

## Effects of Using Cognitive Strategy Training Programs in Developing Reading Comprehension

### *Okuma Becerilerinin Geliştirilmesinde Bilişsel Strateji Programı Uygulanmasının Etkileri*

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**Abstract:** This study aimed to investigate the effectiveness of cognitive strategy instruction on English reading comprehension of Iranian advanced students. A total of 60 participants took part in the present study. The participants (n=20) in one experimental group were provided with the cognitive training only condition while the participants (n=20) in the other experimental group were exposed to both a training and a verbalization requirement condition. Control group participants (n= 20) did not receive any training. Students of the experimental group in both conditions received 10 hours of cognitive strategy training in their regular lessons. The findings in this study generally supported that the consciousness-raising of the cognitive strategies had a positive impact on the reading development of Farsi-speaking English learners.

**Keywords:** : English reading comprehension, cognitive strategy instruction, advanced students, gender

**Özet:** Bu çalışma İranlı ileri düzey İngilizce öğrencilerine verilen bilişsel strateji eğitiminin okuma becerilerine olan etkisini araştırmıştır. Çalışmaya toplam 60 öğrenci katılmıştır. İlk deney grubundaki katılımcılar (n=20) bilişsel strateji eğitimi görürken diğer deney grubundaki katılımcılar (n=20) hem bilişsel strateji eğitimi hem de zorunlu sözlü çalışmalara katılmışlardır. Kontrol grubu (n=20) ise herhangi bir programa katılmamıştır. İki deney grubuna da toplam 10'ar saatlik bilişsel strateji eğitimi uygulaması sunulmuştur. Çalışmanın sonuçları bilişsel strateji eğitiminin sunduğu bilinçlendirmenin Farsça konuşan İngilizce öğrencilerinin okuma becerilerinin gelişimine olumlu katkısı olmuştur.

**Anahtar Sözcükler:** İngilizce okuma anlama, bilişsel strateji eğitimi, ileri düzey, cinsiyet

Research on strategies has focused on two broad areas: learning strategies and communication strategies. In learning strategies the learner makes attempts to establish competence in the target language, whereas in a communication strategy the difficulty of the moment is to be solved.

Looking at learning strategies from the linguistic perspective, a contradiction can be identified. The universal hypothesis claims that second language acquisition happens naturally, without mental efforts on the learner's part. Consequently, learning strategies reflect what happens in cases of instructed SLA, or, in Krashen's (1985) terminology, while learning (not acquiring subconsciously) the target language. On the other hand, research on communication strategies does not take acquisition into consideration, but aims to find out how learners manage to solve their problems in certain situations.

Although language learning strategies have always been recognized, there is a limited

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amount of research on different ways of learner training in strategy employment. Strategy formation depends not only on the availability of unintended stimulus-relevant information but also on the provision of discrete training about performance. Effective strategy application may be continually refined with explicit training of the learners' performance until it becomes almost automatic, requiring little in the way of conscious thought.

Regarding the effectiveness of teaching strategies, teachers are given the responsibility to draw classroom learners' attention to strategies by making them more salient. However, the major question to be addressed is to what degree this attention toward the effective strategy application should be explicit. The present study has focused on the effects of training, provided in different ways, to investigate the learners' opportunities in promoting and internalizing the cognitive strategy.

### **Learning strategies**

Learning strategies – or as they are more recently labelled learner strategies (McDonough, 1999, 2) – are steps taken by students to enhance their own learning. In Oxford's (1990) definition, "*...learning strategies are operations employed by the learner to make learning easier, faster, more enjoyable, more self-directed, more effective, and more transferable to new situations*" (Oxford, 1990, 8).

In Cook's (1993) view, the concept of learning strategies "*...goes against the belief that the language knowledge differs from other forms of knowledge...*" (Cook, 1993, 136). He argues that there is an inherent contradiction between learning strategy research and linguistics, because whatever the strategies might be, they should be language learning strategies, not general learning strategies, as language knowledge differs from other types of knowledge.

Two taxonomies will be shortly examined from the point of view of what learning strategies they identify, and which of these are relevant for students in FLL contexts.

O'Malley and Chamot (1990) differentiated between three types of learning strategies:

- metacognitive strategies;
- cognitive strategies; and
- social mediation strategies.

Metacognitive strategies are about learning rather than learning strategies themselves. Cognitive strategies "*...operate directly on incoming information, manipulating it in ways that enhance learning*"; whereas social mediation strategies, or social/affective strategies, represent a broad group that involves either interaction with another person or control over affect (O'Malley & Chamot, 1990, 44-45).

The other system of learning strategies was developed by Oxford (1990), in which she identified two broad types:

- direct strategies, and
- indirect strategies.

The direct class is composed of memory strategies for remembering and retrieving new information, cognitive strategies for understanding and producing the language, and compensation strategies for using the language despite knowledge gaps. Indirect strategies include metacognitive strategies for coordinating the learning process, affective strategies for regulating emotions, and social strategies for learning with others. These two types are further divided into six general kinds of learning strategies, resulting in 19 sets of learning strategies (Oxford, 1990, 14-22). As this system is more comprehensible than the one suggested by O'Malley and Chamot (1990), further explorations will be based on this source.

Oxford (1990) divides indirect strategies into three groups:

- metacognitive, or planning/evaluating strategies, such as paying attention, consciously

searching for practice opportunities, planning for language tasks, self-evaluating one's progress and monitoring errors;

- affective, or emotional/motivational strategies, such as anxiety reduction, self-encouragement, and self-reward; and
- social strategies, such as asking questions, cooperating with native speakers of the target language, and becoming culturally aware.

On the other hand, direct strategies are divided into the following three groups:

- memory strategies, such as grouping, imagery, rhyming, and structured reviewing;
- cognitive strategies, such as reasoning, analysing, summarizing, and general practicing;
- compensation strategies, such as guessing meanings from the context in reading and listening, and using synonyms and gestures to convey meaning when the precise expression is not known.

Some of these strategies may emerge in the classroom naturally, but most need to be developed through effective instruction and training. First, planning/ evaluation strategies will be considered. The most important finding of the research on motivation in child FLL (Nikolov, 1999a) suggests that learners will not pay attention unless classroom activities capture their attention. They are unable to centre their own learning, but if they are involved in decision making in a training program, they will gradually develop this strategy. Similarly, learners can be involved in self-evaluation successfully. As for monitoring errors, learners can become conscious of their errors gradually, but error treatment techniques should encourage self-correction. If performance is perceived as process rather than product, learners can develop their use of monitor "*by feel*" successfully.

According to Oxford (1990), emotional/motivational strategies consist of anxiety reduction, self-encouragement and self-reward. With learners, these strategies first come from the teacher and learners can develop responsibility for them. Initially, the teacher is responsible for a relaxed atmosphere in the class, encouragement and evaluative feedback for children, but if children are involved in these processes, they will become conscious of them and employ these strategies successfully. Knowledge in itself as an aim of language learning represents the type of self-reward this strategy involves. One particular aspect of emotional learning strategies is related to the use of laughter (Oxford, 1990, 21). Learning can be fun with the help of playful activities and humour, as they lower anxiety. Learners also try to be witty in the target language and use humour for involving and impressing peers, as was found in the emergence of creative language use (Nikolov, 1995). In this sense, emotional/motivational strategies overlap with social ones.

Social strategies involve asking questions, cooperating and empathizing with others, and becoming culturally aware. Learners often ask for clarification and verification, but the focus of this strategy tends to be meaning rather than form. Cooperation with peers is most frequently encouraged with the help of pair work and group work.

The role of the teacher is very special in FLL contexts, as cooperating with the teacher substitutes the aspect of cooperating with native speakers in Oxford's model (1990, 21) and in the SLA theory proposed by Wong Fillmore (1991). Learners accept the teacher as a model; therefore, the teacher is responsible for the training of the learners to use their resources in the process of language learning in the best, appropriate way.

Memory strategies are so important in student FLL that some educators place them in the center of their program. Recent findings in neurolinguistics support the holistic approach, in which both hemispheres are involved in language learning.

Cognitive strategies are typically found to be the most popular strategies with language learners (Oxford, 1990, 43). The importance of cognitive strategies increases with the age of

children in FLL. Learners need to be provided with appropriate ways of instruction to use this strategy as efficiently as possible.

Compensation strategies are as important as the other strategy categories and demand special attention on the part of the teacher to prepare learners to employ them appropriately.

Hsiao and Oxford (2002) believed in the teachability of strategies and argued that strategy training would be more effective if students carry out the tasks which require them to apply strategies explicitly.

There have been numerous studies by researchers which have drawn on the effects of group work, a more learner-centered, and cooperative learning for the strategy instruction purposes (Bejarano, Levine, Olshtain & Steiner, 1997; Dörnyei & Malderez, 1997; Naughton, 2006; Lam, 2009). Dörnyei and Malderez (1997) have emphasized the role of group dynamics in understanding the complicated nature of the classroom. The learner group, according to Dörnyei and Malderez (1997), is a powerful entity whose characteristics have a major impact on the productivity of learning. Oxford, Cho, Leung and Kim (2004) found positive effects of task-based strategy instruction on language learning.

An interesting study by Holunga (1995), cited in Swain (2000), was conducted to investigate the role of metacognitive strategy training on the accurate use of the verb forms as generated by advanced adult learners of English. The strategies consisted of predicting, planning, monitoring, and evaluating. Holunga employed three instructional conditions: the metacognitive instruction with communicative practice, the metacognitive instruction with communicative practice and with verbalization, and communicative practice alone. Results obtained indicated that whereas the first and the third groups focused primarily on the message conveyance, the second group focused on both the message content and the verb form.

### **Research questions**

In line with the different researches done in this area and in order to understand whether the explicit training can affect the performance of Iranian EFL learners in reading comprehension, the following research questions were proposed:

1. Does strategy instruction in EFL reading affect EFL cognitive strategies employed by advanced Iranian EFL students and their reading comprehension scores in English?
2. Is there any difference between learners' gender and the effectiveness of the provision of explicit training on strategy use?

### **METHOD**

#### **Participants**

3 classes of advanced level students in a language center in Tehran acted as participants. Each class consisted of 20 male and female students. One experimental group (10 female, 10 male) was exposed to the explicit training only condition, the other experimental group (13 female, 7 male) received the explicit training plus a requirement to verbalize the strategies, and a third group (14 female, 6 male) was in a control condition with no strategy training. The test of TOEFL was used to assess the learners' proficiency level and it was found that learners were of the similar level of proficiency (advanced).

#### **Instrumentation**

The first instrument used in this study was the TOEFL Preparation Kit (2003). The test consisted of 5 passages each followed by 10 questions. The reading comprehension questions required the learners to provide answers to the questions related to the text. The questions following the texts required the subjects to employ cognitive strategies including inference

strategy, summarization strategy and deductive reasoning strategy.

The participants were also asked to complete an open-ended questionnaire regarding the effectiveness of the training program. The questionnaire was adopted from Soonthornmanee (2002) and was slightly modified in line with the purpose of the present study (see below).

### Procedure

The students in the experimental and control groups followed the same advanced, 40-hour EFL course, based on the course book *Interchange: Student's book 3* (Richards, Hull, & Proctor, 2005). They attended classes twice a week for 2 hours each day as part of a 40-hour course. In the experimental groups, 10 hours of the course were dedicated to strategy training. For the two experimental groups, five reading passages of appropriate reading level were selected. The participants in the experimental group with the explicit training only condition, including both female and male learners, were instructed to use the cognitive strategies while engaged in classroom reading activities. The other experimental group received an explicit instruction of the use of strategies and subsequently was asked to practice verbalizing the learned strategies. In the control group, this time was allocated to the untutored reading comprehension work with the same passages used in the experimental groups.

Both the control and experimental groups were then asked to answer the questions in the TOEFL test regarding their use of strategies during the task.

On the last day of the term, both the experimental and control group participants were asked to self-assess their progress and development during the semester. They were told to write answers to the following questions (adopted from Soonthornmanee, 2002):

1. What do you think about the strategy training method?
2. Do you think this method can help you improve reading? Why or why not?
3. Do you think your reading ability has improved over the semester? Why or why not?
4. What do you like most about this method?
5. What do you dislike most?

### Results

Parametric statistical tests were used throughout the data analysis, using analyses of variance (ANOVA) and independent samples t-test, to test the research questions. Table 1 presents the descriptive statistics of the participants' test scores and strategy use in three different conditions.

**Table 1.** Descriptive Statistics for Cognitive Strategy Use by the Experimental and Control Groups

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
control	20	22.30	7.533	1.684	18.77	25.83
exp.1	20	29.90	5.300	1.185	27.42	32.38
exp.2	20	40.65	5.887	1.316	37.89	43.41
Total	60	30.95	9.804	1.266	28.42	33.48

*Note.* exp. 1=experimental group with the explicit training only condition; exp. 2=experimental group with the explicit training plus a verbalization requirement

Regarding the standard deviation and mean score of three sets of scores, the experimental group that received the cognitive strategy instruction and was required to verbalize the used and learned strategies has a higher value compared with those of the other experimental group with

the instruction only condition and the control group. In order to find out whether there is a difference between these three groups of participants in terms of cognitive strategy use, an analysis of variance (ANOVA) was performed. Table 2 provides ANOVA results of the cognitive strategies used by the participants.

**Table 2.** ANOVA Results for Cognitive Strategy Differences across the Experimental and Control Groups

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3400.300	2	1700.150	42.681	.000
Within Groups	2270.550	57	39.834		
Total	5670.850	59			

As table 2 shows, preferences for cognitive strategy use differed significantly across the three groups of participants ( $F=42.681$ ,  $p=0.000$ ). To determine where the specific differences lay, the Tukey post-hoc test was employed. The results are shown in table 3.

**Table 3.** Tukey Test Results for Cognitive Strategies

groups	N	Subset for alpha=0.05		
		1	2	3
control	20	22.30		
exp.1	20		29.90	
exp.2	20			40.65
Sig.		1.000	1.000	1.000

*Means for groups in homogeneous subsets are displayed.*

*a. Uses Harmonic Mean Sample Size=20.000.*

*Note.* exp. 1=experimental group with the explicit training only condition; exp. 2=experimental group with the explicit training plus a verbalization requirement

The Tukey post-hoc test shows that there are significant differences between all the three groups. The control group ( $M=22.30$ , 95% CI) and the experimental group with verbalization requirement ( $M=40.65$ , 95% CI) are different in that the experimental group gave significantly higher preference ratings for the use of cognitive strategies than the control group. Similarly, the comparisons between the experimental group with no verbalization requirement ( $M=29.90$ , 95% CI) and the control group ( $M=22.30$ , 95% CI) are statistically significant at  $p < 0.05$ . The two experimental groups are also different in their cognitive strategy preferences at  $p < 0.05$ .

In order to investigate the cognitive strategy use of three groups of participants across the factor of gender, an independent samples t-test was conducted. Firstly, table 4 reports the descriptive statistics.

**Table 4.** Descriptive Statistics for Cognitive Strategy Use across Gender

	v1	N	Mean	Std. Deviation	Std. Error Mean
scores	male	23	30.69	9.525	1.769
	female	37	31.19	10.209	1.834

As shown in Table 4, there are no significant mean differences between the male and female participants' scores. The results of an independent samples t-test also signify the same finding. The results are shown in table 5.

**Table 5.** Independent Samples T-test Results for Cognitive Strategy Use across Gender

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
scores	Equal variances assumed	.323	.572	-.197	58	.844	-.504	2.554	-5.616	4.608
	Equal variances not assumed			-.198	58.000	.844	-.504	2.548	-5.604	4.596

The results show that the significance level of Levene's test is  $p=.572$ , which means that the variances for the two groups (males and females) are the same. The results of t-test show that there is not a significant difference in the use of strategies by the male and female participants and the second null hypothesis is accepted ( $t(58)=-0.197$ ,  $p=0.844$ ). Therefore, the different pattern of strategy use for the three groups does not apply in relation to their gender, with each gender group showing preference in the same order. This finding is supported by the results obtained from descriptive analysis. The descriptive means show that there is not a difference between males and females in their use of strategies regarding the mean scores.

### Students' Perceptions and Self-Assessment

The findings from the questionnaire buttress the statistical analysis results. Although both of the experimental groups reported positive attitudes toward their better understanding of the reading texts, the experimental group participants who were required to verbalize the strategies, reported greater motivation and progress in their reading achievements. For those learners with the opportunity to engage in verbalization, appropriately implemented training program may be perfectly corrective, combining comprehension with a focus on 'pushed output' which encourages them to process material syntactically, 'stretch' their interlanguage, and thus gain a genuine command of previously learned strategies. The following sample entry from one of the participants signifies this conclusion:

*"The thing I liked most about my teacher's correction of my mistakes in reading is that I felt like I was able to read the texts more rapidly and that the end result was not disappointing... contrary to my previous experiences, I managed to answer most of the questions correctly. This*

*was especially motivating because I have had the chance to practice many ways of reading a text in more effective ways.”*

Although the participants in the experimental group with no verbalization requirement also asserted their progress compared with their previous reading comprehension abilities, they appeared to be slightly less satisfied with the training because they were not given an opportunity to practice the strategies by themselves. This means that learning the strategies does not matter so much if one does not have the opportunity to put them into practice and receive corrective feedback and help, as it is suggested by the Output Hypothesis (Swain, 2000).

Participants of the control group reported that their reading ability was the same as before. This finding was expectable, however, since these subjects were deprived from the opportunity to learn the strategies and to put them into practice.

### **Conclusion**

This study had the purpose of examining the effect of teacher's explicit training on learners' cognitive strategy use and their improvement in the strategy employment. It has been found that the training provided by the teacher contributes to the FLL process, and learners' awareness of the accurate use of the cognitive strategy increases. The results suggest that teachers' explicit instruction and assistance of learners' strategy use during a particular activity are linked with the learners' overall achievement and effective use of strategies. Although instruction is accompanied with positive effects of increasing learner awareness about strategy application, the results are more promising if the learners are asked to provide explicit verbalizations of the strategies which they have learned. In this sense, the results of the present study are in line with Swain's (2000) research on collaborative dialoguing. It suggests that if strategy instruction involves verbalizing the strategies employed, it can be effective. Swain (2000) defined collaborative dialoguing as a "dialogue in which speakers are engaged in problem solving and knowledge building" (102). Knowledge building is the epiphenomena of the learners' saying and responding to what is said. This knowledge building, then, can be achieved by the teacher's explicit training of the learners and requiring them to verbalize the strategies. In the present case, the more the teacher provided explicit training on learners' strategy use and required their verbalization, the more the learners were motivated to use them effectively. The reason can be explained as because learners may not be aware of the strategies in how they can help them achieve success in the process of language learning, explicit instruction and training on how to use the strategies more effectively in an explicit format promoted their learning.

Another finding of this study was concerned with the gender of language learners and their strategy use. The results indicated that there were no differences between male and female participants. The results imply that it is important for instructors to enhance the strategic awareness of both genders, because it may lead to more active engagement in language learning process. Further research is needed in piloting similar activities with other groups of learners and teachers both in Iran and with learners of different first languages studying other target languages. At the risk of sounding repetitive, however, one must acknowledge that there has been an element of explicitness in the effective instruction programs carried out.

To sum up, although students seem to rely on naturalistic processes in the acquisition of the target language, instruction and social processes also contribute. These findings provide support to Wong Fillmore's (1991) model of child SLA, in which social, linguistic and cognitive processes interact with one another. Therefore, it is critical for the teachers to help their students become self-directed and effective language learners by integrating language learning strategy instruction into regular language lessons.

The findings offer further implications for the classroom: both naturalistic processes and the



teacher instruction play a crucial role in language learning, and this role should be exploited to the learners' benefit. Also, FLL involves more than the acquisition of the target language, as learners' develop cognitively, socially and linguistically at the same time.

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