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METACOGNITIVE ONLINE READING STRATEGIES APPLIED BY EFL STUDENTS

(BİR YABANCI DİL OLARAK İNGİLİZCE ÖĞRENEN ÖĞRENCİLERİN UYGULADIĞI ÜSTBİLİŞSEL ÇEVRİMİÇİ OKUMA STRATEJİLERİ)

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ABSTRACT

The purpose of the present study is twofold. It investigated both what metacognitive online reading strategies the Turkish EFL students report using for academic purposes; and how they use the reported strategies in actual reading tasks. Data came from Online Survey of Reading Strategies (Anderson, 2003), think-aloud protocols and post-reading interview. Results of this study revealed that the students who participated in this study reported a wide range of metacognitive strategies when reading online academic texts. Using reference materials (i.e. online dictionaries), scrolling through the text, rereading for better understanding, guessing what the content is about and paying closer attention to reading appeared to be the most frequently reported strategies. Moreover, the students employed most of the strategies they stated in the survey while they were reading online texts.

Keywords: Metacognitive reading strategies, EFL, online reading.

ÖZET

Bu çalışmanın iki temel amacı bulunmaktadır. Hem bir yabanci dil olarak ingilizce öğrenen öğrencilerin kullandıklarını belirttikleri üstbilişsel çevrimiçi okuma stratejilerini araştırmayı hem de belirttikleri stratejileri ne ölçüde kullandıklarını araştırmayı amaçlamaktadır. Bu çalışma için veriler Çevrimiçi Okuma Stratejileri anketi, sesli düşünme ve okuma sonrası yapılan görüşmelerden elde edilmiştir. Sonuçlar öğrencilerin çevrimiçi okuma yaparken birçok üstbilişsel strateji kullandıklarını ortaya çıkartmıştır. Çevriçi sözlük kullanımı, tüm metni fare yardımıyla taramak, daha iyi anlamak için tekrar okumak gibi stratejiler en sık belirtilen stratejiler arasındadır. Bunun da ötesinde aynı öğrenciler sıklıkla belirttikleri stratejileri çevrimiçi metin okurken uygulamışlardır.

Anahtar Sözcükler: Üstbilişsel okuma stratejileri, yabancı dil olarak İngilizce, çevrimiçi okuma.

INTRODUCTION

In the age of technology, learning foreign language skills and strategies, and responding to the knowledge through the internet has a significant role on the students' academic success. For most of the learners, reading is the most important skill to master. Having strengthened reading skills, learners of English tend to make great progress in their foreign language proficiency (Anderson, 2003). Thus, teaching students how to transfer the skills and strategies they employ in their native language to foreign language reading, how to improve their lexicon and reading comprehension are some of the significant components that the reading teachers need to consider.

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Internet is defined as one of the most significant technological revolutions in history since it has become a powerful new means of communication, information retrieval, transaction processing, and problem solving (Friedman, 2005). In this respect, the role of computers and the internet in the lives of foreign language learners cannot be denied and as a result, the nature of literacy is rapidly changing. In the realm of reading, this technology has enormous potential to make fundamental changes in the way we read on a daily basis. In addition, new information and communication technologies (ICTs), such as the Internet, wikis, blogs, search engines, instant messaging, email, online gaming worlds, which are important new contexts for literacy and learning, require *new literacies* (Leu et al., 2007). Many researchers have defined this new term differently. Some identified new literacy as new social practices (Street, 2003 cited in Pookcharoen, 2009) that emerge with new technologies. Others see new literacy as a set of important new strategies and dispositions, required by the Internet, that are essential for online reading comprehension, learning, and communication (Coiro, 2003; Leu et al., 2007).

Research reveals that online reading process is not alike with the offline reading process which means that every proficient offline reader is not necessarily a proficient online reader (Coiro & Dobler, 2007; Henry, 2006). This new construct-new literacies- has directed the researchers investigate the difference between offline and online reading strategies. Within this perspective, online reading comprehension is defined with five major strategies: (1) identifying important questions; (2) locating information; (3) analyzing information; (4) synthesizing information; and (5) communicating information (Leu et al., 2007). They also claimed that while the mentioned skills tend to overlap with offline reading practices, traditional reading strategies will not be sufficient to comprehend online information. As a result, it is clear that reading online requires separate skills and strategies which are necessary for successful reading online. This issue has been researched in the field and they generally revealed the necessity of employing different reading strategies for online reading to be effective (Coiro & Dobler, 2007; Leu et al., 2005; Coiro, 2007).

One of the studies was conducted with the participation of highly proficient 11 sixth grade students (Coiro & Dobler, 2007). These 11 skilled readers met individually with a researcher and completed two separate tasks that involved reading within multilayered websites or using the *Yahooligans* search engine. Students answered specific questions about their strategy use in a follow-up interview after each reading session. Findings suggested that successful Internet reading experiences appeared to simultaneously require both similar and more complex applications of (1) prior knowledge sources, (2) inferential reasoning strategies, and (3) self-regulated reading processes. The authors suggest that reading Internet text prompts a process of self-directed text construction that may explain the additional complexities of online reading comprehension.

A second study conducted with seventh-grade students, (Leu et al., 2005) found no significant correlation between performance on a measure of offline

reading comprehension and a measure of online reading comprehension for adolescents, using a blog to provide prompts and record responses (ORCA-Blog). The ORCA-Blog measure demonstrated good psychometric properties. These results also suggest that new skills and strategies may be required during online reading.

A third study (Coiro, 2007) found that - although offline reading comprehension and prior knowledge contributed a significant amount of variance to the prediction of online reading comprehension - additional, significant variance was contributed by knowing students' ability in online reading comprehension. The results of this study are also consistent with the conclusion that new skills and strategies are required during online reading comprehension.

Finally, Pookcharoen, In, Lee, & Kigamwa (2009) (cited in Pookcharoen, 2009) pinpointed some difficulties that readers encountered while engaging in online reading tasks. During think-aloud protocols, the students directed their reading strategies according to the type of text as well as to the purpose of their reading. They used context clues to decipher the meaning of unfamiliar words, and identified key information by means of such typographical features as bold face and italics. It was also revealed that the students, regardless of their language proficiency, used their schema or background knowledge frequently when reading online. Nevertheless, some students articulated that they were not aware of many useful strategies that would facilitate their reading on the Internet.

In the literature, some other online reading strategies are stated as follows; knowing how to use a search engine to locate information; reading search engine results; reading a Web page, to locate information that might be present there; making an inference about where information is located by selecting a link at one site to find information at another site. In addition, knowing what to look for and how to access task-relevant information on the Internet is stated to be an important strategy (Bilal, 2000; Nachmias & Gilad, 2002). On the other hand, Coiro (2007) has found at least five different types of evaluation strategies that occur during online reading comprehension: (1) evaluating understanding; (2) evaluating relevancy; (3) evaluating accuracy; (4) evaluating reliability; (5) evaluating bias.

Metacognition and Reading Comprehension

Metacognition is perceived as one's ability to control his or her cognitive processes which allows learners to use cognitive strategies to accomplish their academic goals (O'Malley & Chamot, 1990). More specifically, it assists learners in deciding on how to do a particular task. Thus, metacognitively aware readers are more conscious of their own reading processes and the demands of the task. According to Cohen (1998), metacognitive strategies which lead to effective reading and improved performance include the following; (1) pre-reading (planning) strategies; (2) while-reading (monitoring) strategies; (3) post-reading (evaluating) strategies.

As discussed earlier, online reading comprehension processing requires strategies such as developing important questions, locating, critically analyzing,

synthesizing and communicating information (Leu et al., 2004). Hence, some studies were conducted on the nature of metacognitive strategies during online reading processes (Anderson, 2003; Coiro and Dobler, 2007; Huang et al., 2009, Hamdan, 2010).

Anderson compared ESL and EFL students' different use of metacognitive online reading strategies with the *Online Survey of Reading Strategies* (OSORS) which was created for use in the study of Anderson (2003) based on the *Survey of Reading Strategies* (SORS). The adapted Online SORS (OSORS) consists of 38 items that measure metacognitive reading strategies. The items are subdivided into three categories: global reading strategies (18items), problem solving strategies (11 items), and support strategies (9 items). The findings of this study revealed no differences between the participants and in the use of global and support reading strategies between the two groups. This study has an important role in the literature by being the first study of online strategy use of L2 readers. Despite this significance, the study failed to explicate whether students employ metacognitive online reading strategies when undertaking online reading tasks or not and to what extent.

Coiro and Dobler (2007) investigated online cognitive processes of advanced level sixth-grader students through given online reading texts and comprehension questions. As a result of the study three applications were revealed; prior knowledge sources, inferential reasoning strategies such as predicting and making inferences, and self-regulated processes such as; goal-setting, regulating and evaluating the relevancy of the online information.

The study conducted by Huang et al. (2009) investigated EFL learners' online reading strategies and the effects of strategy use on comprehension. To fulfill the purposes of this study, a Web-based reading program, English Reading Online, was created. Thirty applied English majors, divided into a high group and a low group based on their proficiency levels, were asked to read four authentic online texts; two were appropriate to the students' level of proficiency, and two were more difficult. Results from data analysis showed that the use of support strategies dominated the strategy use and contributed to most of the comprehension gains, but an exclusive dependence on support strategies did not successfully predict the increase in scores on main ideas and details when the students were reading more challenging texts. On the whole, the use of global strategies significantly contributed to better comprehension, especially for low proficiency students.

Finally, Hamdan et al. (2010) investigated the use of cognitive and metacognitive strategies for 3rd semester students majoring in English, in reading an English text. Results of the study revealed that students exploited problem solving (3.77), the most amongst the other categories of the metacognitive strategies. Rereading, guessing, contextualizing, visualizing and using dictionary were the most exploited strategies in metacognitive strategies. Strategies which are greatly needed at tertiary level such as the ability to differentiate between facts and opinions, thinking about topics that cover both sides of the issue and reflecting on what was being read were not too popular.

In the light of the above discussed literature review, present study aims to investigate the metacognitive strategies that are reported and also employed during the reading online processes of EFL students.

Purpose of the Study

The purposes of this study are composed of two parts: (1) to investigate what metacognitive online reading strategies the surveyed low-intermediate level students report using for academic purposes; (2) to discover how they use the reported strategies in actual reading tasks.

In order to examine the metacognitive online reading strategies reported and used by the Turkish EFL students, the present study attempts to answer the following research questions:

1. What metacognitive online reading strategies do the surveyed students report using on the OSORS when reading academic texts in English?
2. What metacognitive strategies do the selected students employ when undertaking online reading tasks?

METHODOLOGY

Setting and Participants

For the first research question, 30 preparatory program students enrolled in the ELT department participated. In the proficiency exam prepared by the department, the scores of the participants were below 45 out of 100, which made them low-intermediate level according to the university regulations. Their age ranged between 18 and 21.

For the second research question, volunteered two students participated in the think-aloud sessions and responded to the comprehension questions. All of the participants reported using the internet at least 1 hour a day. The average internet use reported by the participants was 2 hours per day. They also explained their reasons of using internet as follows; playing interactive games, searching for a topic using a search engine, reading certain websites to learn more about a topic, using e-mail, instant messenger, or chat rooms, browsing or exploring many different web pages, downloading music and software games. So, all of the participants were assumed to be experienced internet users.

Materials

The students were given a list of topics to find out the topic that the students were mostly interested. As a result, 'insomnia' was appeared to be the mostly interested topic (26%). After a thorough search of the websites, two online reading texts selected on this particular topic: (1) Choosing Foods to Help You Sleep[2]; and

[2] (http://nutrition.about.com/od/foodfun/a/foodsandsleep.htm)

(2) Gotta Catch Some Zzzs![3] The level of difficulty of the online reading texts which were selected for the purposes of this paper was calculated based on the Flesch Reading Ease Test (cited in Pookcharoen, 2009). The Flesch Reading Ease Test is calculated by the following method: The average sentence length is multiplied by 1.015 and the average number of syllables is multiplied by 84.6. These two products are subtracted and then that value is subtracted from 206.8 resulting in a score ranging from 0 to 100. This formula is depicted below:

206.8 – 1.015 (total words/total sentences) – 84.6 (total syllables/total words)

It is evident that the lengths of the two texts and their reading ease are particularly similar.

Below is Table 1 which summarizes the two web pages in terms of their elements. The calculation of the elements was done on http://www.wordcalc.com/ web site.

Table 1. Summary of the Two Online Reading Texts and Webpages

	First Online Reading Text	Second Online Reading Test
Sentence Count	30	36
Word Count	568	534
Syllable Count	770	737
Reading Ease	73	77

The following Table 2. is also helpful to assess the ease of readability in a document; The values were based on the Flesch Reading Ease Test:

Table 2. Assessment of Reading Ease Scores

90- 100	Very Easy
80- 89	Easy
70- 79	Fairly Easy
60- 69	Standard
50- 59	Fairly Difficult
30- 49	Difficult
0 - 29	Confusion

The readability scores gained as a result of the above calculations show that both reading texts are equal in terms of difficulty and they are fairly easy to read which is suitable for low-intermediate level students.

[3] (http://depression.about.com/od/sleep/a/insomnia.htm).

Instruments

Online Survey of Reading Strategies (OSORS): In order to identify the online reading strategies that foreign language readers employ an adapted form of Survey of Reading Strategies (SORS) (Mokhtari & Sheorey, 2002) with five-point likert scale questions was used. SORS was adapted and designed by Anderson (2003) to measure offline reading strategies in academic reading contexts. It has 30 items and measures three categories of reading strategies: global, problem solving, and support strategies by Anderson (2003). However, the OSORS is designed to measure metacognitive online reading strategies. It also contains the same three categories of reading strategies as the SORS but has a total of 38 instead of 30 items. As reported by Anderson, the Cronbach alpha for the overall OSORS is 0.92, and the reliabilities for each subsection are: Global Reading Strategies, 0.77, Problem Solving Strategies, 0.64, and Support Strategies, 0.69.

Pookcharoen (2009) who aimed to explore students' " online reading for academic purposes" made some modifications to the original version of the OSORS. First, he excluded two items which relate to the purposes of reading from the survey (i.e., strategies no. 17 *I read pages on the Internet for academic purposes* and no. 33 *I read pages on the Internet for fun*). Also, he added three additional strategies in this version of OSORS, namely no. 17 *When academic sites have links to other sites, I click on them to see what they are*, no. 33 *I skip words or sections I find difficult or unfamiliar*, and no. 39 *When I encounter difficult reading in English, I seek material on the same topic in Thai*. This OSORS measured three categories of these online reading strategies global reading strategies (17 items), problem solving strategies (12 items), and support reading strategies (10 items).

For the purposes of this study, the adapted version of OSORS (Pookcharoen, 2009) was used to investigate the online reading metacognitive strategies of low-intermediate level EFL students used for academic purposes.

Think Aloud Protocols: Think aloud protocols have served as the major source of investigating reading strategies (Akyel and Erçetin, 2009). This instrument has been used in investigating L1 writing processes and L2 writing processes (Grabe and Kaplan, 1995). It has also been used in both L1 and L2 reading processes (Scardamalia and Bereiter, 1984; Block, 1986). Think aloud protocols have been claimed to be the most effective method to learn the participants' thoughts during the writing and reading processes.

All conversations and screen activities on the computer were recorded using *BB Flashback Professional* recording software. This is a capture program that records activity from the screen and audio from the microphone into video files. One of its distinctive features is an option to highlight the cursor path during a recording session, automatically pan, and record with sound. After each think-aloud session, video files were transcribed by the researcher.

Student Interviews: After the think-aloud sessions, semi-structured interviews were conducted with the participants. The purpose of the interviews was to gather some additional data in relation to the participants' use of online metacognitive reading strategies while reading online.

Data Collection and Analysis

In order to yield the reliability of the present study, various sources of data including Online Survey of Reading Strategies, think aloud protocols and post-reading interviews were used.

First, Online Survey of Reading Strategies was administered to participants in a class hour in the end of the first semester in 2010-2011 academic year. The mean scores and standard deviations of responses to 39 five-point Likert scale questions were calculated to see which strategy items were reported as used most frequently and least frequently by the participants.

Second, two volunteer students undertook think-aloud tasks. Before asking participants to think aloud, I gave a training session in which I showed how to undertake a think aloud task. After the session, I sent them online videos which demonstrated the application of this technique. They watched them and tried to think aloud on a different online reading text under my control. After these trials, I started the real think-aloud session. They were given the comprehension questions beforehand they started reading. Each session lasted 15 minutes. All think-aloud sessions were conducted in Turkish, the researcher's and students' native language. I also assured the participants that these sessions were not for testing purposes. To stimulate the participant to continue, I asked these questions when they were silent: "What are you thinking about?", "What's going through your mind?", "How are you doing this?", "How are you figuring this out?", "What do you understand so far?", and "How did you get this?". The strategies applied by the volunteer participants were reveled through in-depth analysis.

Finally, the students who participated in the think-aloud protocols were interviewed after the sessions to gather some additional data in relation to the participants' use of online metacognitive reading strategies while reading online. The analysis of the interview transcript was done with the pattern coding strategy.

To ensure the inter-rater reliability of the findings, another researcher also coded the transcripts and 95% agreement was sustained. Disagreements were solved by negotiation.

RESULTS

The first research question was addressed to identify the metacognitive online reading strategies reported to be used by low-intermediate level EFL university students. To answer this question, quantitative data from the OSORS, which measured the students' perceived use of metacognitive strategies when they read online texts for academic purposes, were analyzed. Table 3. demonstrates the

means and standard deviations for each OSORS item. The value of the mean refers to the frequency of use which ranged from 1 (never) to 5 (always).

Table 3. Means and Standard Deviations for Each OSORS Item (N = 23).

Strategy	Mean	SD
1. I have a purpose in mind when I read online.	3.48	0.97
2. I participate in live chat with other learners of English.	3.09	1.27
3. I participate in live chat with native speakers of English.	3.04	1.29
4. I take notes while reading online to help me understand what I read.	3.00	1.30
5. I think about what I already know to help me understand what I read online.	3.83	0.93
6. I first scroll through the online text to see what it is about before reading it.	4.26	0.81
7. When online text becomes difficult, I read aloud to help me understand what I read	2.65	1.52
8. I analyze whether the content of the online text fits my reading purpose.	3.91	0.84
9. I read slowly and carefully to make sure I understand what I am reading online.	3.91	1.20
10. I review the online text first by noting its characteristics like length and organization.	3.74	1.13
11. I try to get back on track when I lose concentration.	3.78	1.27
12. I print out a hard copy of the online text then underline or circle information to help me remember it.	2.87	1.25
13. I adjust my reading speed according to what I am reading online.	3.74	1.05
14. When reading online, I decide what to read closely and what to ignore.	3.74	1.05
15. I use reference materials (e.g., an online dictionary) to help me understand what I read online.	4.35	0.93
16. When online text becomes difficult, I pay closer attention to what I am reading.	4.09	1.12
17. When academic sites have links to other sites, I click on them to see what they are.	3.04	0.92
18. I use tables, figures, and pictures in the online text to increase my understanding.	3.83	1.02
19. I stop from time to time and think about what I am reading online.	3.52	1.08
20. I use context clues to help me better understand what I am reading online.	3.83	1.11
21. I paraphrase (restate ideas in my own words) to better understand what I read online.	3.17	0.98

22. I try to picture or visualize information to help remember what I read online.	3.65	0.88
23. I use typographical features like bold face and italics to identify key information.	3.96	0.92
24. I critically analyze and evaluate the information presented in the online information.	3.39	0.65
25. I go back and forth in the online text to find relationships among ideas in it.	3.61	0.98
26. I check my understanding when I come across new information.	4.04	0.82
27. I try to guess what the content of the online text is about when I read.	4.17	0.98
28. When online text becomes difficult, I reread it to increase my understanding.	4.22	0.99
29. I ask myself questions I like to have answered in the online text.	3.09	1.08
30. I check to see if my guesses about the online text are right or wrong.	3.74	0.96
31. When I read online, I guess the meaning of unknown words or phrases.	3.70	0.87
32. I scan the online text to get a basic idea of whether it will serve my purposes before choosing to read.	3.78	0.90
33. I skip words or sections I find difficult or unfamiliar.	3.04	1.02
34. I critically evaluate the online text before choosing to use information I read online.	2.83	0.93
35. I can distinguish between fact and opinion in online texts.	4.04	0.97
36. When reading online, I look for sites that cover both sides of an issue.	3.39	1.03
37. When reading online, I translate from English into Turkish.	3.57	1.19
38. When reading online, I think about information in both English and Turkish.	3.48	1.12
39. When I encounter difficult reading in English, I seek material on the same topic in Turkish.	3.35	1.22

As shown in the table above, the 23 surveyed students reported using each reading strategy item on the OSORS with varying degrees of frequency. The means of individual strategy items ranged from a high of 4.35 to a low of 2.65. The most frequently reported item is item 15 *I use reference materials (e.g., an online dictionary) to help me understand what I read online.* (M=4.35). This strategy was followed by item 6 *I first scroll through the online text to see what it is about before reading it* (M=4.26) and item 28 *When online text becomes difficult, I reread it to increase my understanding* (M=4.22). The strategy with the lowest mean was item 7 *When online text becomes difficult, I read aloud to help me understand what I read* (M=2.65) and followed by item 12 *I print out a hard copy of the online text then*

underline or circle information to help me remember it (M=2.87) and item 34 *I critically evaluate the online text before choosing to use information I read online* (M= 2.83).

The reported strategies can be seen more clearly under three categories as in the survey. Table 4. represents the strategies under the categories of global, support and problem-solving strategies.

Table 4. Reported Use of *Global, Problem-solving* and *Support* Online Reading Strategies

Strategies	Mean	SD
Global Reading Strategies		
1. Having a purpose in mind	3.48	0.97
2. Live chatting with other learners	3.09	1.27
3. Live chatting with native speakers	3.04	1.24
5. Using prior knowledge	3.83	0.93
6. Scrolling through text	4.26	0.81
8. Analyzing if the content fits purpose	3.91	0.84
10. Noting length and organization	3.74	1.13
14. Deciding what to read closely	3.74	1.05
17. Clicking on links to other sites	3.04	0.92
18. Using tables, figures, and pictures	3.83	1.02
20. Using context clues	3.83	1.11
23. Using typographical aids (e.g., italics)	3.96	0.92
24. Evaluating what is read	3.39	0.65
26. Checking my understanding	4.04	0.82
27. Guessing what the content is about	4.17	0.98
30. Confirming predictions	3.74	0.96
32. Scanning the text before reading	3.78	0.90
Total	**3.69**	**0.97**
Problem Solving Strategies		
9. Reading slowly and carefully	3.91	1.20
11. Trying to stay focused on reading	3.78	1.27
13. Adjusting reading speed	3.74	1.05
16. Paying closer attention to reading	4.09	1.12
19. Pausing and thinking about reading	3.52	1.08
22. Visualizing information read	3.65	0.88
28. Rereading for better understanding	4.22	0.99
31. Guessing meaning of unknown words	3.70	0.87
33. Skipping difficult words or sections	3.04	1.02
34. Evaluating text before using it	2.83	0.83
35. Distinguishing fact from opinion	4.04	0.97
36. Resolving conflicting information	3.39	1.03
Total	**3.65**	**1,02**

Support Reading Strategies		
4. Taking notes while reading	3.00	1.30
7. Reading aloud when text is hard	2.65	1.52
12. Printing out a hard copy of text	2.87	1.25
15. Using reference materials	4.35	0.93
21. Paraphrasing for better understanding	3.17	0.98
25. Going back and forth in text	3.61	0.98
29. Asking myself questions	3.09	1.08
37. Translating from English into Turkish	3.57	1.19
38. Thinking in both English and Turkish	3.48	1.12
39. Seeking material in Turkish	3.35	1.22
Total	**3.31**	**1.15**

As revealed in the table above, the participants reported that they used global reading strategies the most (M = 3.69), problem-solving strategies the second most (M = 3.65), and support strategies the least (M = 3.31). The following table discusses the most and the least frequently reported strategies by all the participants.

Table 5. Most and Least Frequently Used Strategies Reported by Participants

Most Frequently		**Less Frequently**	
Category	**Strategy**	**Category**	**Strategy**
SUPPORT 15	Using reference materials	SUPPORT 7	Reading aloud when text is hard
GLOBAL 6	Scrolling through text	SUPPORT 37	Translating from English into Turkish
PROB 28	Rereading for better understanding	SUPPORT 12	Printing out a hard copy of text
GLOBAL 27	Guessing what the content is about	SUPPORT 4	Taking notes while reading
PROB 16	Paying closer attention to reading	PROB 17	Clicking on links to other sites

As for the most frequently used strategies, two of the top five strategies (40%) are global strategies, two (40%) are problem solving strategies, and one (20%) is support strategies. Moreover, all students reported four (80%) support strategies and one (20%) problem solving strategies as their least favored strategies on the OSORS. It is interesting to mention that, while reading online for academic purposes, the participants seldom took notes (strategy no. 4) or printed out a hard copy of text (strategy no. 12).

On the whole, the students who participated in this study reported that they employ a wide range of metacognitive strategies when reading online academic texts. It is important to pinpoint the most frequently used metacognitive strategy which is about using reference materials such as online dictionaries. Even though

the students generally find it time consuming and difficult to look up a dictionary during printed reading, students doing online reading mostly preferred using reference materials.

In order to reflect on the students' use of strategies when undertaking online reading tasks, a detailed qualitative analysis of think-aloud protocols and post-reading interviews was done. As it was explained previously, of the 23 students who responded to OSORS two students volunteered to take part in the think-aloud sessions. Each student read two different online texts. Their use of online reading strategies was investigated and the results are described below for each student.

First Student: Can

Can was a 20 year old low-intermediate level EFL student. He has been studying English for 11 years. He considered himself as a computer and internet expert. He spent four to six hours a day using the Internet mainly for both entertainment and academic purposes such as downloading music, software games and communicating with friends or searching for resources for his academic work such as biography of an author, reading class materials sent by his teachers.

During the think-aloud session, he scrolled through the online text and looked at the pictures to see what it is about. He fostered the use of strategies no.6 and 18 which are problem-solving strategies. He explained that "If I know what I am going to read, I feel more secure (think-aloud 1)." And immediately after scrolling through the text, he wanted to see the comprehension questions, which was the application of strategy no. 14. He stated the reason as; "Knowing the purpose of reading helps me to decide what to focus on and what to ignore during reading the text (think-aloud 1)". As soon as having looked at the questions, he stated that "The first question is asking the meaning of 'jittery'. I don't want to waste time by searching it. I will press Ctrl-F and find the place of the word in the text.(Think-aloud 1)" This was a great demonstration of his computer competency. After finding the place of the word, he read the previous and the following sentences to explain the word (strategy no.31), however, he could not understand and explained; "It can be something like alert because it happens after drinking caffeine. But I am not sure exactly. I will open an online dictionary and look up the word (think-aloud 1)". He fostered the use of strategy no.15 by using an online dictionary.

When he tried to answer a comprehension question out of word-meaning questions, he paid closer attention to the whole text. He looked at the pictures around first (strategy no. 18) and clicked on some of the related website links around the text (strategy no.17). Right after reading each sentence, he tended to translate it into Turkish (strategy 37). When he found the answer to the second question of the first text which asks for an explanation, he stopped, thought a minute, paraphrased and reread the sentence which are the applications of strategies no. 19, 21 and 38. He explained that; "Yes, the answer is in this paragraph, but wait a minute, let me think. I will read again. Yes, I am sure this is the answer (think-aloud 2) (strategy 28)".

When he was trying to find the meaning of 'irritable', he read the sentence twice, translated it into Turkish. He stated that "this is a bit difficult sentence, let me read it more closely again" (think aloud 2) (strategy 16).

In both online texts there were some words specific to the field of medicine. Those words had annotations (links). He tended to click on those words and tried to understand by reading it in a new, related website.

After reading the texts, he told that he had difficulty in understanding the medicine jargon, but by looking at online dictionaries and clicking on the links, he understood. Another point that he mentioned was the necessary competency for online reading. He stated that; "In order to read successfully online texts, a person should have adequate computer and internet knowledge; otherwise, it takes long time and becomes boring (post-interview)."

Second Student: Mert

Mert was a 19 year old EFL student. With regard to his Internet use behavior, he stated that he had high skills in using the Internet and search engines to locate and access information on a wide range of topics. Every day, he spent about one hour reading online local and international news in English for class assignments. He also used e-mail and messenger as major means of communication with friends and family on a regular basis. During the think-aloud session, Mert first of all scrolled through the whole text to get the gist of it and looked at the length and organization, then proceeded to read the comprehension questions. These strategies demonstrated the application of strategies no 6 and 10. After reading the comprehension questions he stated that; "I will leave the word meaning questions to end, I need to understand the general idea firstly. I will read the whole text without stopping. I will not look-up the words, I just want to get the gist (think-aloud 1)". He fosters strategies no 14 and 33. While reading to answer the questions, he sometimes stopped to look at the pictures (strategy no 18) and clicked on the annotations. He explained the reason, "If there is an annotation or a picture, that website can help me understand better and I can reach new information (think-aloud 2) (strategy no 17)". He adds that " If there were not comprehension questions asking the meaning of some words, I will ignore those words because it is clear that they are related to medicine and do not hinder my comprehension" by which he fostered strategy no 31. When he was answering word meaning questions he directly opened an online dictionary, which he stated he used mostly, and looked at the Turkish meaning of that word. He was employing strategies no 37 and 15.

After reading the texts, he told that he likes reading online texts because of the visual materials they have. Additionally, he stated that he feels free to open a new web page or refer to an online dictionary. He concluded that he prefers reading online because of the practicality of internet for any kind of academic purposes. "I never go to library, I can find everything online, I know there may be some fake web-sites full of wrong information. If you know how to do crosscheck, you can easily understand whether it is reliable or not (post-reading interview)". Thus, he is

well-aware of the necessity of evaluating a web-site before using the information in it (strategy no 34).

To sum up, based on the think-aloud transcripts, both of the students used four of the most frequently used five strategies reported in the OSORS. These include, no 15 using reference materials (support strategy), no 6 Scrolling through text (Global Reading Strategy), no 28 Rereading for better understanding (problem solving strategy), no 16 Paying closer attention to reading (Problem Solving strategy). However, neither of the participants used no 27 (Trying to guess the content). In addition, the observed strategies employed by the participants during think-aloud sessions include strategies no, 8 (Analyzing if the content fits purpose), 10 (Noting length and organization), 14 (Deciding what to read closely) , 18 (Using tables, figures, and pictures) which are all Global Reading Strategies. Under the Problem-solving strategies category strategies no, 19 (Stopping and thinking about reading), 31 (Guessing meaning of unknown words), 33 (Skipping difficult words or sections) and 34 (Evaluating text before using it) were observed to be used during online reading. Strategies no 21 (Paraphrasing for better understanding) was also employed by the participants as the support reading strategies.

It was revealed that both of the students employed two of the least frequently used strategies reported in OSORS. One of them was no 17 Clicking on links to other sites (Problem Solving Strategy) and the other one is no 37 Translating from English into Turkish which is a support reading strategy.

DISCUSSION AND CONCLUSION

As stated earlier, present study aimed to investigate what metacognitive online reading strategies the surveyed students reported using for academic purposes and how the volunteered participants used them in actual online reading tasks.

The results of the first research question indicated that the participants in this study reported a wide variety of strategies while reading academic texts online. The findings of this study are consistent with the O'Malley and Chamot's (1990) study which conclude that foreign language learners use metacognitive strategies to foster their academic reading comprehension. Moreover, there appeared some parallel results with the study of Coiro and Dobler (2007) in which they reported online reading requires prior knowledge sources such as knowing how to find a specific word within a text or using reference materials.

The findings also revealed that the participants reported using global reading strategies the most. Some examples of these strategies include scrolling through the online text, analyzing the content, deciding what to read closely, using tables and pictures. This specific result contradicts with the result of the study conducted by Huang et al. (2009) which reported that the use of support strategies dominated the strategy use and contributed to most of the comprehension gain. On the contrary,

the current study revealed that support reading strategies were used the least by Turkish low-intermediate level EFL students.

Strategies which are greatly necessary for academic purposes at tertiary level such as the ability to differentiate between facts and opinions and, thinking about topics that cover both sides of the issue were favored by the participants. This result contradicts with the results of the Hamdon et al. (2010) study which revealed opposite results.

As for the participants' actual use of online metacognitive reading strategies, students were observed to employ several strategies they reported on the OSORS with high means when they were undertaking actual online reading tasks for academic purposes. This finding may result from the strategy-based reading course they have attended during the whole semester. Even though they were not informed about the online reading strategies, they were provided with online texts as assignment on a regular basis which might have assisted them to improve their online reading strategies. As Coiro and Dobler (2007) argue, despite a number of similarities online and printed reading share, online reading is more complex than printed reading. Still, the students might have benefitted from the strategy training given in the reading course and transferred some of the strategies such as; guessing the meaning of a word, using context clues to online reading. Nevertheless, there were some other essential strategies which the students needed to employ during online reading such as scrolling through the text, clicking on the links, using online reference materials. Specific to online reading, these strategies contributed to the effective reading comprehension in the online context.

The data from the post-reading interviews with the students confirmed that in order to be proficient online reader, the reader should have the necessary computer and internet competency such as knowing the shortcuts for finding words. In addition, they stated that they can overcome the possible problems by employing those strategies effectively by the help of the computer competency.

IMPLICATIONS

The findings of this study suggest a number of implications for EFL settings. Since metacognitive strategies are believed to be responsible for regulating other strategies (O'Malley and Chamot, 1990), teaching EFL students how to use these strategies effectively has a pivotal role in the reading classes. Because of the undeniable role of internet and computer in this age of technology, teachers need to update themselves and redesign their course syllabi by considering the online reading strategies. Additionally, while Chamot (2007) stressed the importance of learners' current strategies, he encouraged teachers to assess learners' baseline reading strategies prior to strategy instruction. Thus, as another implication of this study, teachers should be aware of their students' current strategies and plan their strategy training accordingly. Another important point is that the teachers need to focus on critical evaluation of the websites in order to protect the students from

wrong information online. Thus, students should be equipped with critical evaluation strategies.

Finally, in order to provide students with essential online reading strategies, the teachers need to have the necessary technological equipment in the classroom to be able to model the use of online strategies.

LIMITATIONS OF THE STUDY

This study has several limitations. First of all, it focused on the online metacognitive reading strategies used in reading for academic purposes by low-intermediate level EFL students. Therefore, the study needs to be replicated with learners of lower proficiency levels. Second, the number of participants is small which does not allow for generalization to a greater population.

Finally, even though the think-aloud protocol was used to learn the process of how low-intermediate level Turkish EFL students used online metacognitive strategies, because of the complexity of thoughts, some strategies that were frequently reported to be used on the OSORS was difficult to observe (e.g. visualizing information, asking oneself questions)

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