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# Use of Cognitive Strategies in Reading: A Descriptive Study on EFL Learners' Metacognition

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# İngilizceyi Yabancı Dil Olarak Öğrenenlerin Üstbilişleri Üzerine Bir Betimleyici Çalışma

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# Use of Cognitive Strategies in Reading: A Descriptive Study on EFL Learners' Metacognition

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**Abstract**

Regulation of cognition (Schraw & Dennison, 1994) that involves planning and strategy use of individuals is one of the two aspects of metacognition. Language programs are likely to promote learners' cognitive skills such as thinking critically or use of strategies, thus, metacognition is also involved in second language research (eg., Ellis, Denton & Bond, 2014; Zhang, 2001). One of the language skills in which strategies are commonly used is reading, so various strategies are taught in language classes. Although reading strategies are part of instruction in language teaching, it is still unexplored how or to what extent learners use them especially in EFL setting (Yayli, 2016). Thus, this paper presents a descriptive study that explores both EFL learners' strategy use and cognitive processes while reading. Participants of the study were 30 students (15 high level learners and 15 low-level learners) learning English at the language program of a state university in Turkey. The participants were taught three global reading strategies in a five-week study and their strategy use was examined through think-aloud protocols after presenting them reading passages appropriate for their levels. Overall, findings put forward that strategy use in reading was related to being a good or bad reader rather than language proficiency and instruction was found to play a role in these learners' strategy use.

**Article Info**

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# İngilizceyi Yabancı Dil Olarak Öğrenenlerin Üstbilişleri Üzerine Bir Betimleyici Çalışma

**Öz**

Bilişin düzenlenmesi (Schraw & Dennison, 1994), bireylerin planlama ve strateji kullanımını içeren üstbilişin iki bölümünden biridir. Dil öğretiminde eleştirel düşünme veya strateji kullanımı gibi öğrencilerin bilişsel becerileri geliştirilmekte olduğundan, üst biliş aynı zamanda dil öğrenimi araştırmalarında yer alan bir konu olmaktadır (ör., Ellis, Denton & Bond, 2014; Zhang, 2001). Okuma, yabancı dil öğretiminin strateji kullanımını gerektiren bir parçasıdır ve bu nedenle öğrencilerin bilişsel becerilerini ortaya koyan çeşitli stratejiler dil sınıflarında öğretilmektedir. Buna rağmen, öğrencilerin bu stratejileri nasıl ve ne ölçüde kullandıkları hala belirsizliğini korumaktadır (Yayli, 2016). Bu nedenle, bu betimleyici çalışma, öğrencilerin okumada kullandıkları strateji kullanımını ve okuma sırasında bilişsel süreçleri araştırmayı hedeflemektedir. Çalışmanın örneklemini, Türkiye'de bir devlet üniversitesinin yabancı dil programında İngilizce öğrenen (15 üst seviye, 15 alt seviye) 30 öğrenci oluşturmaktadır. Katılımcılara beş haftalık bir uygulamada üç genel okuma stratejisi öğretilmiştir. Bu süre sonunda katılımcılara seviyelerine uygun okuma parçaları verilmiştir ve sesli-düşünme yöntemi kullanılarak katılımcıların strateji kullanımı incelenmiştir. Çalışmanın bulguları, okuma becerisinde strateji kullanımının dil yeterliliğiyle değil; iyi ya da kötü bir okuyucu olmayla ilgili olduğunu ve de stratejilerin öğretilmesinin faydalı olduğunu ortaya koymuştur.

**Makale Bilgisi**

**Anahtar Kelimeler:**
İngilizceyi yabancı dil olarak öğrenenler, Üstbiliş, Okuma, Strateji kullanımı

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## Introduction

Innovations and improvements trigger global changes in many areas, one of which is education. In this sense, globally, twenty first century education aims to promote creativity, critical thinking and problem solving (Griffin & Care, 2014; Trilling & Fadel, 2012) which are also elements of metacognition. In other words, it could be stated that new trends in education focus on teaching students how to use their cognition. Similar to other branches of education, language teaching is also influenced by educational innovations. Thus, recent language programs aim to encourage language learners' cognitive skills such as critical thinking and strategy use.

Reading could be regarded as a language skill that demonstrates how language learners use strategies. Considering that strategy use is among 21st century skills that are the focus of new educational systems, it is necessary to unpack the recent state of language teaching and learning in Turkey by providing perceptible evidence on how 21st century skills are reflected in language teaching. For this purpose, this study aims to examine strategy use of language learners in Turkey in a way that reflects learners' cognitive skills.

## Review of Literature

### Metacognition

Metacognition is defined as "...both knowledge of one's knowledge, processes, cognitive and affective states, and the ability to consciously and deliberately monitor and regulate one's knowledge, process, and cognitive and affective states" (Hacker, 1998, p. 11). It comprises of metacognitive knowledge and regulation of metacognition (eg., Flavell, 1987; Schraw & Dennison, 1994).

### Metacognitive Knowledge

One of the components of metacognition is metacognitive knowledge that includes declarative knowledge (knowledge of what), procedural knowledge (knowledge of how) and conditional knowledge (knowledge of when and why) and knowledge about things. Eflides (2001) defined it as ''knowledge we retrieve from memory and regards what the person knows or believes about him/herself and the others as cognitive beings, their relations with various cognitive tasks, goals, actions or strategies as well as the experiences s/he has had in relation to them'' (p. 299) Schraw (1998) indicated that declarative knowledge refers to one's knowledge about the factors affecting his or her performance and procedural knowledge refers to knowledge about how to perform tasks while conditional knowledge involves when and why to use both types of knowledge.

Up to now, studies on metacognitive knowledge or awareness have always put forward a positive effect of it on various educational issues such as academic success (eg., Isaacson & Fujita, 2006; Landine & Stewart, 1998; Zimmerman, 1990). In one of these studies, Young and Fry (2008) searched for the relationship between components of metacognition and academic achievement. The findings of this study revealed that there was a positive correlation between the components and academic achievement, which supports previous research (eg., Schraw & Dennison, 1994; Sperling, Howard, Staley & DuBois, 2004)

### Regulation of Metacognition

This type of metacognition includes planning, monitoring and strategy use (Akın, Abacı & Çetin, 2007; Fraenkel & Wallen, 2000). In other words, it involves a number of activities that facilitate learning or any mental process. Schraw (1998) suggested that planning, monitoring and evaluating are the most commonly used metacognitive regulations in learning process and they help learners regulate their own learning. In this sense, Zimmerman (1990) revealed that use of self-regulated learning is highly related to academic achievement. Strategy use is another element facilitating learning involved in cognitive regulation.

### Use of Strategies

One of the elements of regulation of metacognition is use of strategies. To this end, it has been suggested that learners who have a high level of metacognitive awareness use various learning strategies that enable them to become more independent, autonomous, lifelong learners (Little, 1995; Oxford & Ehrman, 1995; Oxford, 2003). Furthermore, metacognitive strategies provide evidence for students' learning (eg., Cubukcu, 2008; Flavell, 1979; Garner, 1988; Ku & Ho, 2010; Park, 2018). Concerning benefits that they provide, metacognitive strategies have been among popular research areas in educational research. (eg., Bishara & Kaplan, 2018 for math; Cook, Kennedy & McGuire, 2013 for chemistry; Schraw, Crippen & Hartley, 2006 for science). As for metacognitive strategies in language teaching, the focus has commonly been on the reading skill due to the demanding nature of this skill for strategy use.

Reading is regarded as the most important skill probably caused by the fact that it is a learnt skill while skills of speaking and listening are acquired from birth or in time. It also involves cognitive processes such as coding new information and activating schemata for prior knowledge. Strategy use is another cognitive skill that is involved in reading as humans do not read through a single process. Furthermore, reading is a skill that requires various strategies rather than only one type, and learners' being aware of what strategy works best for themselves and choosing it is considered as metacognitive reading strategies. According to Mokhtari and Reichard (2002), reading strategies could be categorized as global strategies such as making predictions, problem-solving (eg, rereading) and supportive reading strategies (eg, taking notes). These strategies are used for different purposes, but what they have in common is that they are all result of complex cognitive processes. Three global reading strategies; guessing from the text, skimming and scanning were used in this study and metacognition of language learners was addressed.

**Previous Research on Use of Reading Strategies**

In the literature, many studies have been conducted on different aspects of strategy use and metacognition in reading (eg., Anderson, 1991; Block, 1992; Kocaman & Beşkardeşler, 2016; Zhang & Wu, 2009) by focusing on the major importance of teaching strategies in reading classes (eg., Anderson, 1999; Cohen, 1998; Oxford, 1990 in Anderson, 2002). For instance, a number of studies have focused on the effect of strategy training on learners' reading comprehension and revealed a positive effect of training (eg., Cubukcu, 2008; Wenden, 2001). Differences between groups such as gender and proficiency in terms of strategy use have been another issue in the related research (eg., Anderson, 1991; Block, 1992; Zhang, 2001; Zhang & Wu, 2009). Anderson (1991) suggested that individual differences between good and bad readers are impactful factors in strategy use in reading. Additionally, Zhang (2001) conducted a study in a Chinese context where deficiency of the target language input (English) is claimed and the researcher concluded that proficiency was a factor affecting strategy use. Similarly, in a study carried out by Zhang and Wu (2009) with 270 students in China, it emerged that proficiency was a determinant in strategy use of EFL learners based on the findings in favor of a high-proficiency group for the use of two types of strategies.

**Think-aloud Protocols in the Research on Use of Reading Strategies**

Think-aloud protocols have been commonly used in research on the use of reading strategies and metacognition (eg., Block, 1992; Davey, 1983; Davis & Bistodeau, 1993; Ghavamnia, Ketabi & Tavakoli, 2013; Lau, 2006; Lin & Yu, 2015; Oster, 2001; Wang, 2016; Yaylı, 2010). Block (1992) carried out a think-aloud study with 25 different proficiency level learners and revealed that proficiency was effective in the use of different strategies. In a similar vein, Lau (2006) conducted a study on strategy use of good and poor readers through think-aloud procedures and concluded that good readers used more strategies during reading. Bereiter and Bird (1985) explored teachability of certain reading strategies through think-aloud protocols. Findings of the study carried out with 80 students indicated that instruction and teachability of reading strategies is to be addressed in the related research area. Considering commonly adopted methods in reading strategies use research, this study employs think-aloud protocols in order to examine EFL learners' metacognition and their use of global reading strategies. Thus, the effect of strategy training could also be detected. In light of the related research and previous studies, this study aims to examine strategy use of EFL learners and their metacognitive awareness through think-aloud protocols. Research questions are as follows:

**1.** Do EFL learners use strategies during reading?

**2.** Is there a difference between learners with high and low proficiency in the use of strategies?

## The Study

**Setting and Participants**

Considering the research purpose, the study was conducted at Zonguldak Bülent Ecevit University, School of Foreign Languages in Turkey. One of the reasons for choosing this particular setting is eligibility and convenience: Language learners studying at the school did not have instruction on reading strategies within the scope of the program. Also, the course book used did not include teaching reading strategies. Generally, the school provides language education for undergraduate students who start their bachelor or associate degree and who are not proficient in English language use since these students need to have at least B1 level of English to study at their departments. The department of Applied English and Translation Studies is among departments for which English preparatory education is provided. These

students are placed in classes based on their scores they got in the proficiency exam conducted at the beginning of the academic year and provided with one-year language instruction appropriate for their language level. To this end, students who get 75 or above are placed in high level classes while the students getting below 60 are placed in low-level classes as false beginner learners. Moreover, as a result of needs analyses, it was found out that the students of this department need grammar instruction more than language skills. Thus, a grammar book is used as the main course material and students do not obtain any explicit strategy training for any language skills, which demonstrates appropriateness of the setting since it could be easy to detect any possible effect of strategy training to learners who do not have any background knowledge about the issue.

Participants of the study were pooled among students of the department of Applied English and Translation Studies for aforementioned reasons. Since exploring the effect of language level is one of the research purposes, students who study at a high-level class and a low-level class (two groups of 15 with high and low level language learners) of the department of Applied English and Translation Studies were determined as the participants of the study. These students were informed about the processes before their participation and they got the same instruction and procedures throughout the treatment.

**Materials**

**Metacognitive Awareness Inventory**

As strategy use, one aspect of metacognitive awareness, is the focus of this study, Metacognitive Awareness Inventory (Schraw & Dennison, 1994), a valid and reliable scale, was found to be an appropriate instrument for the purpose. The original version of the scale includes 52 items on various components of metacognitive knowledge and regulation. Items related to strategy use were employed to examine the participants' general ideas on strategy use following obtaining the required permission of the designers of the scale to use it. "I change strategies when I fail to understand", "I read instructions carefully before I begin a task", "I ask myself if what I'm reading is related to what I already know", "I focus on overall meaning rather than specifics" and" I stop and go back over new information that is not clear", "I stop and reread when I get confused" are among items related to strategy use in the scale. In order for students to understand the items well, a backward translation process was conducted and consequently the items were administered in Turkish. Data from this scale were associated with strategy use in the think-aloud protocols.

**Reading Texts**

Since the current study is on reading skills, first, reading texts that were appropriate for learners' proficiency level (B1) and interest were selected. Length, simplicity/complexity, topics of interest, word choice were among considered issues in the process of selecting reading texts. Thus, a number of texts on topics such as biography of a celebrity (New Headway 4th edition by Oxford University Press) health and world culture (Master Skills Reading-Writing by Blackswan Publishing House) were selected as materials and they were adapted appropriately for the target reading strategies. The adapted version of the materials included reading comprehension questions on guessing, scanning and skimming.

## Method

The study adopted a descriptive design by using think-aloud protocols so as to collect data. Initially, being about strategy use, part of Metacognitive Awareness Inventory (Schraw & Dennison, 1994) was used for the purpose of the study. Three global reading strategies; guessing, scanning and skimming were taught to the participants in three weeks and they also had chances of practicing through the weeks. In the first week, the participants were presented with guessing strategy and practiced it through activities based on a reading text. In the second week of the treatment, they were instructed on scanning strategy and practiced in the same way. Finally, they learned how to use skimming in reading. Considering that taking an immediate action just after the instruction session could affect the results, a week was spent with no instruction or treatment between instruction weeks and think-alouds on purpose. A week later, 12 students who were chosen by considering responses in the awareness scale and who volunteered to be part of the further processes of the study were interviewed individually by arranging appointments and asked to think aloud reading materials following a training and demo session on how to conduct think-alouds. Even though using think-aloud protocols is criticized by a number of scholars in the literature (eg., Afflerbach & Johnston, 1984) due to the difficulty students have during the process, this method has always been popular for reading and cognition studies (eg., Bereiter & Bird, 1985; Crain-Thoreson, Lippman & McClendon-Magnuson, 1997; Yayli, 2010). In order to

prevent the claimed difficulty that participants might have, the participants of the current study were guided for the protocols. Six participants conducting think-alouds were in the group of high level while the other six were from the group of low level. Thus, it enabled the researcher to compare strategy use of the two different groups and provide supporting data for the findings based on the awareness scale. The students were audiotaped in the process and the researcher coded transcription of the protocols. (See Table 1 for the methodology of the study)

**Table 1.** Methodology of the study

| | |
|---|---|
| Week 1 | implementation of strategy awareness test |
| Week 2-3-4 | selecting reading texts and strategies to teach instruction on reading strategies and practice |
| Week 5 | no instruction |
| Week 6 | think-aloud protocols |

## Findings and Discussion

The current study aims to explore strategy use of high and low level language learners in reading, thus to shed light on their cognitive skills. In this sense, first, metacognitive awareness of the participants was determined for their strategy use. The findings revealed that despite the difference in language proficiency between high and low level learners, there was no significant difference in their strategy use awareness. Most of the participants responded positively to the items in the scale. (See Table 2)

**Table 2.** Strategy use awareness

| Items | Yes | No |
|---|---|---|
| I change strategies when I fail to understand (*M*=1.06, *SD*=.25) | 28 (93.3%) | 2 (6.7%) |
| I read instructions carefully before I begin a task *(M=1.1, SD=.30)* | 27 (90%) | 3 (10%) |
| I ask myself if what I am reading is related to what I have already know (*M*=1.13, *SD*=.34) | 26 (86.7%) | 4 (13.3%) |
| I stop and go back new information that isn't clear (*M*=1.1, *SD*=.30) | 27 (90%) | 3 (10%) |
| I stop and reread when I get confused (*M*=1, *SD*=.0) | 30 (100%) | 0 |

As for the inquiry whether there is any difference between high and low level learners, statistical analyses suggested that there is no significant difference between the two groups in consideration of their metacognitive awareness. (See Table 3 for the output of the analysis)

**Table 3.** Group difference

| | Level | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| Strategy use | High level | 15 | 15.33 | 230.000 |
| | Low level | 15 | 15.67 | 235.000 |
| | Total | 30 | | |

As seen in the tables 2 and 3, all participants are metacognitively aware learners in terms of strategy use. Their strategy use could be regarded as significant since strategy use is stressed within the scope of twenty first century skills in education. Furthermore, the findings revealed no difference in the awareness of high and low level learners.

This finding is not in line with the findings of many studies in the literature since they highlighted a positive relationship between metacognition and academic achievement (eg., Isaacson & Fujita, 2006; Young & Fry, 2008). The learners with low level of proficiency were also metacognitively aware at least for their strategy use. It demonstrates that learners are active in their learning process, and it could be considered as self-regulated learning in which learners are responsible for their own learning. Thus, it could be suggested that teaching programs could provide opportunities for learners to promote their metacognitive skills since all students benefit from them, especially strategy use.

Concerning the second research question that is similarly connected to language learners' strategy use, data from think-aloud protocols revealed that all the participants used cognitive strategies even though the degree of the correct strategy use differed. Verbal records of participants related to strategy use are as follows:
Low level language proficiency group:

*S1*
*(the student translates the text and tries to understand line by line)*
*(The student reads the text again and translates)*
*(the student starts reading comprehension questions, but skips main idea question )*
*Carries on wh-questions (specific information)*
*S1: This question asks for being active and healthy, so the answer is in the paragraph about health.*
*The second question asks when. The answer is when you are outside and the sun is shining.*
*The third question asks why. (translates the question and tries to understand cannot find the answer*
*The fourth question asks the reason. I can see fruit and vegetables. So the answer is that they keep your body healthy.*
*The fifth question asks for diet. ....(cannot find the answer)*
*The student reads the next question but cannot comprehend it.*
*The last question asks for how much and I see the word of exercise. I see 20 minutes.*

*(Matching pictures with paragraphs)*
*S2*
*The first picture is related to the first paragraph because it is about food. The second picture is about sport so it's in the second paragraph. Third picture is about activities, so it's in the fourth paragraph.*
*S2. Matching headlines with paragraphs)*
*I think the headline of the first paragraph is "be active". Sorry, the first paragraph is "have fun" and the second paragraph is "be active". The third paragraph is about food and the heading about food is "eat well".*
*(Comprehension questions)*
*S1. I examine what is included in the question. The first question is about health, so the answer is supposed to be in the paragraph about health. I check that paragraph and make inferences. I use the same strategy for the other questions.*

*(Matching pictures)*
*S3.*
*First, I examine pictures and I read other questions and try to understand why I need to read. Then I read the whole text. Thus, I match the pictures with the paragraph for the first activity.*
*(the student did not focus on the other exercises)*

*(matching pictures)*
*S4.*
*First I examine pictures. Then, I look through the paragraphs and read the instructions. After reading the instructions, I read the paragraphs carefully because looking through the text before reading it carefully is important. Thus, you can find some of the answers without reading carefully. It provides me a framework and then I read carefully and understand the text better. For example, this exercise is a matching exercise. I focus on the key words like health and match it with the picture about health.*

*S5.*
*For exercise A, to match the pictures with paragraph, I focus on the words in each paragraph. If there is food in the photo, I try to find the word of "food" in the paragraphs*
*The second exercise is about the main idea of the paragraphs. For this, I think about the main idea of the paragraphs. For example, "don't smoke" is written here, so I look through the related paragraph and find the appropriate heading.*
*The last exercise is for specific information. Again, I try to find similar words in the text with the words in the items. For example, it asks for why and I try to find the answer starting with "because" in the text.*

*S6.*
*( The student looks up a dictionary for unknown words)*
*I found the meanings of these words. Now I can read the text. Before reading it, it is better to read the instructions. Then, I need find similar words in the text.*

Think-alouds of high level language proficiency group are as follows:

*S21*
*For the first exercise, I match pictures with paragraphs. It's not a difficult exercise for me. It's so clear because there are similar words in the paragraphs. For example, this picture is about food and I match it with this paragraph. It's also about food. The second exercise is for the main idea, matching the headings. For the main idea, I read a bit carefully for catching specific information. For the last exercise, I read in detail because these are questions for detailed information. For example, for the first question, I look into the first paragraph and read it in detail.*

*S16*
*When I look at the photos and read the paragraphs by using specific cue words, I can match the pictures with the paragraphs easily. For example, the third paragraph is about eating healthy food and it is Picture A. It's about food. The fourth paragraph is about smoking and this picture is about smoking. These are noticeable cues for this exercise. For the second paragraph, I use key words again, but I am confused about C and D. After reading the paragraph carefully, I see this is D. For the last part, I read the paragraph very carefully. For example, this question asks for time "how much" , so I need to read this paragraph very carefully. The answer is 20 minutes.*

*S22*
*First, I just look through the paragraphs. I do not read them carefully to match the pictures. I underline key words and I start checking the questions, so it becomes easier for me to find the answers.*

*S18*
*For the first part, I just look through the text. It's enough for me. For the second part, I underline important information, forms and vocabulary in the text. Then I read the questions again and match them with the underlined parts.*

*S24*
*For this part, I need to get the main idea in the paragraphs and I can use this information for all exercises. Getting the main idea is enough for me. For the last part, I need to read the text more carefully.*

As seen in the reports, all the students used cognitive strategies regardless of their proficiency level. However, high level learners could be considered a little more successful in strategy use since some of the low level learners had difficulty comprehending the text. Students from the low level group looked up a dictionary for unknown words, translated many words and sentences, spent longer time on answering each question and gave incorrect answers to a few of the comprehension questions. Therefore, it could be concluded that there was no significant difference in strategy use by language learners with different proficiency while their comprehension differed. This finding is slightly different from previous studies that revealed findings in favor of learners with high proficiency level. (eg., Zhang, 2001; Zhang & Wu, 2009). That learners used strategies comparatively could also be attributed to strategy training because these learners had no previous instruction on use of reading strategies. Following the sessions, most of the participants reflected positively on the strategy instruction. They stated that having a purpose and focus before reading facilitated their comprehension and it was time saving, which supports previous research on the effect of instruction in strategy use (eg., Anderson, 1999; Cohen, 1998; Oxford, 1990 in Anderson, 2002; Cubukcu, 2008, Wenden, 2001). Thus, it could be concluded that teaching learners how to use strategies in reading or different skills is likely to affect their learning positively and it promotes their metacognition.

Overall, the findings of this study indicated that the EFL learners use strategies regardless of background factors such as their proficiency as long as they get instruction on when and how to use them. These aspects are part of metacognitive knowledge; procedural and conditional knowledge. Therefore, it could be concluded that strategy use is highly associated with both components of metacognition; having knowledge and knowing how to use it. As for the slight difference between the groups of the study, it could be stated that what matters in reading is not proficiency levels, but how good a reader is, considering that the participants in this study had different levels but they all used strategies. The only difference between them was their comprehension, which could be connected to being a good or bad reader rather than being a high or low proficiency learner, which supports Anderson (1991), suggesting that individual differences between good and bad readers are impactful factors in strategy use in reading.

## Conclusion

This study aims to investigate whether there is a difference between English language learners with high or low proficiency level in the use of strategies. The study has emerged as a result of a need to explore EFL learners' cognitive skills and how aware they are to use them in a century when prime importance is attached to cognitive skills such as critical thinking and problem solving in education. Strategy use is another cognitive skill that is related to language learning as well as other fields of education. There have been studies on strategy use from different perspectives, one of which is individual differences in using them. In this sense, proficiency has been considered as an effective factor in leading to a difference in strategy use. In order to provide evidence for existing research on strategy use among language learners with different proficiency levels and also shed light on these learners' metacognition, this study used think-aloud protocols to detect use of reading strategies. That the learners in the study had no previous instruction on strategy use helped the researcher connect strategy use and the effect of instruction. As for the findings which were in accordance with previous studies, the study revealed that there was no significant difference between high and low level learners in the study concerning their strategy use during reading. That the participants had no previous knowledge on reading strategies, but used them in the treatment process, suggested that instruction plays a significant role regardless of background factors. To conclude, strategy use in reading was related to being a good or bad reader rather than language proficiency and instruction was found to play a role in students' strategy use. Based on these findings, the implication is that strategy use could be supported through materials and courses in language teaching.

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