International Journal of Language and Literature June 2017, Vol. 5, No. 1, pp. 7-15 ISSN: 2334-234X (Print), 2334-2358 (Online) Copyright © The Author(s). All Rights Reserved. Published by American Research Institute for Policy Development DOI: 10.15640/ijll.v5n1a2 URL: https://doi.org/10.15640/ijll.v5n1a2

Cognitive and Metacognitive Strategy Training to Enhance Freshmen's Reading Skills

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Abstract

The aim of this study was to investigate to what extent involvement in cognitive and metacognitive strategy training instruction increases language learners' reading strategy use while reading texts written in English. The study was conducted at the preparatory school of Inonu University School of Foreign Languages in Malatya, Turkey in 2015-2016 academic year. The participants were 27 preparatory class students aged between 18 and 21. In order to achieve the aim of the study, in our reading classes, we explicitly instructed our students the cognitive and metacognitive reading strategies for eight weeks. The reading strategy instruction consisted of two periods. In the first period, we mainly focused on cognitive strategy training and in the second on metacognitive reading strategies. When determining the types of strategies to be introduced and practiced, we considered the difficulties the students face when comprehending texts written in English and adjust the procedure to be followed when necessary. In this case study, we employed mixed method research design to make sense of the data gathered through qualitative and quantitative approaches. Qualitative data collection instruments included researcher's diary, learners' diaries, and follow-up semi-structured interviews conducted with the students. Quantitative data collection instruments involved The Survey of Reading Strategies (Mokhtari & Sheorey, 2002) and The Survey of Self-Evaluation Questionnaire (Oxford, 1990). The findings of the study revealed that the students increased their strategy use after an eight-week strategy-training program.

Keywords: Case Study, Cognitive Reading Strategies, Metacognitive Reading Strategies, Reading Comprehension.

1. Introduction

People need English globally to interact for social, cultural and academic purposes. Therefore, to have an adequate reading skill is the prerequisite for academic research studies. We all employ different reading strategies depending on our purpose for reading a piece of information. We find and store the information given. We do this on a daily basis, whether for pleasure, for example; while reading a novel, we are more likely to take our time by reading slowly and carefully while savoring the details. On the other hand, unlike when reading for pleasure, when we read to look for a specific piece of information, we tend not to read in such focused detail. Instead, we scan the written information until our attention falls upon what is sought (Nunan, 1999). Alternatively, when we read in order to verify information that is already known to us, we neither read the written information in detail nor by scanning. Rather, we skim read. According to Davies (1995), both skimming and scanning are superficial forms of reading of which their main purpose is to search the text rather than to process its information and content (as cited in Nunan, 1999).

As teachers, we need to train our students with a various number of strategies on the grounds of cognition approach Accordingly, if the students are exposed to an interaction with 'the supportive teacher' they will improve their proficiency level of strategy use, and this makes them cope with the tasks even they are challenging (Palincsar and Brown, 1984). Strategy instruction within the academic texts enables the students to acquire metacognitive skills which give them the awareness of how, when, and where to use the incoming strategies (Mayer, 1998).

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Second language learners and instructors need to follow a number of strategies in order for adequate language acquisition to take place. This view was supported by Williams et al. (2015) who argued that the language learners should use appropriate learning strategies, where needed, to improve their language use. The teachers also need to follow appropriate methods to instruct their students. The purpose of this paper is to explore the preparatory class students' current situation regarding their use of reading strategies while they read texts written in English. The paper also aims to investigate to what extent cognitive and metacognitive strategy training increases the students' reading strategy use.

2. Literature Review

2.1. Reading Comprehension

What is reading? In short, reading is producing meaning from a written text and its visuals. However, a broader explanation has been offered by Moreillon (2007) who argues, "reading is not simple" and adds that reading demands practice and skill, so is, therefore, an action process (p.10). She also asserts that when proficient readers are confronted with a difficulty while reading, they rely on certain reading comprehension strategies in order to solve the problem. While dealing with a reading comprehension test, readers need to activate various knowledge sources already stored in their mind to understand the text, and answer the questions related to the text. Although written English is assumed as a receptive skill like listening, recent investigations in literature have revealed that both skills need a process in learners' mind like the productive skills required in writing and speaking. In Kendeou, Smith & O'Brien's terms, successful reading comprehension depends on repeated unification of information in the "reader's memory" (2012, p.854). Reading is a complex process of problem solving in which the reader works to make sense of a text not just from the words and sentences written but also from the ideas and knowledge conveyed by those words and sentences. Although at first glance reading may seem to be a passive and simple process, it is in truth active and complex. From this point of view, Geva& Ramirez (2015) assert reading comprehension is a complex activity that one can make meaning from while reading with the purpose of enjoyment or to get information.

2.2. Language Learning Strategies

Krashen (2000) defines language learning as the ability of awareness on target language rules and adds that language acquisition is to improve the ability of target language use in a natural environment. As noted by Krashen (2000), "according to research in second language acquisition, it is thought that acquisition can take place only when people **understand** messages in the target language" (p. 19). A considerable amount of literature has been published on language learning strategies. Traditionally it has been argued that language learning strategies are the actions and behaviors learners make use of to enhance their understanding of a second language (Oxford, 1990; Cohen, 1995; O'Malley &Chamot, 1990). In 2015, Ellis reported the process of language learning strategies "they start out as conscious but subsequently, as a result of continuous use, become automatic and unconscious" (p. 57).Rubin also defined the strategies as the techniques followed by the learners to get the information (1975). Williams, Mercer & Ryan (2015) clarify language learning strategies in five groups as "cognitive strategies "as they compensate for a lack of knowledge of the language", affective strategies which are used "to regulate their emotions", and metacognitive strategies "used to regulate and control the learning process" (p. 124). Cognitive strategies and metacognitive strategies are the vital points of the present study.

2.2.1. Cognitive Learning Strategies

According to Weinstein and Meyer (1986), cognitive strategies seek to manipulate the incoming information in a way that would optimize learning through rehearsal, organization; and elaboration processes. Such processes may in themselves be combined with other processes which may rely, in varying degrees, on prior knowledge stored in the learners' long-term memory, for example, when summarizing, deducing, inferencing and transferring (cited in O'Malley &Chamot, 1990). Likewise, Ritter et al. (2007) claim that cognitive learning is to put the newly information upon the present one in long-term memory. Lewis & Hurd also (2008) state "**Cognitive strategies** are direct strategies used to orchestrate the mental processing of a target language" (p.72). Brown and Palincsar (1982) point out that cognitive strategies are more involved with individual tasks which require more manipulation of materials to reach a sounder understanding of the content (cited in O'Malley and Chamot, 1990). On the ground of cognitive theory, Rabinowitz and Chi (1987) assert "strategies must be conscious in order to be "strategic"; consequently, they should no longer be considered as strategic behavior once they are performed automatically" (cited in O'Malley & Chamot, 1990, p.52).

2.2.2. Metacognitive Learning Strategies

As cited in Cubukcu (2008) "one of the first definitions of metacognition comes from Flavell (1976), who describes it as 'one's knowledge concerning one's own cognitive processes and products or anything related to them" (p. 83). In one of his following studies Flavell (1979), classified metacognition as cognitive monitoring which involves interrelations between four phases of the process, namely 'metacognitive knowledge' is that one's awareness of his or her cognitive learning processes compared to the other learners, 'metacognitive experiences, which are one's ideational initiations', 'goals (tasks)' which are the instruments for cognitive attempts, and 'actions' which are the behaviors, used for achievement, related to mental process. According to O'Malley & Chamot (1990), the term metacognition "has been used to refer to knowledge about cognition or the regulation of cognition" (p. 99). Garner & Alexander, (1989) defined metacognition as "knowing about knowing" (p. 147). McLoughlin&Hollingworth, also define metacognition as the learners' awareness of their own cognitive process, and the ability to monitor and control their acquisition process of learning (2002). Brown et al. (1982) also explain the term metacognition in one of their major works; the term metacognition "refers to two distinct areas of research, namely knowledge about cognition and regulation of cognition" (p. 92). These are, indeed, closely related, and each compliments each other; one cannot stand alone without the other. Brown et al. (1983) define metacognitive strategies as "higher order executive skills that may entail planning for, monitoring, or evaluating the success of a learning activity" (as cited in O'Malley & Chamot, 1990, p. 44). Lewis & Hurd claims metacognitive strategies as to be "indirect strategies used to monitor the self when engaged in an activity such as reading" (2008, p.72). Macaro (2006) asserts that high proficiency level learners tend to use a range of metacognitive strategies, so as to enhance their proficiency (cited in Ellis, 2015).

3. Research Questions of the Study

The research questions, which guided the study, were as follows:

1. What type of reading strategies do the preparatory class students use while reading a text written in English?

2. Is it possible to increase the number of the reading strategies that the learners use through involvement in cognitive and metacognitive reading strategy training in English classes?

4. Method

4.1. Participants

The participants of the study were 27 preparatory class students at Inonu University, in Malatya, Turkey with the age range between 18 and 22 (14 males and 13 females). All of the students in the class were placed according to the results of a placement test that they took at the beginning of the first semester. Thus, all the subjects were assumed to be at the same language proficiency level, as beginner.

4.2. Design

The methodological approach taken in this study is a mixed methodology based on a case study. As taking the advantages of mixed methodology, the researchers in the present study had the opportunity to use both qualitative and quantitative research methods for the benefit of the research questions.

4.3. Materials

Data, for use in the quantitative method approach, was collected through The Survey of Reading Strategies (SORS) (Mokhtari & Sheorey, 2002), and The Survey of Self-Evaluation Questionnaire (Oxford, 1990). The SORS consists of 30 items classified under three subscales: Global Reading Strategies (GLOB) with 13 items, Problem Solving Strategies (PROB) with 8 items, and Support Reading Strategies (SUP) with 9 items. The Survey of Self-Evaluation Questionnaire is an instrument originally designed by Oxford (1990). It consists of four language learning skills self-evaluation parts. In the present study, the reading part of the survey was separately implemented to the students in order to reveal their perceptions of their progress in reading. Follow-up semi-structured interviews, researcher's diary and learner's diary were used to collect the qualitative data of the study.

4.4. Procedural Details of Reading Strategy Instruction

The reading strategy instruction consisted of two periods, and each period included a four-week implementation. The Survey of Reading Strategies Questionnaire (Mokhtari & Sheorey, 2002) was implemented twice; once before the strategy training program started, and once after the strategy training program was over. The aim of the first implementation of the survey was to find out the answer to the first research question which aimed to explore the number and the type of reading strategies the participants use to comprehend a text. The aim of the second implementation was to find out the answer to the second research question which aimed to identify whether there would be an increase in the number of the metacognitive reading strategies the participants use after involvement in the reading strategy training program. The implementations of The SORS (Mokhtari & Sheorey, 2002) were imported into Microsoft Excel and then into SPSS version 20. Follow-up interviews were administered at the end of each period. Random sampling strategy was employed when choosing the participants for the interviews due to the large number of the students in the class. The researcher's diary was kept to record her in-class observations, and the informal conversations that took place in the classroom setting regarding the researcher's perceptions of the participants' attitudes toward the implementation of strategy training on a weekly basis. In the present study, the students were also asked to keep a learner diary to record their own experiences and interpretations of involvement in cognitive and metacognitive reading strategy use during the second period of the instruction. All the data from followup interviews, researcher and learners' diaries were descriptively analyzed. In the last week of the strategy training program, the reading part of The Survey of Self-Evaluation Questionnaire (Oxford, 1990) was separately implemented to the students in order to reveal their perceptions of their progress in reading. The students' responses to the survey were statistically analyzed.

4.5. Cognitive and Metacognitive Strategy Instruction

Reading strategy training program was conducted during the four-hour reading-writing classes. Each week participants were explicitly instructed one or two reading strategies and practiced with the texts in students' course book 'UNLOCK; Reading & Writing Skills' (Ostrowska, 2014) or the texts provided by the researchers with the aim of preparing the students to deal with texts from real life. The strategies instructed were as follows: Genre Analysis: Raising the participants' awareness of genre analysis allows them to identify where the reading material comes from. Thereupon, the students could be able to make use of genre analysis to attach meaning to the text they read. Skimming: The aim of skimming was to help promote quick and efficient reading. The participants passed quickly over the text, glanced at keywords, made use of visuals and got a general idea of what the text was about. Scanning: The participants were instructed scanning strategy as a technique to read a text quickly, but apart from skimming, to pick out specific information from the text. The students ran their eyes up, down, diagonally across the text focusing on the typographical features of the words, numbers and capital letters in names. Predicting: The participants were instructed some tips related to predicting the meanings of unknown words in the text in hand. They were explained how to guess the meanings of the unknown words by looking at the title, the neighboring words and by considering the context of the text. Using Visuals: The participants were instructed use the visuals presented in the text to trigger subconscious awareness about the text. The students experienced that having visuals in a text made the verbal items easily stored in mind. Visualizing: The Participants were instructed about creating mental images in mind to remember the verbal elements in the text to summarize. Planning Strategy: The participants learned to be aware of what to do to cope with a reading comprehension text. They could think about how they were going to approach and carry out a task .Evaluating Strategy: The learners were taught to evaluate themselves to decide which strategies worked best when they had difficulties to comprehend the text so that suitable strategies could be chosen in the future. Monitoring Strategy: The participants were instructed monitor themselves about the types of reading strategies they used during comprehension process. They also reached the ability to be aware of their strengths and weaknesses.

5. Findings and Researchers' Reflections

The aim of this study was to explore the students' current situation regarding their use of reading strategies while they read texts written in English, and to investigate to what extent cognitive and metacognitive strategy training increases the students' reading strategy use. The statistical findings from SORS for the first and second research question are shown below in the same tables as pre-test and post-test. However, results will be separately discussed for each question.

5.1. First Research Question

The first research question in this study guided the researchers to determine the type of reading strategies the participants used at their current level. The first implementation of SORS aimed to find the answer to the first research question. Mokhtari and Sheorey's (2002) interpretation was used to explain the overall average scores for the SORS as rating mean of 3.5-5.0 high; mean of 2.5-3.49 medium; and mean of 1.0-2.49 low strategy use.

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est 2.59	9 1.6	251	.60)8
test 2.85	5 1.4	0		
est 3.66	6.87	32	.74	16
test 3.74	4.85			
est 3.88	8.97	30	.76	54
test 3.96	6.93			
est 3.92	2.99	12	.90)3
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Table 1. Global Reading Strategies P	Pre-test and Post-test Results.
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M, mean; SD, standard deviation

Having analyzed the data from SORS to find out the answer to the first research question, it became clear that the students were able to plan and monitor their reading processes by using the such strategies; skimming and scanning the text, using the visuals and content clues, identifying their purposes, using background knowledge and typographical features, and predicting to comprehend a text with the overall mean of pre-test (M= 3.57) under GLOB subscale (Table 1).

Support Reading Strategies	Test	М	SD	Т	Sig.
2. I take notes while reading to help me understand	Pre-test	3.62	1.11	.000	1.000
what I read.	Post-test	3.62	1.11		
5. When text becomes difficult, I read aloud to help	Pre-test	2.51	1.08	.000	1.000
me understand what I read.	Post-test	2.51	1.08		
10. I underline or circle information in the text to	Pre-test	3.85	1.02	.122	.904
help me remember it.	Post-test	3.81	1.00		
13. I use reference materials (e.g. a dictionary) to	Pre-test	3.22	1.08	105	.917
help me understand what I read.	Post-test	3.25	1.09		
18. I paraphrase (restate ideas in my own words) to	Pre-test	3.59	1.24	209	.836
better understand what I read.	Post-test	3.66	1.20		
22. I go back and forth in the text to find	Pre-test	3.51	1.22	.000	1.000
relationships among ideas in it.	Post-test	3.51	1.22		
26. I ask myself questions I like to have answered in	Pre-test	3.30	1.25	378	.709
the text.	Post-test	3.42	1.23		
29. When reading, I translate from English into my	Pre-test	3.88	.80	.176	.861
native language.	Post-test	3.85	.81		
30. When reading, I think about information in	Pre-test	2.51	.70	420	.678
both English and my mother tongue.	Post-test	2.59	.79		
Overall Mean	Pre-test	3.34			
	Post-test	3.36			
	N= 27				

Table 2. Support Reading Strategies Pre-test and Post-test Results.

M, mean; SD, standard deviation

The findings from SUP scale (Table 2) with the overall mean of pre-test (M= 3.34) also indicated that the students could make contributions to their understanding by the strategies of; taking notes, underlining the information, using resources, and reading aloud. As can be seen in Table 3, the findings from PROB subscale with the overall mean of pre-test (M= 3.87) showed that the students were capable of coping with the difficulties during a task with the kind of strategies such as using mental imaginary, rereading, guessing the meaning of unknown words, and adjusting their reading speed to comprehend a text.

Table3. Problem Solving Strategies Pre-test and Post-test Results.

Problem Solving Strategies	Test	М	SD	Т	Sig.
7. I read slowly and carefully to make sure I understand	Pre-test	3.70	1.20	.000	1.000
what I read.	Post-test	3.70	1.20		
9. I try to get back on track when I lose concentration.	Pre-test	3.33	1.24	.000	1.000
	Post-test	3.33	1.24		
11. I adjust my reading speed according to what I am	Pre-test	4.14	1.09	.319	.752
reading.	Post-test	4.07	1.17		
14. When text becomes difficult, I pay closer attention to	Pre-test	4.37	.92	.000	1.000
what I am reading.	Post-test	4.37	.92		
16. I stop from time to time and think about what I am	Pre-test	3.40	1.24	263	.795
reading.	Post-test	3.48	1.22		
19. I try to picture or visualise information to help	Pre-test	4.22	1.01	267	.791
remember what I read.	Post-test	4.29	.99		
25. When text becomes difficult, I re-read it to increase	Pre-test	3.81	1.00	493	.626
my understanding.	Pro-test	3.96	.97		
28. When I read, I guess the meaning of unknown words	Pre-test	3.96	.89	290	.774
or phrases.	Post-test	4.03	.80		
Overall Mean	Pre-test	3.87			
	Post-test	3.90			

N= 27

M, mean; SD, standard deviation

Not unexpectedly, the students reported their strategy use at medium or high level. As the students aged between 18 and 22, they were assumed being experienced on their cognition. As Pearson (2008) noted that "today's new knowledge is tomorrow's background knowledge", so the young adult learners of the present study were well of with respect to their life experience to make use of their world knowledge (as cited in Harvey & Goudvis, 2013, p. 437). Another possible explanation for this result might be that the participants were from the departments of Social Sciences at university and had taken instruction on some strategies during preparatory courses for the University Entrance Examination (UEE). However, it was also noticed at the initial phase of the study that the students were not proficient in using those strategies. This was observed during the informal conversations in the classroom.

5.2. Second Research Question

The key research question of this study was the second one that aimed to investigate to what extent cognitive and metacognitive strategy training increases the students' reading strategy use. The statistical findings from SORS indicated that there was no increase in strategy use associated with the strategy training program. That is, we observed that the items in the GLOB subscale were at high use with an overall post-test mean (M = 3.62). Similarly, the items in the SUP subscale were observed to be at medium use with an overall mean of (M = 3.36) in the post-test and the items in the PROB subscale were at high use with an overall post-test mean (M = 3.90). There were no significant differences between the findings elicited from the pre-test and the post-test of the survey. Having compared the statistical findings from SORS and the verbal data from interviews, diaries, and observations, a contradiction can be seen as the findings revealed no significant differences between findings gathered from the pre-test and post-test of the survey. This means no increase was observed in the number of the strategies that the students used after the training program. This finding in line with the developer of SORS, Mokhtari and Sheorey's, (2002) argument that the instrument was considered "as only one source of information about students' reading abilities", and so the study concerned the triangulation of both quantitative and qualitative approach (p. 6). However, the verbal findings of the study showed that the training program helped to raise the students' metacognitive awareness on reading. More specifically, findings from the second period semi-structured interviews, diaries and observations revealed that the students were able to manage their learning by using the metacognitive strategies to plan and monitor their comprehension process, to elaborate their prior knowledge, to solve the problems they encountered when they were on a task and evaluate how they completed a task (Chamot et al., 1988).

Participants' responses to the follow-up semi-structured interviews carried out at the end of each period showed that it was the first time they were trained to use cognitive and metacognitive reading strategies for the texts written in English. However, they were previously trained to use the strategies in their mother tongue for the text written in L1, but not able to apply them to the texts in L2. Some of the quotes from the interviews are as follows: I try to guess the content from the heading, and use pictures in the text if there are some. We learned skimming and scanning, but I usually read in detail, and take notes. I deal with grammar and unknown words too much. (P3C20) (Personal communication, December 23, 2015)After strategy training, I learned to use the visuals, and some other clues in the text to comprehend it. Before the training, I didn't use to pay attention to the clues such as visuals, numbers, and typeface of the words, but now, I am aware of them. I can use various types of reading strategies. (P2DR) (Personal communication, March 21, 2016)As can be seen from the participants' responses within the interviews, they were aware of their current metacognitive processes. They also reported their improvements in the learners' diaries in a similar way. We investigated through the participants' diaries what their goals and objectives to be achieved were. They were planning to be proficient second language readers in long-term and also had the purpose of solving some of their linguistic problems in short-term. During the reading strategies instruction process, we observed that the participants were much more eager to engage in the tasks from daily life. As we noted in researcher's diary: Having practiced the strategy using an up-to-date and authentic material worked well. Although there were many unknown words in the article from the daily newspaper 'The New York Times', they did not much struggle with the words. On the other hand, they make much effort when they deal with academic texts. (March 14, 2016)On the other hand, comparing the statistical findings from Oxford's (1990) survey and the verbal data from the all sources, the similar results were observed about the participants' cognitive and metacognitive awareness which means they increased the number of the reading strategies used in English classes after being involved in cognitive and metacognitive reading strategy training.

Moreover, having deeply analyzed the statistical findings of one item from Oxford's survey, as can be seen from the Table4, it is obvious that the students' understanding of English written text had improved since the previous month.

Self-Evaluation Questionnaire Statements	Frequency	Percent
Yes	26	96.3
No	1	3.7
Total=	27	100.0

 Table 4. Has your reading comprehension improved since last month?

Categorical scales yes/no were used to measure the item (Creswell, 2013). As can be seen from Table 4, all the participants responded to the item, and all but one of them with 96.3% claimed their reading comprehension have improved since the previous month. Interestingly, 1 out of 27 participants reported his reading comprehension had not improved. The results also showed that the students' awareness on the target language could be increased by the help of the instructors.

6. Conclusion

Following O'Malley and Chamot's (1990) recommendation of checking the students' current strategy use to foster the previously taught strategies before instructing the new one put each session into a warm-up activity. The participants enjoyed learning a new strategy like "learning a new move in sports" (Crawford, 2005, p.9). As Nunan said (1999) the students could integrate what they knew with the content of what they were reading in practice sessions. The most obvious finding to emerge from this study was that having explicit metacognitive reading strategy training, the students could apply different types of strategies to various kinds of texts, and "regulate and control the learning progress" Williams et al. (2015, p. 124). It means that they were consciously aware of their mental process when they were on a task, and could make a combination of metacognitive strategies with cognitive strategies to enhance their learning (Chamot et al., 1988). We have also experienced to monitor the students learning process while teaching them to monitor their learning process through strategy training program (Kutluturk, 2016).

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