



## **EFL Learners' Use of Online Metacognitive Reading Strategies and its Relation to their Self-Efficacy in Reading**

**Moussa Ahmadian**

Arak University

**Parastou Gholami Pasand**

Arak University

### **ABSTRACT**

*This study explores Iranian EFL learners' online reading metacognitive strategy use and its relation to their self-efficacy in reading comprehension. It further examines the effect of gender in this respect. To these ends, the Online Survey of Reading Strategies (OSORS) and reading self-efficacy questionnaire were adopted and administered to 63 homogeneous sophomore EFL learners. To analyze data, Friedman Test and Multiple Analysis of Variance (MANOVA) were run. Results of Friedman test indicated that problem-solving online metacognitive reading strategies are most frequently used by the learners, while support strategies are used least frequently. The findings of MANOVA further revealed a significantly positive relationship between the learners' perceived use of metacognitive online reading strategies and their self-efficacy in reading comprehension. The study further revealed that females use more global online reading strategies, while males perceive themselves as more self-efficacious in reading online texts. Finally, the analysis of think aloud protocol indicated that learners used some other metacognitive strategies while reading online. The findings may have contributions to EFL learners' online reading strategy use and training and can highlight the significant role that self-efficacy might play in the use of metacognitive reading strategies while reading online.*

### **INTRODUCTION**

With the growth of technology and its incorporation in L2 classrooms, many students read texts online. In fact, reading is one of the most important means of obtaining information for many students (Anderson, 2003). In the past, students had to read only printed texts on a subject matter to learn it. Nowadays, reading online has become one of the widely used sources of knowledge for learners, especially those in the academic contexts (Zarrabi, 2015).

Reading, as an important language skill, raises students' awareness; it is also useful for employment and recreational purposes (Grigg & Mann, 2008). The use of reading strategies is necessary for successful reading comprehension. According to Richards and Renandya (2002), reading strategies are plans for solving problems that readers encounter when constructing meaning out of the text they read. Reading strategies are cognitive and purposeful actions helping

learners construct, maintain meanings, and understand the texts while reading (Kasemsap & Lee, 2015).

Self-efficacy, which is considered as the belief in one's ability to perform a task successfully, plays a central role in students' life (Bandura, 1986). In other words, high self-efficacious students may be more successful in their academic endeavors (Gahungu, 2007). The concept of self-efficacy was first proposed by Bandura (1997) who defined it as "beliefs in one's capabilities to organize and execute the courses of actions required to produce given attainments" (p.3). He further believed that it is the persons' level of self-efficacy which will determine whether a task will be initiated and completed. A learner who possesses higher self-efficacy is motivated to try more and is persistent in completing a task. Self-efficacy can instantiate in different language skills including reading, writing, etc. Self-efficacy in reading, which is the focus of the present study, is explicated by Boakye (2015) as students' beliefs in their ability to read successfully.

As indicated by Anderson (2003), the reading ability of average L2 readers is below the native speakers' reading ability and this can act as a barrier in second or foreign language learners' academic achievements. A great deal of evidence emphasizes on the need for nonnative readers to become aware of and use metacognitive reading strategies in order to successfully cope with the wide range of available texts and contexts (Zarrabi, 2015). The challenges introduced by the internet regarding online reading such as the inclusion of hypermedia and hyperlinks have made the task of reading online even harder for L2 learners. As such, it cannot be claimed that a proficient reader of printed text remains proficient in reading online (Inecay, 2013). As in reading printed texts, students use some strategies while reading online in order to tackle comprehension problems or make reading online easier. To date, there are a number of studies investigating the relationship between students' use of reading strategies and their self-efficacy (see for example, Kargar & Zamanian, 2014; Khajavi & Ketabi, 2012; Naseri & Zaferanieh, 2012; Shang, 2010; Tobing, 2013; Zare & Davoudi Mobarakeh, 2011). However, little research has probed the relationship which might exist between online metacognitive reading strategies and EFL learners' self-efficacy in reading, and also possible effects of gender in this relation. Thus, the present study attempts to find whether there is any relationship between these two. It also seeks to examine if there is any gender difference in the use of online cognitive reading strategies and reading self-efficacy among Iranian EFL learners, and it also aims to find other metacognitive reading strategies that learners might use while reading online texts.

## **REVIEW OF LITERATURE**

### **Metacognitive reading strategies**

In her recent publication, Griffiths (2015) defined language learning strategies as "actions chosen by learners (either deliberately or automatically) for the purpose of learning or regulating the learning of language" (p.426). Among various classifications of language learning strategies, the one proposed by Oxford (1990), including memory, cognitive, compensation, metacognitive, social, and affective strategies, has been realized as one of the most comprehensible (Radwan, 2011).

Anderson (2002) further hypothesized that compared to other reading strategies, metacognitive strategies play a more vital role. He reasoned that when a learner comes to the understanding of how to regulate his or her learning by using strategies, the rate of language acquisition will become faster. Metacognitive reading strategies are depicted as thinking processes

applied to self-monitoring and self-regulating that the reader uses to choose among different reading strategies in various contexts and for various reading purposes (Anderson, 2002).

Three main metacognitive reading strategies as distinguished by Mokhtari and Sheorey (2002) include: global reading strategies, problem-solving strategies, and support strategies. Global reading strategies set the stage for reading act and include readers' plan for reading, preview of text content, etc. Problem-solving strategies are used when there are problems in comprehending a text, in which the reader rereads the text or tries to guess the meaning of unknown words. Support strategies, such as note-taking, highlighting a text, or the use of reference materials, act as tools and mechanisms aimed at helping the readers in the process of reading. A number of studies have recently dealt with L2 learners' use of reading strategies while reading online or printed texts (see for example, Chen, 2015; Naeini & Rezaei, 2015; Ostovar-Namaghi & Noghabi, 2014). There are also a number of studies in the literature on reading strategy use which reveal the significance of metacognitive strategies in assisting EFL learners for checking and evaluating their comprehension while reading (such as Li & Wang, 2010; Shang, 2010). For instance, Shang (2010) examined the use of three reading strategies by a group of Taiwanese EFL learners and the association between using strategies and students' self-efficacy in reading. The strategies included cognitive, metacognitive, and compensation strategies. Results of the study revealed that metacognitive strategies were most frequently used by the learners and compensation and cognitive strategies followed them. Moreover, Shang (2010) found a significantly positive relationship between the use of reading strategies and students' perception of self-efficacy. He accordingly concluded that metacognitive strategies play an enabling and significant role in helping learners to become responsible for improving their learning skills (Farahian & Farshid, 2014). For these reasons, the present study focused on EFL learners' use of metacognitive strategies while reading online. Despite the existence of a large number of studies on different aspects of L2 reading, little research has been done on the use of metacognitive strategies employed by EFL learners, particularly in reading online. As such, the present study attempts to shed some light on this point.

### **Online reading**

With the growing advances in technology and the host of information available in various websites, it is almost impossible not to engage in reading online. There are many online sources for academic or non-academic purposes, hence online reading serves as a source of input for a large number of L2 learners (Anderson, 2003).

The skills of using technology and the use of the web are fundamental tools for studying and learning in academia in the modern world. Reading online is quite different from reading printed text in that it may include links to other pages, multimedia and many other tools. These features mark it as requiring a different set of skills and strategies to be able to comprehend an online text (Coiro & Dobler, 2007).

There are many studies exploring online reading strategies used by ESL/EFL learners (see for example, Anderson, 2003; Marandi & Mokhtarnia, 2008; Ostovar-Namaghi & Noghabi, 2014; Ramli, Darus & Abu Baker, 2011; Vaičiūnienė & Užpalienė, 2013). One of the first investigations of online reading strategies was conducted by Anderson (2003) who explored strategy use by 247 EFL and ESL readers. He particularly aimed to find whether different L2 contexts make any difference in L2 learners' online reading strategy use. Results of his study revealed no significant difference in the use of online reading strategies between EFL and ESL learners, despite the wide range of strategies employed by both groups. In another study, Marandi and Mokhtarnia (2008) investigated the possible difference between metacognitive reading strategies perceived and used by Iranian EFL learners while reading printed text and hypertext. Findings of the study revealed

that there is a significant difference in students' awareness of using problem-solving and support strategies in both printed and online texts, while no significant difference was found for global reading strategies between the two mediums.

The review of literature on the use of online reading strategies by EFL/ESL learners reveals that most of the studies attempted to compare learners' use of reading strategies in online and printed texts and have found that there are differences in the use of reading strategies in these two mediums.

### **Self-efficacy**

Self-efficacy is generally referred to as a person's beliefs on his/her capability to do particular tasks (Bandura, 1986). Self-efficacy is one aspect of social cognitive theory, imposing that there is an interaction among environment, human behavior, and personal aspects such as cognitive, physiological, and affective factors (Bandura, 1986). In social cognitive theory, it is suggested that people can reflect upon their own behaviors or actions-- a metacognitive activity-- and thus shape their environment rather than passively reacting to it. Considering the reciprocal interaction among environmental, behavioral, and personal forces, the efforts individuals exert in performing a task are determined by their beliefs in their own capabilities (Bandura, 1999).

Self-efficacy has a pivotal role in learners' achievements, and knowledge and skills are completed with possession of it. Self-efficacy might further shed light on why different people, whose knowledge and skills are similar, perform quite differently on related tasks (Bandura, 1993). Moreover, self-efficacy is a context-bound and domain-specific construct (Bong, 2006) which should not be equated with self-confidence and anxiety which are rather stable traits. There are plenty of studies on L2 learners' self-efficacy and its effect on various aspects of L2 learning (see for example, Ahmadian, Amerian, & Lavasani, 2015; Anyadubalu, 2010; Hsieh & Schallert, 2008; Mills, Pajares & Herron, 2006; Rahimpour & Nariman-Jahan, 2010; Tilfarlioğlu & Ciftci, 2011). Many studies have also probed the relationship between L2 reading strategies and EFL/ESL learners' self-efficacy. However, there is scarcity of research on the probable association between EFL learners' online reading strategy use, particularly metacognitive strategies, and their self-efficacy in reading.

As indicated above, many studies to date have found a link between EFL learners' reading strategy use and their self-efficacy, either in general or self-efficacy in reading. For instance, Zare and Davoudi Mobarakeh's (2011) study revealed that Iranian EFL senior high school students who perceived themselves as self-efficacious in reading printed texts used more reading strategies than those who regarded themselves as having less efficacy. The study also indicated that metacognitive, cognitive, and socio-affective reading strategies positively correlated with self-efficacy as a construct. In another study by Naseri and Zafernieh (2012), a positive relationship was found between Iranian junior high and senior high school students' reading self-efficacy and reading strategy use. The findings also showed cognitive strategies to be most frequently used by the learners. However, no significant effect was found for gender in this respect. In the same way, Kargar and Zamanian (2014) found a positive relationship between self-efficacy and reading strategy use among Iranian EFL learners in an English language institute. As the review of literature suggests, none of the studies addressed the issue of online reading strategies and its probable link to reading self-efficacy, and gender variation in this relation. This study, thus, attempted to shed some light on these points. As such, the following research questions were raised.

1- What are the most frequent and least frequent online reading metacognitive strategies used by Iranian EFL learners?

2- Is there any relationship between EFL learners' use of online reading metacognitive strategies and their self-efficacy in reading?

3- Does gender make any difference in EFL learners' use of online reading metacognitive strategies and their reading self-efficacy?

4- What other online reading metacognitive strategies are used by the EFL learners?

In order to further explore the research questions, two null hypotheses were formulated:

H<sub>01</sub>. There is no relationship between EFL learners' use of metacognitive online reading strategies and their self-efficacy in reading.

H<sub>02</sub>. Gender does not make any difference in EFL learners' use of metacognitive online reading strategies and their reading self-efficacy in reading.

## METHODOLOGY

### Participants

The participants of the present study were 63 EFL learners from both genders (40 females and 23 males). All the participants were Persian L1 speakers, majoring in English Language and Literature at Arak University, Iran, aged 19 to 23. They were selected based on convenient sampling. The participants' homogeneity in terms of language proficiency was checked through the administration of Nelson Proficiency test, and they were found to be at the intermediate level.

### Instruments

Two questionnaires were used as the data collection instruments in the present study. The first one, which aimed to tap into the learners' online metacognitive reading strategies, was Online Survey of Reading Strategies (OSORS) (Appendix A) adopted from Anderson's (2003) study. This questionnaire was a modified version of Survey of Reading Strategies (SORS) first developed by Sheory and Mokhtari (2001) to explore reading strategies employed by readers of printed texts. The OSORS focuses on metacognitive online reading strategies in academic reading. It comprises 38 items. Eighteen items in the questionnaire include global reading strategies, eleven items are designed to explore problem-solving strategies, and 9 items address support strategies while reading online.

Concerning the reliability of OSORS, Anderson (2003) reported that the Cronbach's alpha for the overall questionnaire was .92. For the purposes of the present study and to establish the reliability of OSORS utilized in the Iranian EFL context, prior to the administration of the questionnaire, its reliability was once more examined. We found the Chronbach alpha for the entire questionnaire 0.89 which is very close to what Anderson (2003) reported. The Reliability estimate for each subsection of the OSORS includes: Global Reading Strategies: .81, Problem Solving Strategies: .80, and Support Strategies: .63. Thus, based on these data, it is evident that the OSORS is a reliable tool for the assessment of the metacognitive online reading strategies used by Iranian EFL learners in academic contexts. With regard to the validity of the questionnaire, it was checked by an experienced university professor of EFL and it was found to be a valid instrument.

A further instrument used in the present study was Reading Self-efficacy questionnaire, which was adopted from Zare and Davoudi Mobarakeh (2011). This questionnaire intends to gather information about the learners' beliefs in their reading capabilities. It contains 10 items on a 7-point likert scale. Zare and Davoudi Mobarakeh (2011) partly adapted the questionnaire from

Wang (2007) and also Li & Wang (2010), and made some modifications in it ensuring its reliability and validity after piloting it. For the purposes of the present study and after piloting it, we changed the scale into a 5-point likert type since the majority of the participants did not choose two of the scales. Internal consistency measure of reliability for the questionnaire after reducing the scale was found to be (Chronbach alpha=.85) which is an acceptable reliability estimate.

### **Procedures**

In the present study, it was assumed that the majority of EFL learners in the academic context are involved in online reading for a variety of purposes such as looking for information, searching specific points, and so on. To add more certainty to our assumption, the participants were involved in an extra-curricular online reading task for one session. They were asked to read two passages online and answer some reading comprehension questions. They were also asked to verbalize what they were thinking about (think aloud) while reading the online texts, so that we could find if there were any other online reading strategies employed by the learners which were not included in the questionnaire. The students' voices were recorded using their cell phones. The passages used in the study are available in a website especially designed for practicing literary reading comprehension texts (<http://www.readworks.org/literary-reading-comprehension-passages>). The stimulus was provided by choosing literary texts to engage students in reading tasks relating to their field of study.

After explaining the aims and objectives of the study to the participants, the Online Reading Strategies Questionnaire was distributed among them. They completed the questionnaire at about 20 minutes. Then, after a short break, the second questionnaire, Reading Self-Efficacy Questionnaire, was distributed. It took approximately 10 minutes to complete. Both questionnaires were distributed by the researchers and the students could ask for explanations and clarifications if needed. All the participants were ensured of the confidentiality of their responses and were told that their responses to the questionnaires would not have any effect on their scores.

### **Data analysis**

In order to analyze the OSORS questionnaire, a scoring procedure was employed through which the number of choices selected by each participant for each component of the questionnaire, including global reading, problem-solving, and support strategies, was added and his/her total score in that component was determined. For instance, if student X selected choice 5, i.e. 'I always or almost always do this' for an item in the global reading component of OSORS, the participant's score for that item was 5, and in case the same person selected 'I never or almost never do this', his/her score was 1. As mentioned earlier, global reading strategies contained 18 items, problem-solving strategies 11 items, and support strategies included 9 items. Hence, the maximum and minimum possible scores for global reading strategies were 90 and 18, for problem-solving strategies 55, and 11, and for support strategies they were 45 and 9, respectively. Therefore, the overall scores of each participant in the OSORS were between 190, maximally, and 38, minimally.

For analyzing the reading self-efficacy questionnaire, the same scoring procedure was used, and if a student had chosen scale 5, i.e. "I can do it well", the score of 5 was assigned, and in case he/she selected scale 1, i.e. "I cannot do it", score 1 was assigned. It needs to be pointed out that for the purpose of avoiding ad hoc selection of choices by the participants, the scales used in the reading self-efficacy questionnaires were reversed. However, in conducting the statistical analyses, scale 1 was assigned as the lowest score and scale 5 received the highest score.

Accordingly, the maximum and minimum scores for this questionnaire were 50 and 10, respectively.

In order to analyze the data obtained from the recording of the participants' voices, the data were transcribed and analyzed thoroughly by the researchers. The strategies included in the OSORS were disregarded and only those which were not included among the questionnaire's items were considered for further scrutiny.

Both descriptive and inferential statistics were used in the present study. Descriptive statistics includes mean, standard deviation and standard error of the means. Friedman Test, Pearson Product Moment Correlation Test and Multiple Analysis of Variance (MANOVA) were also run to find answers to the research questions.

## RESULTS

Table 1 shows the frequency and percentage of the number of males and females who participated in the present study. As indicated in the table, among 63 participants who took part in this study, 40 (63.5%) learners were female and 23 (36.5%) were male.

Table1. The frequency and percentage of male and female participants

	<b>Frequency</b>	<b>Percent</b>	<b>Cumulative Percent</b>
female	40	63.5	63.5
male	23	36.5	100
Total	63	100	

In Table 2, descriptive statistics for the variables of the study including online metacognitive reading strategies and self-efficacy in reading are presented. These include mean and standard deviation of the students' scores. Based on the results presented in the table, the mean scores and standard deviation for global reading strategies are ( $X= 58.39$ ,  $SD= 9.64$ ), for problem-solving strategies ( $X= 39.17$ ,  $SD= 6.50$ ), for support strategies ( $X=27.79$ ,  $SD= 4.92$ ), and for self-efficacy in reading ( $X= 34.84$ ,  $SD= 6.33$ ).

Table2. Descriptive Statistics for the use of online metacognitive reading strategies and self-efficacy in reading

	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
global reading strategies	63	58.39	9.64
problem-solving strategies	63	39.17	6.50
support strategies	63	27.79	4.92
total	63	125.36	18.54
self-efficacy	63	34.84	6.33

Prior to testing the hypotheses, the normality of the distribution of the results should be checked to enable the researchers to choose the most appropriate statistics for testing the hypotheses. To this purpose, One-Sample Kolmogorov-Smirnov test was run on the data for ensuring that they are normally distributed. The distribution of scores regarding the variable of the present study was explored at the alpha level of .05 and the results are presented in Table 3.

Table3. Results of One-Sample Kolmogorov-Smirnov Test

Based on the results of the test, the  $p$ -value for the variables and sub-variables of the present study is higher than .05. Therefore, the hypothesis for normal distribution of the results is accepted, and parametric tests can be applied for further analyses of the results.

To		N	Kolmogorov-Smirnov Z	Sig	answer the research which the most online
first question addresses prevalent	global reading strategies	63	0.45	0.98	
	problem-solving strategies	63	0.76	0.60	
	support strategies	63	0.94	0.32	
	Overall metacognitive	63	0.53	0.93	
	self-efficacy	63	0.89	0.40	

metacognitive reading strategies used by the learners while reading online, Friedman Test was run and the results are presented in (Table 4).

Table 4. Results of Friedman Test

Ranks	Online Reading Strategies	Mean Rank
1	problem-solving strategies	2.60
2	global reading strategies	1.80
3	support strategies	1.60

As indicated in Table 4, problem-solving strategies are the most frequently used strategies applied by the participants while reading online with the mean rank of 2.60, followed by global reading strategies and support strategies having mean ranks of 1.80 and 1.60, respectively.

Concerning the second research question which aimed at investigating whether there is a statistically meaningful relationship between the use of online reading strategies and self-efficacy in reading, Pearson's Correlation Test was run on the data. In what follows, the matrix of correlation coefficients is presented.

Table 5. Results of Pearson Correlations Test

	1	2	3	4	5
1.global reading strategies	1				
2.problem-solving strategies	0.744**	1			
3.support strategies	0.596**	0.531**	1		
4.overall metacognitive strategies	0.940**	0.879**	0.762**	1	
5.self-efficacy	0.88**	0.92**	0.86**	0.88**	1

\*\* . Correlation is significant at the 0.01 level

As can be seen in Table 5, the correlation between overall online metacognitive reading strategies is positive and meaningful. The table also illustrates a significant positive relationship between all the components of metacognitive reading strategies and self-efficacy in reading. Accordingly, it can be inferred that possessing a high degree of self-efficacy in reading online texts can account for more strategic online reading.

The third research question of the study explored gender differences in the use of online reading strategies and self-efficacy in reading. In what follows, first, descriptive statistics is presented for the third research question, and then the results of parametric tests ran on the data are presented.

Table 6. Descriptive Statistics for the use of online reading strategies and self-efficacy in reading across gender

Gender		N	Mean	Std. Deviation
<b>female</b>	global reading strategies	40	60.32	9.37
	problem-solving strategies	40	40.17	6.22
	support strategies	40	28.25	4.75
	self-efficacy	40	33.65	6.82
<b>male</b>	global reading strategies	23	55.04	9.37
	problem-solving strategies	23	37.43	6.75
	support strategies	23	27.00	5.21
	self-efficacy	23	36.91	4.85

Table 6 illustrates descriptive statistics of the variables of the study including mean and standard deviation, for male and female participants to answer the third research question. As can be seen in the table, the mean score of each component of online metacognitive reading strategies is higher for female students than that of male ones. However, the table indicates that the mean score of self-efficacy in reading is higher for males.

In order to compare male and female students' use of online reading strategies and self-efficacy in reading, Multiple Analysis of Variance (MANOVA) was run on the data. Prior to running this test, the statistical assumptions were tested and they were found to be held. Table 7

presents the results of MANOVA for comparing the performance of male and female students in their use of online metacognitive reading strategies and self-efficacy in reading.

Table 7. Results of MANOVA for gender differences in the use of online metacognitive reading strategies and self-efficacy in reading

Effect	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
	Pillai's Trace	0.14	4	58	0.05	0.14
	Wilks' Lambda	0.85	4	58	0.05	0.14
<b>Gender</b>	Hotelling's Trace	0.17	4	58	0.05	0.14
	Roy's Largest Root	0.17	4	58	0.05	0.14

Table 7 illustrates that the  $p$ -value of all the four statistical tests including Pillai's Trace, Wilks' Lambda, Hotelling's Trace, and Roy's Largest Root equals .05. Therefore, the third null hypothesis of the study is rejected and it is shown that there is a statistically significant difference between male and female EFL learners who participated in the present study with reference to their use of online metacognitive reading strategies and their self-efficacy in reading. In order to investigate this difference in each of the components of online reading strategies and self-efficacy in reading, Test of Between-Subjects Effects was run; the results are presented in the following table.

Table 8. Results of Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
	global reading strategies	407.34	1	407.34	4.63	0.03	0.07
<b>Gender</b>	problem-solving strategies	109.65	1	109.65	2.65	0.10	0.04
	support strategies	22.81	1	22.81	0.93	0.33	0.01
	self-efficacy	155.48	1	155.48	4.06	0.04	0.06

Table 8 shows the results of Between-Subjects Effects for comparing male and female participants in their use of online reading strategies and self-efficacy in reading. Based on the table, the resulting F is only significant for two of the variables including global reading ( $F = 4.63, p < .05$ ) and self-efficacy ( $F = 4.06, p < .05$ ) at the alpha level of .05. Considering the mean score of global reading strategies in the two groups, it can be concluded that the mean score of female students is higher than males. On the other hand, it can be claimed that the mean score of self-efficacy in reading is higher for male students. The results also indicate that there is no statistically meaningful difference between male and female participants in using problem-solving and support strategies in online reading.

Results of the think-aloud technique revealed some other metacognitive online reading strategies used by the participants. These strategies include:

- reviewing the online text after completely reading it;
- thinking about synonyms of difficult words;
- guessing the content of upcoming paragraphs in the online text;
- thinking about the text type before starting to read the online text;
- trying to summarize the online text at some intervals;
- using pocket dictionary while reading online; and
- skimming through the online text for some ideas which interest the reader.

## DISCUSSION

Considering the proclaimed gap in the literature regarding L2 learners' use of online reading strategies (Zonotz, 2012), the present study was conducted. As indicated by Sheorey and Mokhtari (2001), "skilled readers . . . are more able to reflect on and monitor their cognitive processes while reading. They are aware not only of which strategies to use, but they also tend to be better at regulating the use of such strategies while reading" (p. 445). Self-efficacy beliefs are determining factors in students' choice of activities, in that the students do not venture doing activities which they believe surpass their capabilities and only undertake activities or tasks which they find themselves capable of handling (Bandura, 1986). As self-efficacy has shown to be effective in the use of reading strategies in printed texts (For example, Kargar & Zamanian, 2014; Naseri & Zafarnieh, 2012; Zare & Davoudi Mobarakeh's, 2011), we tried to explore whether the same holds true while reading online, and whether there is any effect for the gender in this respect. To these ends, the present study addressed three research questions each of which is discussed in turn.

To fulfill the first objective of the study, Friedman Test was run on the data and it was found that problem-solving strategies, such as reading slowly and carefully, trying to get back on track when losing concentration, adjusting the reading speed, and so on are the most frequently used metacognitive reading strategies applied by the participants. On the other hand, support strategies such as note taking, reading the online text aloud, using online references, and global reading strategies like having a purpose while reading online, participating in live chat with other EFL learners, or taking an overall view of the online text before reading it, were shown to be the least frequently used strategies while reading online texts. Problem-solving strategies are mostly applied when the students encounter difficulties in understanding a text. The reason why the participants of the present study applied this type of metacognitive reading strategies more frequently than global reading or support strategies may be due to the difficulty of the online texts and possible challenges that they might have faced in reading and making sense of the texts.

As emphasized by Mokhtari and Sheorey (2002), text comprehension is enhanced by being aware of different cognitive and metacognitive reading strategies. The effective use of strategies is determined by students' belief in their capabilities or their self-efficacy (Zimmerman, 2000). Having strong self-efficacy is, in fact, a determining factor to be able to persist with using special strategies (Anam & Stracke, 2016). The literature on the relationship between L2 learners' self-efficacy and their learning strategies has rather consistently reported the existence of such an association between the two (Li & Wang, 2010; Purdie & Oliver, 1999).

The findings of the present study also revealed a significant relationship between the use of online metacognitive reading strategies, a rather underdeveloped area, and self-efficacy in reading. Therefore, the null hypothesis stating that there is no relationship between EFL learners'

perceived use of metacognitive reading strategies while reading online and their self-efficacy in reading can be safely rejected. These findings are in line with many of the studies exploring the relation between reading strategy use in printed texts and self-efficacy in reading (For instance, Kargar & Zamanian, 2014; Naseri & Zafarnieh, 2012; Shang, 2010; Zare & Davoudi Mobarakeh, 2011). This close association further pinpoints the significant and outstanding role of self-efficacy in strategic reading (both printed and online texts) and lends support to the earlier findings that students need both skills and strategies and a belief in their capabilities for successful achievements (Bandura, 1993; Oxford & Shearin, 1994). In other words, findings of the present study highlighted that mere possession of knowledge, skills and strategy use might not be sufficient in case the L2 learner does not believe in his/her own capabilities and potentials in reading a text. It can thus be inferred from the results that self-efficacy plays an important role in the students' use of metacognitive reading strategies while they are engaged in reading online texts. As pointed out by Sheorey and Mokhtari (2001), strategic awareness and monitoring of the comprehension process are significant aspects of skilled reading. Also, metacognitive awareness, that is, planning and consciously using appropriate actions to achieve a special goal, is considered to be critical elements of strategic and proficient reading (Carrell, Pharis, & Liberto, 1989). Furthermore, as indicated by Bandura (1986), self-efficacious students are more motivated and persistent in doing tasks. As self-efficacy and motivation are both deriving forces which can lead students in pursuing their goals (Ersanl, 2015), there might have also been a motivational factor involved in the participants' use of online reading strategies. In addition, the students might have found the online texts challenging, and thus for understanding the texts better, they applied more metacognitive reading strategies.

The third objective of this study was to explore whether there is a gender effect in the use of metacognitive online reading strategies and self-efficacy in reading. Results of MANOVA revealed that females use more global reading strategies while reading online. It was further indicated that the male participants of the study see themselves more efficacious in reading online texts. As such, we are safe to reject the second null hypothesis of the study which posited that there is no gender effect in the use of metacognitive online reading strategy use and self-efficacy in reading online. The findings with regard to gender differences in self-efficacy are in contrast to those of Kargar and Zamanian (2014), who did not find any difference between male and female EFL learners in their perceived self-efficacy. Overall, studies on learners' general self-efficacy beliefs indicate that males consider themselves more self-efficacious than females (Huang, 2013). The reason for difference between males and females in their self-efficacy in reading might arise because of various factors. Pajaras (2002) states various reasons for gender differences in self-efficacy beliefs among which is the tendency of boys and girls to answer self-report instruments like questionnaire with a varying "mind set" (p. 118). In other words, while girls are more modest in their responses, boys are more confident and regard themselves as possessing most qualities (ibid.). The effect for gender which was found to be significant in global reading strategies and self-efficacy in reading are in line with previous studies which have revealed the existence of a relation between strategy use and factors such as proficiency and gender (Khali, 2005; Lan & Oxford, 2005). In the studies conducted on gender differences in using language learning strategies, in which online reading strategies might be part of, it was revealed that females use L2 strategies more than males (Lan & Oxford, 2005). The same holds true in the present study which also indicates that females used more global reading strategies while engaged in online reading tasks than male participants.

The findings of the present study also revealed that L2 learners might use other metacognitive reading strategies while reading online. This indicates that, in addition to the items included in the questionnaires, researchers should use other techniques such as think aloud protocol to find further strategies which may be used by the learners.

### CONCLUSION AND IMPLICATIONS

The findings of this study indicated that there was no equal distribution in the frequency of the use of different components of metacognitive online reading strategies by the participants, as some of them, including strategies under the problem-solving category, were more frequently used than the others. The study also revealed that those students who perceive themselves more self-efficacious in reading also use more metacognitive reading strategies while engaged in online reading tasks. This can lead us to conclude that, as in reading printed texts, online reading is dependent on the use of reading strategies and personal characteristics like self-efficacy. In the meanwhile, care must be taken in dealing with males and females, as it was found that gender differences exist in metacognitive online reading strategy use and also self-efficacy in reading online.

Based on the findings of this study in which global reading and support strategies were the least frequently used online reading strategies, teachers may put more emphasis on these strategies and encourage the use of those strategies by the learners. The main contribution of the present study is in academic EFL education which nowadays focuses on online reading tasks for various purposes such as searching information, and writing papers. Knowing about L2 learners' use of strategies in reading online texts can be helpful in training them to more successfully deal with nonlinear electronic texts (Zonotz, 2012). Moreover, as indicated by Jiuhan and Newbern (2012), studies on metacognitive reading strategies can contribute to the training of instructors, since by involving learners in activities which enhance their self-efficacy, teachers can play important roles in developing students' beliefs in their abilities. Having a strong sense of self-efficacy, students could be more consistent in using special strategies perceived as helpful by them (Anam & Stracke, 2016).

Like other cross-sectional studies, the findings of the present study are inherently correlational and cannot present any claims with regard to the causality of the relations. As such, further research is needed to empirically account for the probable existence of a cause-effect relationship between the use of online reading strategies and self-efficacy in reading. The rather small sample of the present study also makes generalizations hard to maintain, and future research can use a larger sample to produce more dependable conclusions. More in depth findings can be granted by using instruments such as think-aloud protocols by tapping into the reasons why learners use some particular online metacognitive reading strategies and avoid others.

*Moussa Ahmadian is associate professor of TEFL in Arak University. He has published and presented a number of articles on Translation Studies, Second Language Acquisition and Teaching, and Literature in different journals and conferences, and has carried out a number of research projects most of them on Translatology and texology and translation.*

Email: [m-ahmadian@araku.ac.ir](mailto:m-ahmadian@araku.ac.ir)

**Parastou Gholami Pasand** is a Ph.D candidate of TEFL at Arak University. She has published a number of articles and presented papers in ELT conferences. Her main areas of research are Sociocultural Theory, Scaffolding, and English Language Skills and strategies.

Email: [parastou\\_gholami@yahoo.com](mailto:parastou_gholami@yahoo.com)

## REFERENCES

- Ahmadian, M., Amerian, M., & Lavasani, E. (2015). The effect of the Dicto-gloss as a cooperative learning technique on EFL learners' self-efficacy in writing. *Journal of Language Teaching and Research*, 6(6), 1357-1364.
- Anam, S. & Stracke, E. (2016). Language learning strategies of Indonesian primary school students: In relation to self-efficacy beliefs. *System*, 60, 1-10. <http://dx.doi.org/10.1016/j.system.2016.05.001>
- Anderson, N. J. (2002). *The role of metacognition in second/foreign language teaching and learning*. ERIC Digest. Washington, DC: ERIC Clearinghouse on Languages and Linguistics.
- Anderson, N. J. (2003). Scrolling, clicking, and reading English: Online reading strategies in a second/foreign language. *The Reading Matrix*, 3(3), 1-33.
- Anaydubalu, C. C. (2010). Self-efficacy, anxiety, and performance in the English language among middle-school students in English language program in Satri Si Suriyothai School, Bangkok. *International Journal of Human and Social Sciences*, 5(3), 193-198.
- Bandura, A. (1986). *Social foundations of thought and action: A socio cognitive theory*. New Jersey: Prentice Hall, Inc.
- Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist*, 28(2), 117-148. <http://dx.doi.org/10.1207/15326985ep28023>.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: W. H. Freeman and Company.
- Bandura, A. (1999). Social cognitive theory: An agentic perspective. *Asian Journal of Social Psychology*, 2(1), 21-41. <http://dx.doi.org/10.1111/1467-839X.00024>
- Boakye, N. A. N. Y. (2015). The relationship between self-efficacy and reading proficiency of first-year students: An exploratory study. *Reading & Writing*, 6(1), 1-9.
- Bong, M. (2006). Asking the right questions: how confident are you that you could successfully perform these tasks? In F. Pajares, & T. Urda (Eds.), *Self-efficacy beliefs of adolescents* (pp. 287-306). Greenwich, CT: Information Age Publishing.
- Carrell, P. L., Pharis, B. G., & Liberto, J. C. (1989). Metacognitive strategy training for ESL reading. *TESOL Quarterly*, 23(4), 650-678.
- Chen, L. W. C. (2015). Taiwanese EFL learners' perceived use of online reading strategies. *The IAFOR Journal of Education*, 3(2), 68-80.
- Coiro, J. & Dobler, E. (2007). Exploring the online comprehension strategies used by sixth-grade skilled readers to search for and locate information on the Internet. *Reading Research Quarterly*, 42, 214-257.
- Ersanli, C. Y. (2015). The relationship between students' academic self-efficacy and language learning motivation: A study of 8th graders. *Procedia - Social and Behavioral Sciences*, 199, 472-478. doi: 10.1016/j.sbspro.2015.07.534

- Farahian, M., & Farshid, M. (2014). A reader response approach to reading: Does it have an effect on metacognitive reading strategies? *Modern Journal of Language Teaching Methods*, 4(1), 371–383.
- Grabe, W., & Stoller, F. L. (2002). *Teaching and researching reading*. Harlow, UK: Pearson Education.
- Griffiths, C. (2015). What have we learnt from good language learners? *ELT Journal*, 69(4), 425-433. <http://dx.doi.org/10.1093/elt/ccv040>.
- Grigg, N. & Mann, R. (2008). Promoting excellence: An international study into creating awareness of business excellency models”. *The TQM Journal*, 20(3), 233-248.
- Hsieh, P. H. P., & Schallert, D. L. (2008). Implications from self-efficacy and attribution theories for an understanding of undergraduates motivation in a foreign language course. *Contemporary Educational Psychology*, 33, 513-532.
- Huang, C. (2013). Gender differences in academic self-efficacy: A meta-analysis. *European Journal of Psychology of Education*, 28(1), 1-35.
- Incecay, G. (2013). Metacognitive online reading strategies applied by EFL students. *Journal of Theory & Practice in Education (JTPE)*, 9(4), 390–407.
- Jiuhuan, H., & Newbern, C. (2012). The effects of metacognitive reading strategy instruction on reading performance of adult ESL learners with limited English and literacy skills. *Journal of Research & Practice for Adult Literacy, Secondary & Basic Education*, 1(2), 66–77.
- Kargar, M., & Zamanian, M. (2014). The relationship between self-efficacy and reading comprehension strategies used by Iranian male and female EFL learners. *International Journal of Language Learning and Applied Linguistics World*, 7(2), 313-325.
- Kasemsap, B., & Lee, H. Y. H. (2015). L2 reading in Thailand: Vocational college students’ application of reading strategies to their reading of English texts. *The Reading Matrix: An International Online Journal*, 15(2), 101-117.
- Khajavi, Y., & Ketabi, S. (2012). Influencing EFL learners’ reading comprehension and self-efficacy beliefs: The effect of concept mapping strategy. *PortaLinguarum*, 17, 9-27.
- Khalil, A. (2005). Assessment of language learning strategies used by Palestinian EFL learners. *Foreign Language Annals*, 38(1), 108-119. <http://dx.doi.org/10.1111/j.1944-9720.2005.tb02458.x>.
- Lan, R., & Oxford, R. L. (2005). Language learning strategy profiles of elementary school students in Taiwan. *IRAL*, 41(4), 339-379. <http://dx.doi.org/10.1515/iral.2003.016>.
- Li, Y., & Wang, C. (2010). An empirical study of reading self-efficacy and the use of reading strategies in the Chinese EFL context. *The Asian EFL Journal Quarterly*, 12(2), 144-162.
- Marandi, S. & Mokhtarnia, S. (2008). Strategic reading process in two on-line and printed environments. *The Journal of Asia TEFL*, 5(3), 171-198.
- Mokhtari, K., & Sheorey, R. (2002). Measuring ESL students’ awareness of reading strategies. *Journal of Developmental Education*, 25(3), 2-10.
- Naeini, M.B., & Rezaei, R. (2015). Examining and dealing with the issue of reading strategy use by Iranian EFL learners. *The Reading Matrix: An International Online Journal*, 15(2), 182-195.
- Naseri, M., & Zaferanieh, E. (2012). The relationship between reading self-efficacy beliefs, reading strategy use and reading comprehension level of Iranian EFL learners. *World Journal of Education*, 2(2), 64-75.

- Ostovar-Namaghi, S., & Noghabi, A. (2014). A comparison of perceived use of the metacognitive reading strategies by Iranian Master of Science students for hypertext and printed academic materials. *Journal of Language Teaching & Research*, 5(4), 865–872.
- Oxford, R. L. (1990). *Language learning strategies: What every teacher should know*. New York: Newbury House Harper Collins.
- Oxford, R. L., & Shearin, J. (1994). Language learning motivation: expanding the theoretical framework. *The Modern Language Journal*, 78(1), 12-28. <http://dx.doi.org/10.1111/j.1540-4781.1994.tb02011.x>.
- Pajares, F. (2002). Gender and perceived self-efficacy in self-regulated learning. *Theory Into Practice*, 41(2), 116-125.
- Purdie, N., & Oliver, R. (1999). Language learning strategies used by bilingual school-aged children. *System*, 27(3), 375-388. [http://dx.doi.org/10.1016/S0346-251X\(99\)00032-9](http://dx.doi.org/10.1016/S0346-251X(99)00032-9).
- Radwan, A. A. (2011). Effects of L2 proficiency and gender on choice of language learning strategies by university students majoring in English. *The Asian EFL Journal*, 13(1), 115-163.
- Rahimpour M, Nariman-Jahan R (2010). The influence of self-efficacy and proficiency on EFL learners' writing. *Int. J. Instructional Technol.and Distance Learning*. 7 (11): 19- 35.
- Ramli, N. F. M., Darus, S., & Abu Baker, N. (2011). Metacognitive online reading strategies of adult ESL learners using a learning management system. *Theory and Practice in Language Studies*, 1(3), 195-204.
- Richards, J. C., & Renandya, W. A. (2002). *Methodology in language teaching*. Cambridge: Cambridge University Press.
- Sheorey, R., & Mokhtari, K. (2001). Differences in the metacognitive awareness of reading strategies among native and non-native readers. *System*, 29, 431-449.
- Shang, H. F. (2010). Reading strategy use, self-efficacy and EFL reading comprehension. *Asian EFL Journal*, 12(2), 18-42.
- Tilfarlioğlu, F. T., & Ciftci, F. S. (2011). Supporting self-efficacy and learner autonomy in relation to academic success in EFL classrooms (A case study). *Theory and Practice in Language Studies*, 1(10), 1284-1294. <http://dx.doi.org/10.4304/tpls.1.10.1284-1294>
- Tobing, I. R. A. (2013). *The relationship of reading strategies and self-efficacy with the reading comprehension of high school students in Indonesia*. Unpublished doctoral dissertation, University of Kansas, Indonesia.
- Vaičiūnienė, V. & Užpaliėnė, D. (2013). Metacognitive online reading strategies in foreign language learning context at university. *Social Technologies*, 3(2), 316–329.
- Zare, M., & Davoudi Mobarakeh, S. (2011). The relationship between self-efficacy and use of reading strategies: The case of Iranian senior high school students. *Studies in Literature and Language*, 3(3), 98-105.
- Zarrabi, S. (2015). *Exploring metacognitive online reading strategies of non-native English-speaking translation student*. Unpublished doctoral dissertation. University of San Francisco, U.S.
- Zimmerman, B. J. (2000). Self-efficacy: an essential motive to learn. *Contemporary Educational Psychology*, 25(1), 82-91. <http://dx.doi.org/10.1006/ceps.19991016>.
- Zenotz, V. (2012). Awareness development for online reading. *Language Awareness*, 21(1–2), 85–100.