



## **The Effects of Cognitive Strategy Instruction on the Reading Comprehension of Iranian EFL Learners**

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### **Introduction**

Reading is of prime significance to language learners. It is one of the most significant skills for those who aim to get entry to higher educational institutes, as most materials presented to them are in the form of texts (Ellis, Tanaka, & Yamazaki, 1994). On the other hand, reading in L2 could foster learning language subskills. For example, Yu-Ling (2005) asserts that reading could cause learning vocabulary and building a semantic map between the words in the reading texts.

The significance of the reading skill perpetuates the need for enhancing the reading comprehension of the language learners. Theoretically speaking, a possible approach to achieve this goal is strategy instruction. Chamot (2004) defines strategy instructions as learning strategies which are used by language learners to learn language skills such as, the reading skill, and the writing skill or language sub-skills such as grammar. Strategy Instruction teaches language learners techniques to learn the material and content of the course. It supplies them with ample opportunities to practice the target language and activates their schemata by integrating the new information with what they already know (Oxford, 2003). The plethora of research on strategy instruction has also proved that it can be used to teach learners with disabilities (Harris, Graham, & Mason, 2003). These studies provide the readership with empirical evidence on how effective strategy instruction is.

As strategy instruction is a multifaceted issue, numerous studies have dealt with it. Oxford (1990) in her comprehensive taxonomy of learning strategies lists 62 strategies which could be used by language learners. These strategies include cognitive, metacognitive, socio-affective, compensation and memory strategies. As stated by Oxford (1994), three types of strategies have already been found to have an effect on the reading comprehension of English as a foreign language (EFL) learners. These three strategies include: guessing intelligently, highlighting, and taking notes. Two of these strategies are very common among language learners, i.e., highlighting and taking notes. In fact, EFL learners usually highlight or take note of what seems to be significant to them in order to remember the information and use it to answer reading comprehension questions (Sukarni, 2017). In addition, Chamot (1995) posited that although experienced language learners choose their desired strategy to learn systematically, novice language learners are naïve when choosing strategies. This suggests that perhaps the learning strategies should be explicitly taught to them.

In addition, the literature indicates a considerable amount of research on strategy instruction. Plonsky (2011) lists 400 studies that have been carried out with regard to strategy instruction. Considering the EFL context of Iran, a number of articles have dealt with the effect of strategy instruction on the reading

comprehension of EFL learners. As many Iranian EFL learners who sit for high-stakes tests such as the IELTS or TOEFL exams complain about the difficulty of the reading section of these exams (Rasti, 2009; Zare, 2013), there is a need to investigate the effects of CSI on the reading comprehension of learner in the Iranian EFL context.

Moreover, it seems very important to investigate the effects of note taking and highlighting cognitive strategies in this context, as their possible effects on reading comprehension have already been empirically investigated by Oxford (1990), but also they are among the most common strategies used by many EFL learners (Zare & Othman, 2013).

Not knowing about the effects of note taking and highlighting on the reading comprehension of Iranian EFL learners results in some confusion amongst both language teachers and language learners on the effectiveness of these strategies. As a result, teachers avoid explicit instruction of these strategies and, the learners may feel dubious about using these strategies. The researcher in this study measured the effects of the two most common types of cognitive strategy instruction, i.e., taking notes and highlighting on the reading comprehension of Iranian EFL learners.

The study is important on the grounds that it paves the way for EFL teachers to employ strategy instruction and techniques in their classes to create a more advantageous situation and atmosphere in the classroom for the learners. Material developers also can include activities and tasks which focus on the effect of strategy instruction on EFL reading comprehension. English teachers can also make use of the results of this study in order to teach their learners what type of material should be highlighted or taken down as notes during a lecture and how this should be done.

## Research Questions

- RQ1: What is the effect of note taking strategy instruction on the reading comprehension of Iranian EFL learners?
- RQ2: What is the effect of highlighting strategy instruction on the reading comprehension of Iranian EFL learners?

## Research Hypotheses

- H01: Note taking strategy instruction does not have an effect on the reading comprehension of Iranian EFL learners.
- H02: Highlighting strategy instruction does not have an effect on the reading comprehension of Iranian EFL learners.

## Review of the Literature

McDonough (1999) notes that strategy instruction can enhance one's own learning. In the same vein, Oxford (1990) defined strategy instruction as steps taken towards leaning by the learners. She defined the characteristics of these steps as being self-directed, more enjoyable, faster and easier.

In general, two distinct taxonomies have been presented for learning strategies by Oxford (1990) on the one hand, and O'Malley, O'Malley and Chamot (1990) on the other. In Oxford's tradition, strategies are divided into 5 main groups, i.e., metacognitive strategies, affective strategies and memory strategies, social strategies and cognitive strategies. The first group of strategies (metacognitive), refers to planning and evaluation, e.g., planning for language tasks. The second group (affective), refers to emotional or motivational strategies such as self-reward. The third group refers to the learners' ability to memorize the learning content. The fourth type (social strategies) refers to asking questions and socializing with other people. The fifth type, cognitive strategies are those that involve reasoning, analyzing, etc. Finally,

compensation strategies include activities such as making conjectures to understand meaning (Riding & Rayner, 2013).

The other tradition is that of O'Malley, O'Malley and Chamot (1990). They put forward 3 types of strategies, i.e., metacognitive, cognitive, and affective. They describe cognitive strategies as those being used by the learners to manipulate the data in a way that it is understood more easily. Cognitive strategies were those which resulted in critical analysis of the learning content, and affective ones are those strategies that are relevant to the learners' emotions.

A common group of learning strategies in both taxonomies is cognitive strategy. Oxford (1990) considered this type of strategy as the most important type. Khezrlou (2012) stated that age plays a role here. He noted that, "The importance of cognitive strategies increases with the age of learners in foreign language learning. Learners need to be provided with appropriate ways of instruction to use this strategy as efficiently as possible" (p. 81). He further explained that cognitive strategies are problem-solving strategies and incorporate any type of clarification or transformation.

### **Cognitive Strategy Instruction (CSI)**

Zimmerman, Boekarts, Pintrich, and Zeidner (2000) stated that the CSI strategy fosters the teaching and learning processes, as it includes self-regulation and metacognitive strategies. Conley (2008) also noted that using these strategies is significant for academic success. Furthermore, scholars who deal with learners with disabilities have found CSI to be a solution to their learning problems (Dinsmore, Alexander, & Loughlin, 2008). Montague and Dietz (2009) note that explicit instruction of CSI through examples, scaffolding and verbal patterns along with guided or distributed practices enhances learning. Other techniques listed by Montague and Dietz (2009) include self-monitoring and using verbal patterns which should result in flexibility and automaticity of learning. Brown, Palincsar, and Armbruster (1984) also note that the metacognitive component of CSI puts the focus on tasks among learners and regulates their performance.

Some studies have investigated CSI and its effect on the reading comprehension of language learners. Lau and Chan (2007) investigated the effect of cognitive strategy instruction on the reading comprehension of low achieving learners. Not only did they find cognitive strategy instruction a useful approach for usage with such learners, they also found considerable difference and enhancement in participants who were instructed on the use of cognitive strategies. Their study highlights a very significant fact about strategy instruction, i.e., it can be used with learners with learning disabilities (Dinsmore, Alexander, & Loughlin, 2008).

Wong (2005) found that CSI can bring about self-efficacy in learning. Hong-Nam and Leavell (2006) suggests that language learners at different proficiency levels tend to use different strategies. For example, in the intermediate level, they noticed a greater usage of learning strategies than beginning and advanced levels. Although their study was focused on all types of strategies, it was observed that the learners who used more strategies, tended to develop their language abilities faster.

## **Method**

### **Research Design**

This research is a quantitative study. The effects of note-taking and highlighting are measured using quantitative analysis of the participants' pretest and posttest scores. In addition, due to non-random selection of the participants, this is a quasi-experimental study. The main independent variables in this study are note taking and highlighting. The main dependent variable is the reading comprehension of the Iranian EFL learners.

## Participants and Setting

The participants of the study were chosen non-randomly in the form of two intact classes. These two classes included 54 learners. All participants were adult males between the age of 23 to 29. The participants were given a proficiency test approved by the institute's research and development center (R & D). The results were checked for reliability using Cronbach alpha and for validity using factor analysis. Having approved that the test results were reliable and the test was a valid one, the results were used to homogenize the learners for this study.

## Instruments and Materials

Two separate versions of the Official IELTS reading test were used in this study as the pretest and the posttest. IELTS reading texts from Cambridge IELTS Practice Tests were used as course materials.

## Procedure

This study lasted over a period of 6 weeks or 12 class sessions. In the first session, the consent forms along with the pretest (IELTS reading test) were given to the participants. After that both groups went through 10 sessions of intervention. Finally, in session 12, the posttest (a different IELTS test) was administered to the participants.

The participants in the note-taking group were instructed on the taking notes strategy prior to reading the texts. They were asked to take notes while they read the texts. They were also provided with small pieces of paper to take notes if they wished to take notes on a separate sheet of paper. They were asked to take notes of the purpose, theme, and thesis statement of the reading texts. Thus, having read the reading text, the participants should have jotted down 3 notes from the text. They were also asked to discuss what part of the text they had referred to in order to find the relevant information. Participants in each session practiced this skill through the reading of two 250-word texts over a 90-minute period. In the highlighting group, participants were asked to highlight the purpose, theme, and thesis of the reading texts. They were also asked to make reference to the part of the text from which they found the information. Both groups of participants were then given an IELTS reading test at the end of the course as a posttest.

## Results

### Test of Normality Assumption

In the first phase of the data analysis, the assumption of normal distribution was checked.

TABLE 1  
*Normality of All Tests*

	N	Min	Max	Mean	SD	Variance	Skewness	Kurtosis		
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error	
Note Pretest	28	15.00	31.00	22.46	4.53	20.55	.064	.441	-.852	.858
Note Posttest	28	18.00	32.00	25.67	3.67	13.48	-.304	.441	-.546	.858
Highlight Pretest	26	15.00	26.00	21.00	2.49	6.24	-.384	.456	.617	.887
Highlight Posttest	26	16.00	30.00	25.00	3.31	10.96	-.767	.456	.932	.887

As Observed in Table 1, ratios of skewness and kurtosis were within the range of +/-1.96; therefore, based on Fields (2013), the homogeneity of the results was assumed.

### Reliability of the Tests

Reliability of the pretest and posttest was gauged using Cronbach  $\alpha$ . The results of the test for the pretest and posttest ( $\alpha=.82$ , and  $.79$ , respectively) revealed that the tests were reliable.

### The First Research Hypothesis

H<sub>01</sub>: Taking notes strategy instruction has no effect on the reading comprehension of Iranian EFL learners.

In order to check the first null hypothesis, participants pretest scores were compared to their posttest scores. As can be seen in Table 2, there is a difference between the participants pretest mean score (M=22.46, SD= 4.13) and their posttest score (M=25.67, SD= 3.97, Sig=.00).

TABLE 2.  
*Comparison of the Pretest and Posttest Scores*

	Mean	N	Std. Deviation	Std. Error Mean
Notes pretest	22.46	28	4.13	.856
Notes posttest	25.67	28	3.97	.693

Table 3 shows the paired samples t-test results which indicate that participants scores statistically increased on the posttest compared to those of the pretest ( $t_{(27)}=-7.105$ ,  $p=.000 >.05$ ) Therefore, the first null hypothesis (H<sub>01</sub>) was rejected because the taking notes strategy instruction had an effect on the reading comprehension of Iranian EFL learners.

TABLE 3.  
*Paired Samples T-test for the Pretest and Posttest Scores of the Note Taking Group*

Mea n	Std. Deviation	Paired Differences		t	df	Sig. (2- tailed)	
		Std. Error Mean	95% Confidence Interval of the Difference				
			Lower				Upper
- 3.21	2.39	.45	-4.14	-2.28	-7.10	27	.00

### The Second Research Hypothesis

H<sub>02</sub>: Highlighting strategy instruction has no effect on the reading comprehension of Iranian EFL learners.

In order to find the answer to the second research hypothesis, a paired samples t-test was run. As indicated in Table 4 there were differences between the pretest scores of the participants in the highlighting group (M=21.00, SD=2.498) and their posttest scores (M=25.00, SD=3.310).

TABLE 4.  
*Comparison of the Pretest Scores with the Posttest Scores*

	Mean	N	Std. Deviation	Std. Error Mean
Highlight pretest	21.00	26	2.498	.489
Highlight posttest	25.00	26	3.310	.649

As can be observed in Table 5, the results of the paired samples t-test were  $(t_{25}) = -7.601$ ,  $p = .000 < .05$ . The difference between the participants pretest scores and posttest scores were meaningful. Therefore, the second null hypothesis ( $H_02$ ) was rejected and highlighting has an effect on the reading comprehension of Iranian EFL learners.

TABLE 5.  
*Paired Samples T-test for the Pretest and Posttest Scores of Highlighting group*

Mean	Std. Deviation	Paired Differences			t	df	Sig.
		Std. Error	95% Confidence Interval of the Difference				
			Mean	Lower			
-4.00	2.68	.526	-5.08	-2.91	-7.601	25	.000

## Discussion

The findings of the study proved that note taking and highlighting while reading as a cognitive strategy could positively affect the reading comprehension of Iranian EFL learners. In fact, this study is in line with Janzen (1996), Winograd and Hare (1988), and Karbalaei (2011) who all found cognitive strategy instruction useful for the reading comprehension of EFL learners.

Chamot (2004) posited that strategy instruction in general could be an effective approach to teaching language skills and that EFL learners should be instructed on how to use strategies. The results are in congruence with the findings of Chamot (2004) as it was proven that note taking and highlighting strategies were useful strategies to enhance reading comprehension. Sukarni (2017) investigated the effects of cognitive strategy instruction on EFL learners' reading comprehension and found that taking notes could have a significant positive effect on the reading comprehension of EFL learners. Similar to their study, the findings of this study also proved that note taking is an effective approach to teaching reading to Iranian EFL learners.

Lau and Chan (2007) investigated the effect of cognitive strategy instruction on the reading comprehension of low achieving learners. Not only did they find cognitive strategy instruction a useful approach to be used with such learners, they also found considerable differences and enhancements in participants who were instructed on the use of cognitive strategies. Their study highlights a very significant fact about strategy instruction- it is usually used with learners with learning disabilities (Dipper, Black, & Bryan, 2005).

Pressley (1990) stated that CSI can positively affect the reading comprehension of children. He believed that, "Cognitive strategy instruction is not a 'quick fix' for children with academic learning problems nor an 'add-on'. Strategies are most powerfully used in the context of content teaching, coordinated with a well-developed knowledge base, and routinely included in ongoing instruction" (p. 41). The focus in the current study was not on effects of CSI on children; however, the results of the study on the undergraduate learners were congruent with Pressley (1990). Wong (2005) has stated that CSI can bring about self-efficacy in learning. Although the focus of the study conducted by Wong (2005) was on preservice teachers and college teachers, the conclusion drawn for his study is in line with the conclusion of the present study.

Hong-Nam and Leavell (2006) found that language learners at different proficiency levels tend to use different strategies. For example, in the intermediate level, they noticed a greater use of learning strategies than at the beginning and advanced levels. Although their study was focused on all types of strategies, it was observed that the learners who used more strategies, tended to develop their language abilities faster. Congruent with their findings, this study showed that conscious awareness of both note taking and highlighting can increase learners' reading comprehension.

The findings of this study advocate for the use of strategy instruction in language classes. In fact, this study is in line with Janzen (1996), Winograd and Hare (1988), and Karbalaei (2011) who all found cognitive strategy instruction useful for reading comprehension of EFL learners.

## Conclusion

The current study investigated the effects of two different types of cognitive strategies from Oxford's (1990) taxonomy of learning strategies, namely, highlighting and taking notes. The results of the study revealed that both note taking and highlighting positively affect the reading comprehension of undergraduate Iranian EFL learners. The results indicate that CSI is a useful approach to fostering reading comprehension among the targeted population. Reading teachers in EFL contexts can benefit from the findings of the study as can Iranian EFL learners. Both groups should include note taking and highlighting to the list of strategies they use to read and understand better. The researcher also found that the effects of affective strategies have been understudied; thus, it is recommended that future researchers investigate affective strategies and their effect on reading comprehension.

## The Author

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