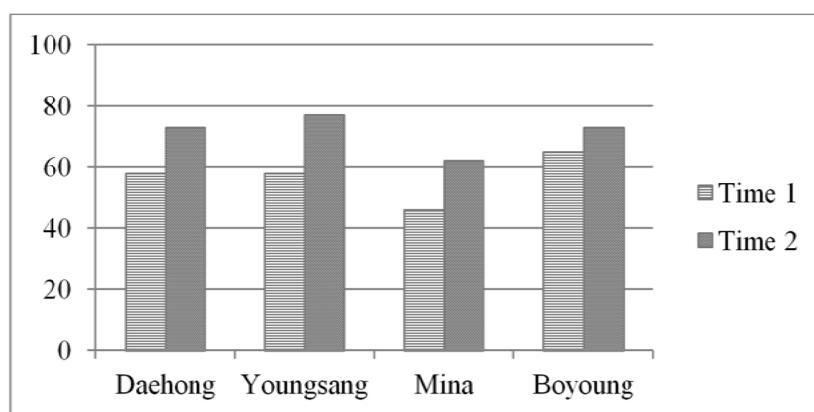


FIGURE 3 RC Test Results

Note: the test scores were presented in percentage

The strategy training was designed based on CALLA model starting from preparation for awareness raising, presentation involving teacher modeling, practice of their individual reading, evaluation of their own strategy use, to expansion of whole group discussion. As seen in the above section, the participants gained more pools of strategies use as well as employing more effective ways of strategy use after the training. It can be explained that the participants' reading abilities have been improved based on the enhanced knowledge about what, when, how, why to use strategies, or declarative, procedural, and conditional knowledge.

V. CONCLUSION

The primary purpose of this study was to investigate the change of Korean university students' awareness and strategy use in reading processes. This study was also carried out to find whether these changes contribute to the enhancement of their reading performance through explicit reading strategy instruction. The four Korean university students participated in the instruction study and their changes were examined based on their interview and conceptions questionnaires conducted in the beginning and at the end of the intervention. By reporting findings mainly from an analysis of interview study and think-aloud protocols of students' reading strategy use, this study attempted to account for the significant roles of metacognitive knowledge in the reading process.

The results of this study indicate that the explicit reading strategy instruction brought about positive effects for the participants. First, positive changes in the participants' knowledge about cognition have been identified. The awareness in their reading processes in terms of reading strategy use was noticeably increased, reflecting the development in their metacognitive knowledge. To be more specific, they obtained the knowledge about various options to address comprehension problems and to enhance their reading comprehension. In addition, their strategy use became more sophisticated after frequent practices offered by the instruction based on the five stages outlined in the CALLA model. With such positive changes, the students increased their reading comprehension ability.

These results reveal significant pedagogical implications. First, reading strategies can be taught to L2 learners by using think-aloud procedures as an instructional tool. A think-aloud protocol can be a valuable tool not only for eliciting self-reported strategies, but also for raising the metacognitive knowledge of a learner. Therefore, teachers should be encouraged to incorporate an instructional tool that utilizes explicit strategy instruction in their reading classes to provide opportunities for practice, self-reflection, and evaluation.

Second to ensure good pedagogically sound practices, teacher training programs for guiding correct teacher modeling of strategic thinking should be developed. More studies need to be undertaken to find effective instructional approaches for assisting teachers to direct and motivate learners to use more useful strategies as they cope with reading difficulties.

Although research into reading strategies is extensive, there are few studies of longitudinal interventions using think-aloud protocols and interviews in an EFL context. Therefore, more intervention studies about multifarious aspects of reading process are needed for further research. It will be meaningful to look at the actual use of the strategy use in more detail in future studies, and to attempt to discover the relationships between the awareness and the actual use of strategy use in balance under metacognitive knowledge as an indicator of successful reading.

REFERENCES

- Afflerbach, P., Pearson, P. D., & Paris, S. G. (2008). Clarifying differences between reading skills and reading strategies. *Reading Teacher, 61*, 364–373.
- Aghaie, R., & Zhang, L. J. (2012). Effects of explicit instruction in cognitive and metacognitive reading strategies on Iranian EFL students' reading performance and strategy transfer. *Instructional Science, 40*, 1063–1081.
- Anderson, N. (2003). Reading. In D. Nunan (Ed.), *Practical English language teaching* (pp. 67-86). New York, NY: McGrawhill.
- Anderson, N. (2008). Metacognition and good language learners. In C. Griffiths (Ed.), *Lessons from good language learners* (pp. 99-109). Cambridge, UK: Cambridge University Press
- Ardasheva, Y., & Tretter, T. R. (2013). Contributions of individual differences and contextual variables to reading achievement of English language learners: An empirical investigation using hierarchical linear modeling. *TESOL Quarterly, 47*(2), 323-351.
- Auerbach, E. R., & Paxton, D. (1997). "It's not the English thing": Bringing reading research into the ESL classroom. *TESOL Quarterly, 31*(2), 237-261.
- Baker, L. (2002). Metacognition in comprehension instruction. In C. Block & M. Pressely (Eds.), *Comprehension instruction: Research-based best practices* (pp. 77-95). NY: Guilford Press.
- Baker, L., & Brown, A. L. (1984). Metacognitive skills and reading. In P. D., Pearson, M. M. Kamil, R. Barr & P. Mosenthal. (Eds.), *Handbook of research in reading* (pp. 353-395). NY: Longman.
- Baumann, J., Seifert-Kessell, N., & Jones, L. A. (1992). Effect of think-aloud instruction on elementary students' comprehension monitoring abilities. *Journal of Reading Behavior, 24*(2), 143-172.
- Bereiter, C., & Bird, M. (1985). Use of thinking aloud in identification and teaching of reading comprehension strategies. *Cognition and Instruction, 2*, 131-156.
- Carrell, P. (1991). Second language reading: Reading ability or language proficiency? *Applied Linguistics, 12*, 159–179.
- Carell, P. L., Paris, B. G., & Liberto, J. C. (1989). Metacognitive strategy training for ESL reading. *TESOL Quarterly, 23*(4), 647-678.
- Chamot, A. U. (2005). Language learning strategy instruction: Current issues and research. *Annual Review of Applied Linguistics, 25*, 112–130.
- Chamot, A. U., & O'Malley, J. M. (1994). *The CALLA handbook: Implementing the cognitive academic language learning approach*. NY: Longman.
- Chu, M. (2013). Strategy use for reading English for general and specific academic

- purposes in testing and nontesting contexts. *Reading Research Quarterly*, 48(2), 175–197.
- Dhieb-Henia, N. (2003) Evaluating the effectiveness of metacognitive strategy training for reading research articles in an ESP context. *English for Specific Purposes*, 22, 387–417.
- Dörnyei, Z. (2007). *Research methods in applied linguistics*. Oxford, UK: Oxford University Press.
- Dreyer, C., & Nel, C. (2003). Teaching reading strategies and comprehension within a technology-enhanced learning environment. *System*, 31, 349–365.
- Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of psychological inquiry. *American Psychologist*, 34, 272–278.
- Grabe, W. (2009). *Reading in a foreign language*. Cambridge, UK: Cambridge University Press.
- Grabe, W., & Stoller, F. L. (2002). *Teaching and researching reading*. Harlow, UK: Longman.
- Harris, K. R., Santangelo, T., & Graham, S. (2010). Metacognition and strategy instruction in writing. In H. S. Waters & W. Schneider (Eds.), *Metacognition, strategy use, & instruction* (pp. 226–256). NY: Guilford.
- Hudson, T. (2007). *Teaching second language reading*. Oxford, UK: OUP.
- Jiang, X., & Grabe, W. (2007). Graphic organizers in reading instruction: Research findings and issues. *Reading in a Foreign Language*, 19(1), 34–55.
- Kim, Hyeon-Okh. (2006). Changes in learner beliefs and strategy use through strategy-based instruction. *Foreign Languages Education*, 13(4), 193-217.
- Koda, K. (2005). *Insights into second language reading. A cross-linguistic approach*. NY: Cambridge University Press.
- Kucan, L., & Beck, I. L. (1997). Think aloud and reading comprehension research: Inquiry, instruction, and social interaction. *Review of Educational Research*, 67, 271-299.
- Macaro, E., & Erler, L. (2008). Raising the achievement of young-beginner readers of French through strategy instruction. *Applied Linguistics*, 29(1), 90–119.
- McCormick, C. B. (2003). Metacognition and learning. In W. M. Reynolds & G. E. Miller (Eds.), *Handbook of psychology: Volume 7, Educational psychology* (pp. 79-102). NY: John Wiley & Sons.
- McKeown, R. G., & Gentilucci, J. L. (2007). Think-aloud Strategy: Metacognitive development and monitoring comprehension in the middle school second-language classroom. *Journal of adolescent & adult literacy*, 51(2), 136–147.
- Mirriam, S. B. (2009). *Qualitative research: A guide to design and implementation*. USA: Jossey-Bass.
- Nuttall, C. (1996). *Teaching reading skills in a foreign language*. London: Heinemann

- O'Malley, J. M., & Chamot, A.U. (1990). *Learning strategies in second language acquisition*, Cambridge, UK: Cambridge University Press.
- Paris, S., & Winograd, P. (1990). Promoting metacognition and motivation of exceptional children. *Remedial and Special Education*, 11(6), 7-15.
- Paris, S. G., Wasik, B. A., & Turner, J. C. (1991). The development of strategic readers. In R. Barr, M. L. Kamil, P. Mosenthal & P. D. Pearson (Eds.), *Handbook of reading research, Vol. 1* (pp. 609-640). New York, NY: Longman.
- Phakiti, A. (2008). Construct validation of Bachman and Paler's (1996) strategic competence model over time in EFL reading tests. *Language Testing*, 25(5), 237-272.
- Pressley, M., & Afflerbach, P. (1995). *Verbal protocols of reading: The nature of constructively responsive reading*. New York: Lawrence Erlbaum.
- Pressley, M., Borkowski, J. G., & Schneider, W. (1987). Cognitive strategies: Good strategy users coordinate metacognition and knowledge. In R. Vasta & Whitehurst, (Eds.), *Annals of child development* (Vol. 5, pp. 89-129). New York: JAI.
- Pressley, G. M., & Harris, K. H. (2006). Cognitive strategies instruction: From basic research to classroom instruction. In P. A. Alexander & P. H. Winne (Eds.), *Handbook of educational psychology* (pp. 265-286). Mahwah, NJ: Erlbaum.
- Schramm, K. (2008). Reading and good language learners. In C. Griffiths (Ed.), *Lessons from good language learners* (pp. 231-243). Cambridge, UK: Cambridge University Press.
- Schraw, G. (1998). Promoting general metacognitive awareness. *Instructional Science*, 26, 113-125.
- Schraw, G., & Dennison, R. S. (1994). Assessing metacognitive awareness. *Contemporary Education Psychology*, 19, 460-475.
- Silven, M., & Vaurus, M. (1992). Improving reading through thinking aloud. *Learning and Instruction*, 2(2), 69-88.
- Song, Mi-jeong. (1998). Teaching reading strategies in an ongoing EFL university reading classroom. *Asian Journal of English Language Teaching*, 8, 41-54.
- Sperling, R. A., Howard, B. C., Miller, L. A., & Murphy, C. (2002). Measures of children's knowledge and regulation of cognition. *Contemporary Educational Psychology*, 27, 51-79.
- Taylor, A., Stevens, J. R., & William Asher, J. (2006). The effects of explicit reading strategy training on L2 reading comprehension. In J. M. Norris & L. Ortega (Eds.), *Synthesizing research on language learning and teaching* (pp. 213-245). Amsterdam, the Netherlands: John Benjamins.
- Wenden, A. L. (1998). Metacognitive knowledge and language learning. *Applied Linguistics*, 19, 515-537.

- Zhang, L. J. (2008). Constructivist pedagogy in strategic reading instruction: Exploring pathways to learner development in the English as a second language (ESL) classroom. *Instructional Science*, 36, 89–116.
- Zhang, J. L. (2010). A dynamic metacognitive systems account of Chinese university students' knowledge about EFL reading. *TESOL Quarterly*, 40(2), 320-353.

APPENDIX 1

Conceptions questionnaire

1. What do you think reading is?
2. What do you think is the biggest problem for someone learning to read in English?
3. What are for specific pieces of advice you would give someone learning to read in English?
4. What do you do when you come to something you have a hard time with when you are reading?

APPENDIX 2

Interview questions

A. Effectiveness of reading strategy instruction

1. Please explain me how you have learned reading in English so far.
2. Please describe the procedures of a lesson in the reading strategy instruction.
3. You have answered the two questions. In what way, how different are the two types of lessons in terms of the instructional effects for students?
4. When you are to recommend reading focusing on strategy use to your friend, what would you tell him or her about its advantages or disadvantages?
5. Please tell me your reading style before and after the strategy instruction. Are there any differences?
6. You are learning reading strategies now. How do you find them?
7. You are learning reading strategies nowadays. Do you enjoy using any typical types of strategies? Do you have any purpose in mind when using the mentioned strategies? Is it effective to make successful meaning construction?
8. You are discussing the strategy use with your partner. Have you ever learned something new that you have never thought of from your friend?

B. Knowledge of strategy use

1. Please remind yourself of the time you read an English text recently. What interrupted

your reading processes the most?

2. What do you do in order to pay attention to reading?
3. Have you ever had any difficulties you encountered when reading recently? How did you overcome the difficulties? Please give me an example.
4. Please describe your feelings toward the difficulties you encountered while reading. How do you solve the tensions or anxiety?
5. Please describe your reading procedures from the beginning to the end when you receive a text.
6. A friend who is willing to learn reading in English is seeking a piece of advice. What would you recommend? What would be avoided?
7. Some people point out that grammar and vocabulary are the most important elements in order to read successfully. What would you tell them?
8. You are explaining how you check your understanding after reading. Please explain it to me. Do you always check your comprehension after reading?
9. What would be necessary to make reading strategy instruction more effective?
10. What else would you like to share about your learning reading strategies?

Examples in: English

Applicable Languages: English

Applicable Levels: Teritary

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