

Metacognitive Strategies and Reading Comprehension Enhancement in Iranian Intermediate EFL Setting

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Abstract

This study examined the relationship between metacognitive strategy instruction and reading comprehension enhancement. Metacognitive strategies are something potentially important in learning a foreign language (Larsen Freeman 1991). In this study, an attempt is made to investigate the effects of metacognitive strategies on enhancing reading comprehension in Iranian intermediate learners of English. For this purpose, 70 English major students studying at Isfahan Payam-Noor University were invited to take part in a reading comprehension TOEFL test (2007 version) to homogenize them then a total number of 40 participants whose scores were within the range of one standard deviation below and above the mean were divided into two groups of experimental and control. Participants in experimental group received twelve sessions of two hour classes, every other week, on reading comprehension instruction as well as metacognitive strategies while the control group remained intact and the regular process of reading instructions went on. In order to see if there was a significant

difference between the participants' attitudes toward metacognitive strategies before and after the treatment an attitude questionnaire was administered to the experimental group and the subjects were asked to fill it. Then after the treatment both groups received an immediate test as post-test and the experimental group took the second post-test as the delayed recall test with the same design as the pre-test. The result indicates that there was a significant difference between the two groups and the participants in experimental group outperformed those in control group.

Keywords: Metacognitive strategies, Reading comprehension, Learning strategies

1. Introduction

The recent development of English in educational contexts in Iran has called for more investigation on different skills of this language. Reading comprehension is regarded as an influential activity through which learners can be exposed to language input (Laufer, 2010). The current understanding of reading strategies, as one of the important facets of reading skill, has been shaped significantly by research on what expert readers do (Bazerman, 1985; Pressley & Afflerbach, 1995). These studies show that successful reading comprehension does not occur automatically; rather, it depends on direct cognitive efforts, called metacognitive processing which consists of knowledge about cognition and regulation of cognitive processes (Bazerman, et al, 1985). The ability to read and understand efficiently is one of the crucial factors in achieving advanced level of proficiency in reading. This is considered as one of the pivotal aims and objectives of education and a major prerequisite for learning; both in and out of the context of formal education (Boulware – Gooden, et al, 2007).

During reading comprehension, "metacognitive processing is expressed through strategies, which are procedural, purposeful, effortful, willful and essential, and facilitative" (Alexander & Jetton 2000). Since reading comprehension plays an important role in EFL contexts, it seems to be necessary to train learners to become proficient readers. In order to have an overview related to training the learners to be more successful, Brown and Palincsar (1984) developed a training method which involved four concrete reading strategies: summarizing, questioning, clarifying and predicting. As it was mentioned earlier the purpose of the present research is to see if metacognitive strategies have significant influence on enhancing reading comprehension in Iranian intermediate EFL learners.

2. Theoretical Background

Flavell (1976), as the pioneer in metacognitive researches, defined "metacognition as individual's knowledge concerning one's own cognitive processes and products or anything related to them". He suggests that metacognition includes the active monitoring and consequent relation and orchestration of information processing activities (Flavell, 1976, cited in Ferial Kobuk). Baird (1990) asserts that metacognition refers to the knowledge, awareness and control of one's own learning. Metacognition development can be described as a development in one's metacognitive abilities, i.e., the move to greater knowledge, awareness and control of one's learning, Flavell (1979) and Baird (1990).

There seems to be no agreement on an exact definition of metacognition. Some researchers (such as Flavell, 1979; Veenman, 1993; O'Neill and Abedi, 1996; Kuhn, 2000) claim that metacognition has two components; the learners self awareness of a knowledge base in which information is stored about how, when and where to use various cognitive strategies and their self awareness of and access to strategies that direct learning so the learners' awareness and self controlling are developmental and lies on a linear process, this interpretation is almost similar to Brown (1987). While others, including Samuels et al. (2005) acknowledge that related with personal cognitive processes there are three factors that constitute the notion of metacognition; the nature of the task that learners are expected to carry out; various

approaches to achieve it under different circumstances; and strategies that enable learners to monitor and regulate their cognitive processes.

Due to the amount of applying metacognitive strategies, readers can be divided into two groups; skilled readers and unskilled ones, Pressley & Afflerbach (1995). Skilled readers use one or more metacognitive strategies to comprehend the texts efficiently and to improve their ability in this regard. Some researchers including, Pressley & Afflerbach (1995) classified the readers as skillful readers versus unskillful ones and the way they use their characteristics as well as exploiting metacognitive strategies may have influence on learning procedures. Poor readers are less aware of effective strategies and of the counterproductive effects of poor strategies, and are less effective in their monitoring activities during reading. Brown and Palincsar (1985) suggested that an effective reading instruction program should require the identification of complementary strategies that are modeled by an expert and acquired by the learner in a context reinforcing the usefulness of such strategies. Unskilled readers can become skilled readers and learners of whole text if they are given instruction in effective strategies and taught to monitor and check their comprehension while reading with respect to this point, Al Melhi (2000) has found that some differences do exist between skilled and less skilled readers in terms of their actual and reported reading strategies, their use of global reading strategies (such as underlining, guessing, reading twice), their metacognitive awareness, their perception of a good reader, and their self-confidence as readers. Training in metacognitive language learning strategies help learners develop their reading skills and raise their language proficiency levels (Palincsar, 1986; Green & Oxford, 1995; Carrell, Gajdusek & Wise, 1998).

A vast amount of research in the first reading and reading strategies has found that good readers are better at monitoring their comprehension than the poor readers, that they are more aware of the strategies they use than the poor ones, and that they use strategies more flexibly and efficiently (Garner, 1987; Pressley, Beared, EL-Dinnary, & Brown, 1995, to name just a few). Good readers distinguish between important information and details as they read and are able to use in the text to anticipate information and / or relate new information to information already stated. They are also able to notice inconsistencies in a text and employ strategies to make these inconsistencies understandable (Baker & Brown, 1984; Garner, 1980). Among researchers Pintrich, Walter and Baxter (2000) claim that there are three main components of metacognition; a) metacognitive knowledge, b) metacognitive monitoring, c) self regulation and control. Wine and Hadwin (1998) suggest another model of metacognitive strategies which consist of four basic stages; task definition, goal definition, planning, enactment and adaptation. According to this model they claim that the learners generate a perception of what the task is, and the available resources, and they construct a plan for addressing the task, exact study strategies and make changes to their own cognitive structure based on perception of their performance. The present studies on reading strategies have been shaped significantly by research on what expert readers do (Bazerman, 1985; Pressley & Afflerbach, 1995). These studies demonstrate that successful comprehension does not occur automatically, i.e. being a successful reader is not a matter of chance and some happenings, rather it depends on directed cognitive efforts, referred to as metacognitive processing, which

consists of knowledge about cognition and regulation of these cognitive processes.(Alexander & Jetton ,2000) assert that during reading, metacognitive processing is expressed through strategies which are " procedural, purposeful, effortful, willful, essential, and facilitative in nature"(p.295) and the reader must purposefully, willfully or intentionally invoke strategies and does so to regulate and enhance learning form text. Through metacognitive strategies, a reader allocates significant attention controlling, monitoring, and evaluating the reading process (Pressley, 2000; Pressley et al., 1995). The learners' attitude toward metacognitive strategies usage has a crucial role in learning processes, as Robert Gardner and his Colleagues carried a program of research on the relationship between learners' attitudes toward SL/FL learning and its community and success in SL learning (cited in Lightbown & Spada, 1987).

It is difficult to know obviously whether positive attitudes produce successful learning or successful learning engenders positive attitudes, or whether both are affected by other factors. Reyner, et.al (1991) believe that reading comprehension is defined as the level of understanding of a text. This understanding as they claim comes from the interaction between the words that are written and how they trigger knowledge outside the text.

2.1 Purpose of the Present Study

This study aims to explore into the importance of effective ways to enhance reading comprehension in Iranian intermediate EFL learners through administering metacognitive strategies to the participants who voluntarily took part in the experiments. This study implicitly tries to help both the teachers to choose the best strategies to work on in various classes considering individual differences and the students to see that they can be successful readers on the condition of applying appropriate strategies and to see that unsuccessful learners can improve their learning by being trained to use effective strategies (Dancewear 1985, Weinstein & Underwood 1985)

As mentioned earlier, a considerable amount of research has focused on the relationship between reading comprehension and metacognitive strategy application and its role in academic achievement. This research is conducted to find out answers to the following questions:

Q1: Does metacognitive strategy instruction enhance reading ability of intermediate EFL learners?

Q2: Is there any significant difference between Iranian intermediate EFL learners' reading comprehension ability in immediate and delayed recall tests?

Q3: Is there any difference between learners' attitude before and after the application of metacognitive strategies?

3. Method

3.1 Participants

The population from which the participants have been selected for this study included all EFL learners whose first language was Persian and had not yet been to an English speaking country. Initially a sample of 70 people participated in this study, comprised of 34 male (48.5%) and 36 female (51.5%) whose age ranges between 19 and 24. All of the participants were undergraduate students attending as English major in Isfahan Payam Nour University.

3.2 Instruments

In this study, the following instruments were applied:

- The bio-data questionnaire: This questionnaire was designed so as to get information about participants' background knowledge which contained different questions about their age, native language, if they had been in an English speaking country, as well as some questions about the amount of time they spend on reading and the kind of materials they choose to read. The rationale behind this questionnaire was to make sure that the participants did not much differ in terms of their background knowledge.
- The reading comprehension section of TOEFL test (2007 version): in the earlier stages of the study all the students were asked to take this test in order to homogenize their reading comprehension ability.
- The pre/post test: in order to measure participants' improvement of reading comprehension ability, one of the sample test including 30 items, related to progressive *Reading Unit* developed by Payam - Noor University at national wide Scale was used before the treatment.
- The immediate/delayed post test: in order to see the probable effects of applying metacognitive strategies on the participants' reading comprehension ability, another sample test with the same design as that of the pretest was used after the experiment.
- To find out the use of metacognitive strategies, the participants received strategy inventory for language learning (SILL) questionnaire and reading comprehension of the groups.
- The attitude questionnaire was given to participants before and after the treatment phase to see if there is any difference in participants' attitude before and after the application of metacognitive strategies.

3.3 Procedure

After the selection of the participants, they were assigned into two groups, as experimental and control group, with twenty in each group. The experimental group received 12 sessions of a 90 minute reading comprehension instruction class as well as teaching metacognitive strategies, while the latter group followed the routine method for reading. In the experimental

group, the participants were taught the following three metacognitive strategies and they were asked to apply them to the passages.

The strategies taught were as follows:

- ✓ Using strengths: while reading, I exploit my personal strengths in order to better understand the text.
- ✓ Inferring meaning (through word analysis or other strategies): while I am reading, I try to determine the meaning of unknown words that seem critical to the meaning of the text.
- ✓ Distinguishing: As I am reading, I distinguish between information that I already know and new information.

It is believed that metacognitive strategies have their best effects if students are aware of other strategies that are available to them at the beginning of the course (O'Malley & Chamot, 1990).

After the treatment both groups received strategy inventory for language learning (SILL) questionnaire to see the use of metacognitive strategies and their effect on enhancing reading comprehension. Moreover the experimental group received the attitude questionnaire to investigate if their attitudes have been changed before and after the treatment. Immediately at the end of the treatment a reading test with the same design as that of the pre t-test was given to the participants in the two groups, as the immediate post-test, to measure their reading comprehension improvement. The experimental group received an additional post –test as the delayed test two weeks after the immediate post-test. The pretest, posttests, i.e., immediate and delayed recall tests and the attitude questionnaire were analyzed by utilizing SPSS. To examine the normality of the distribution, descriptive statistics was employed and the means obtained from the C/E group were compared through a t-test.

4. Results

To accept or reject the aforementioned questions, the data gained through the administration of the various tests as well as the data of the questionnaire were analyzed by SPSS program. The necessary approaches, that is, qualitative and quantitative ones, were applied to evaluate the three research questions. The raw data obtained from the pre/post tests were given to SPSS program to process the information and the subsequent computation was made. Hence the following information based on each research questions obtained

Descriptive Statistics

	N	Mean	Std. Deviation
Control	20	22.0000	1.65434
Experimental	20	23.6000	1.35336
Valid N (list wise)	20		

Table 4.1. Descriptive Statistics of control and experimental groups

Table 4.1 Shows the descriptive statistics of the participants' mean scores across on the control and experimental groups. It can be seen in the above table that the difference between mean scores for the two groups is 1.6 (mean =22 & 23.6).

4.1 The Results of the First Research Question

The first question was:

Q1: Does metacognitive strategy instruction enhance reading ability of intermediate EFL learners?

In order to test the above question, an independent sample t-test was conducted to reading comprehension test scores for the control and experimental groups. The following table clarifies both descriptive and inferential statistics on pre/post tests.

Group Statistics

		N	Mean	Std. Deviation	Std. Error Mean
scores	without instruction	20	22.0000	1.65434	.36992
	with instruction	20	23.6000	1.35336	.30262

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
									Lower	Upper
scores	Equal variances assumed	.620	.436	-3.348	38	.002	-1.60000	.47793	-2.56753	-.63247
	Equal variances not assumed			-3.348	36.564	.002	-1.60000	.47793	-2.56878	-.63122

Table 4.2. Descriptive statistics of pre and post tests in control and experimental groups

Table 4.3. Independent Samples Test of control and experimental groups

In the independent samples t-tests, the result of Levene's test for the equality of variance is present (Table 4-3). Levene's test shows whether the variance of scores for the C/E groups is the same or not. The Sig-value of the Levene's test is .436 which is more than .05, so in table 4-3 the second row of the table which refers to Equal variances not assumed should be used. Under the title of t-test for Equality of means, the column labeled "Sig" (2-tailed) signifies the value of .002 which shows that there is significant difference in the performance of control (M=22, SD=1.65) and experimental (M=23.6, SD=1.35) groups pre/posttests reading comprehension scores (Table 4 .2). In spite of the fact that the difference between the mean score of the two groups is very close, Since the Sig value is lesser than .05, i.e. .002 so metacognitive strategy instruction enhances reading ability of intermediate EFL learners.

4.1.1 The results of the Second Question

The second question as it was mentioned earlier was:

Q2. Is there significant difference between Iranian intermediate EFL learners' reading comprehension ability in immediate and delayed recall tests?

To test the second question closely, a paired samples t-test was run to make a comparison between the mean score of experimental group in the two different cases (i.e. immediate and delayed recall tests). (Table 4.4)

Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 Immediate	26.1500	20	2.68083	.59945
Delayed	26.0000	20	2.86540	.64072

Table 4.4. Descriptive Statistics of immediate and delayed post-test

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 immediate - delay	.15000	1.08942	.24360	-.35987	.65987	.616	19	.545

Table 4.5. Paired Samples test of immediate and delayed posttest

In the paired samples t-test, the last column called "Sig", the probability value is .545 which is more than .05 so it can be concluded that the difference between immediate (Mean=26.15, SD=2.68) and delayed (Mean =26, SD=2.86), $t(616), p < .545$ was not significant, i.e., there is no significant difference between Iranian intermediate EFL learners' reading comprehension ability in immediate and delayed recall test.

4.1.2 The results of the Third question

The last question of the research was:

Q3. Is there any difference between learners' attitudes before and after the application of metacognitive strategies?

In order to test the accuracy of the last question, a paired samples t-test was conducted to compare participants' attitudes toward the application of metacognitive strategies before and after the treatment (Table 4.6).

Table 4.6 Descriptive statistics for participants' attitude

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Anxious before	1.5500	20	.51042	.11413
	Anxious after	1.8500	20	.36635	.08192
Pair 2	Sure before	1.5000	20	.51299	.11471
	Sure after	1.7500	20	.44426	.09934
Pair 3	Enjoy before	1.6500	20	.48936	.10942
	Enjoy after	1.9000	20	.30779	.06882
Pair 4	Advantage before	1.7500	20	.44426	.09934
	Advantage after	2.0000	20	.00000	.00000
Pair 5	Knowledge before	1.7000	20	.47016	.10513
	Knowledge after	1.8000	20	.41039	.09177
Pair 6	Personality before	1.8000	20	.41039	.09177
	Personality after	1.9500	20	.22361	.05000
Pair 7	Ability before	1.7500	20	.44426	.09934
	Ability after	1.9500	20	.22361	.05000
Pair 8	Reading before	1.5000	20	.51299	.11471
	Reading after	1.6000	20	.50262	.11239

Paired Samples Test								
	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 anxiousbefore - anxiousafter	-.30000	.65695	.14690	-.60746	.00746	-2.042	19	.055
Pair 2 surebefore - sureafter	-.25000	.78640	.17584	-.61805	.11805	-1.422	19	.171
Pair 3 enjoybefore - enjoyaft	-.25000	.55012	.12301	-.50746	.00746	-2.032	19	.056
Pair 4 advantagebefore - advantageafter	-.25000	.44426	.09934	-.45792	-.04208	-2.517	19	.021
Pair 5 knowledgebefore - knowledgeafter	-.10000	.55251	.12354	-.35858	.15858	-.809	19	.428
Pair 6 personalitybefore - personalityafter	-.15000	.36635	.08192	-.32146	.02146	-1.831	19	.083
Pair 7 abilitybefore - abilityaf	-.20000	.52315	.11698	-.44484	.04484	-1.710	19	.104
Pair 8 readingbefore - readingafter	-.10000	.71818	.16059	-.43612	.23612	-.623	19	.541

Considering all the points and the statistical information represented in the tables above, the third question stating that "Is there any difference between learner's attitudes toward the application of metacognitive strategies before and after the treatment?" We came to the conclusion that there is no significant difference between the participants' attitudes before and after metacognitive strategy instruction.

5. Discussion

5.1 Metacognitive strategy application and reading comprehension enhancement

The first research question was based on the differences in the performance of the experimental and control groups on reading comprehension. In response to this question, an independent samples t-test was conducted to analyze the data. The results showed that participants in the experimental group outperformed the participants in the control group.

As it was mentioned earlier, the main objective of this study was to find out whether or not the application of metacognitive strategies can have any positive effect on reading comprehension of Iranian intermediate EFL learners.

Reading comprehension is defined as the level of understanding of a text which comes from the interaction between the words that are written and how they trigger knowledge outside the text. It would be difficult, if not impossible, to learn a foreign language without learning this skill. The role of this skill is so important that among other teaching methodologies you can find reading method as one of the topics of debates for some time. All ESL teachers as well as EFL teachers admit that reading comprehension is an inseparable part of language learning and teaching. According to Laufer (2010) reading comprehension is regarded as an influential activity through which learners can be exposed to language input. As a matter of fact the more skillful the learner is, the better he can grasp the gist of the text. The t-test between scores of the groups under the experiments, i.e., the control and the experimental groups, revealed that there was significant difference between the participants who were being exposed to metacognitive strategy instruction.

As the results of this study show metacognitive strategy instruction has a positive impact on the desirable noticing of strategy use in terms of awareness-raising. It is worth paying attention that metacognitive strategy instruction helps the EFL learners to overcome their difficulties in reading comprehension and provide the participants with a means to help them improve their reading comprehension. It may also be desirable to plan for metacognitive instruction with a view to raise its effectiveness in the language classes.

5.2 The Participants Response toward Immediate and Delayed Recall Tests

The second research question addresses on the difference between Iranian intermediate EFL learners' reading comprehension ability in immediate and delayed recall tests. To answer this question, a paired samples t-tests was conducted to analyze the data obtained. The results showed that there is no significant difference in participants' performance regarding the effect of metacognitive strategy instruction in immediate and delayed recall tests.

5.3 Students' Attitudes toward the Metacognitive Strategy Instruction

The third question focuses on the participants' attitudes toward the application of metacognitive strategies in reading comprehension. To answer this question a paired samples t-tests was conducted. The results of the paired-samples t-tests showed that there were not significant differences on the participants' attitudes toward the use of metacognitive strategies from time one (before the treatment) to time two (after the treatment). Although the participants hesitated whether they prefer metacognitive strategy instruction before the treatment, they changed their opinions during the treatment phase and chose learning English by the use of metacognitive strategies.

6. Conclusion

The purpose of this study was to see the effects of metacognitive strategy instruction on Iranian intermediate reading comprehension. The effects of metacognitive strategies on immediate and delayed recall tests of participants as well as their attitudes toward applying metacognitive strategies in reading comprehension in classroom setting were also tested. The theoretical foundation of the study reveals a good amount of the previous researches done about the application of learning strategies on learning a foreign language. According to the insights from the works done before (on this domain), we assume that metacognitive strategy use leads to better understanding and more successful reading. The inevitability of the importance of reading comprehension in Iranian University students majoring English reveals that it would be beneficial if they were introduced metacognitive strategies to help them improve their reading comprehension. If students tried to exploit the learning styles and the strategies aforementioned discussed, they could help themselves enhance their reading comprehension ability more easily. The findings of this study support this assumption and imply more attention in this crucial skill. The findings also imply that not only at the level being studied but at the other levels it seems to be beneficial to encourage the participants to apply metacognitive strategies.

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