The Effect of Awareness Raising Through Metacognitive Strategy-based Instruction on ESP Learners' Reading Comprehension

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Abstract

The present study was an attempt to investigate the effect of meta-cognitive strategy (planning, self-monitoring) awareness raising instruction on reading comprehension of Iranian ESP learners. Participants of three groups each comprising of 21 Iranian male students studying "Civil Engineering" in "Islamic Azad University of Buin Zahra" were selected and assigned to three groups: two experimental groups (group A, and B) and one control group (group C). To meet the aim of the study, two reading comprehension tests were administered to the participants in three groups. In the first phase, a reading comprehension was administered as a pre-test. In the second phase, two experimental groups received five sessions of instruction on planning and self-monitoring awareness raising strategies on the Cognitive Academic Language Learning Approach (CALLA) and control group received no training. In the third phase, after completion of the instruction, a reading comprehension test as a post-test was administered to the groups. The findings indicated that the participants in two experimental groups outperformed the control group in the post-test of reading comprehension. It is concluded that the instruction of planning and self-monitoring metacognitive strategies as learning aids can lead to the improvement of students' reading comprehension performance.

Keywords: awareness-raising, metacognitive, reading strategy, planning, self-monitoring, reading comprehension.

Introduction

Reading comprehension could be considered as the most basic skill for second language learners, especially for EFL learners. This claim is obviously demonstrated in Chastain (1988), who states, "Reading is an important component of learning a second language for various reasons," (p. 219). In some researchers' (e.g. Krashen, 1993 a & b) point of view, learning reading is equal to learning language; in other words, they claim that in order to learn (or acquire as they like to name it) a second language, reading a lot is needed. Krashen (1993b) introduces reading as a powerful instrument which can result in language acquisition. He promotes the theory that reading is the foundation of language education and paves the ground for increasing vocabulary and the abilities to read, write, spell, and comprehend. The approach teachers employ to teach reading to students depends on their functional definition of learning, language, and reading (Chastain, 1988). Nunan (2006) argues that, "reading is not something that every individual learns to do. An enormous amount of time, money and effort is spent on teaching reading in elementary and secondary schools around the world" (p. 249).

To explain the difficulties of L2 reading, it can be assumed that with poor L2 lexical and grammatical knowledge, L2 readers are not able to apply reading strategies and metacognitive knowledge they use in L1 reading. Gelderen et al. (2007, p. 47) eloquently show this issue: "Metaphorically speaking, L2-specific linguistic knowledge constitutes a threshold that has to be surpassed before L1 skills transfer to L2 performance and L1 and L2 reading become similar."

Previously, mastering the so called skills, i.e., speaking, listening, reading, and writing in general education at the primary and secondary levels was the main focus (Allen &Widdowson, 1974). In recent years, however, English for Specific Purposes (ESP) has emerged as a particular subdivision of general activity of Teaching of English to the Speakers of Other Languages. In this regard, language education deals with teaching General English (GE) which seems content independent or good for all learners. However, separating ESP from GE is a controversial issue. The opponents of this issue believe that specified lack of appreciated structural differences between Special English and General English has made such a separation. Furthermore, the proponents of this view consider ESP as a variation of GE which has samples taken from

subjects for specific purposes (Mackey & Mountford, 1978). In this regard, some specialists believe that ESP essentially serves the needs of non-native speakers of English. Therefore, it is one of the branches of teaching English as a foreign language. Hutchinson and Waters (1987, p.30) state "ESP is an approach to language teaching in which all decisions as to content and method are based on the learner's reason for learning". Categories of ESP may be classified as various academic Englishes, for example, English for science and technology, English for graduate teaching assistants, and General English for academic purposes, in addition to a number of occupational Englishes, for example, English for business, and vocational ESL. In this regard, the main purpose of this study is to find out the effect of metacognitive strategies-based instruction on the reading comprehension of students in ESP context of Iran.

Technological development in the modern world has turned the transfer of knowledge as a great concern. Traditionally, the most technologically advanced countries, which produce the largest amount of the materials in science, tried to shed more light on their language as main media and forced others to follow the trend. In the post-medieval world, English won the prize and became the language of science, and teaching the English of science became an extensive business. It is technically called EAP (English for academic purposes) or ESP (English for Specific Purposes). ESP as an enterprise involving education, training, and practice plays a major role in the world today. University students of English require reading a large number of academic texts in English; However, many of them entering university education are unable to read selectively, that is, specifying what is important for the purpose of reading and what is not (Benson, 1991). They often show inability to apply strategies needed to successfully comprehend expository texts. Also, they lack strategy comprehension in selecting effective and efficient strategies (Wood et al. 1998).

Important aspects of skilled reading involve strategic awareness and monitoring of the comprehension process (Sheorey & Mokhtari, 2001). Such awareness and monitoring is often referred to in the literature as "metacognition" which "entails knowledge of strategies for processing texts, the ability to monitor comprehension, and the ability to adjust strategies as needed" (Auerbach & Paxton, 1997: pp.240-1). Sheorey and Mokhtari (2001) believe that being conscious of the strategic reading processes and the actual

use of reading strategies draw a border line between skilled and unskilled readers. A cognitive view of reading submits that comprehension instruction requires teachers to provide students with appropriate situation to learn a set of strategies to use to comprehend a text with the goal of empowering a sense of conscious control, or metacognitive awareness so that they can use and adapt the strategies with any text they read (Dole, 2001). Accordingly, in the last two decades, comprehension instruction and reading-strategies instruction have joined. As noted by Grabe (2002), comprehension instruction now includes teaching students a set of strategies to use while they are trying to comprehend the main idea of the text. Pressley et al. (1988) found that students' reading comprehension was not enhanced by merely reading more texts. In a more recent study, Vogt and Nagano (2003) indicated that with reading strategy training, struggling readers often achieved noteworthy improvements in comprehension. Recent studies recognize the role of metacognitive strategies instruction in reading comprehension. Dhieb and Henia (2003) investigated reading processes of English as a foreign language/English for specific purposes (EFL/ESP) students with respect to research articles in their specialty area. This study aimed to indicate that the students who received strategy training would show enhanced declarative and procedural knowledge (as indicated by their higher scores and lower task-achievement timings) at the end of the course. Results provided evidence of the effectiveness of metacognitive strategy training in improving the subjects' proficiency in reading research articles. Dreyer and Nel (2003) also conducted research on strategic reading instruction in ESP context. The main purpose of the study was investigating the effect of strategic reading instruction on students' reading comprehension tests at the end of the course. The results indicated that students who received strategic reading instruction attained both statistically and practically significantly higher marks on the reading comprehension tests than the students in the control group did.

Although, as reviewed above, some studies have investigated the impact of metacognitive strategy use on the improvement of language skills, few of them have considered the difference between different types of metacognitive strategies and their effect on the improvement of learners' language skills. So, the present study was an attempt to investigate the effect of awareness raising through metacognitive strategy use on learners' reading comprehension

performance in ESP context. This study specifically focused on the effect of instructing two metacognitive strategies, that is, planning and self-monitoring on ESP learners' reading comprehension.

In this regard, the following research questions were formulated:

1. Does instruction of planning metacognitive strategy have any significant effect on ESP learners' reading comprehension?

2. Does instruction of self-monitoring metacognitive strategy have any significant effect on ESP learners' reading comprehension?

3. Is there any significant difference in the effects of instructing planning and self-monitoring metacognitive strategies on ESP learners' reading comprehension?

Method

Participants

In order to find answer for the research questions and identify the impacts of training reading strategies on students' reading comprehension of ESP texts, three groups of participants each comprising of 21 Iranian students studying "Civil Engineering" in Islamic Azad University of Buin Zahra were selected. All of them had passed a general course of English with the mean score of 15. In order to check the homogeneity of the participants, the researchers administered a proficiency test (PET) to a population of 80 students and the students whose scores were between 1 SD above and 1 SD below the mean were selected (n=63). They were then randomly assigned into three groups. Groups A and B were considered as the experimental groups and received explicit strategy instruction, and group C was considered as the control group and received no explicit instruction. The three groups included male students who had an age average of about 22 and they studied this ESP course as a 2-uint compulsory course. In terms of background knowledge of English reading comprehension, all of the students had passed a general English course before registering for this course of instruction.

Instrumentation

Two reading comprehension tests in the area of civil engineering, each consisting of 30 multiple-choice items were developed as data-collection instruments to measure the learners' reading comprehension ability. The texts

were selected from "English for the Students of Civil Engineering" book and the total tests were piloted with a population of similar test takers that shared the characteristics of the target sample and showed a reliability of 0.81 on KR21. One was given to three groups as a pre-test at the start of the course before giving any instruction. The other one was given to three groups as post-test at the end of the course of instruction. The pre-test aimed to determine the level of the participants' ability in terms of reading comprehension. The post-test aimed to determine the degree of reading comprehension of three groups after they received different treatments in the course.

Procedure

In order to investigate the effectiveness of the instruction, in the first phase a pre-test was administered to each group. In the second phase, experimental groups A and B received planning and self-monitoring metacognitive reading strategy instruction respectively, while the control group received general reading comprehension instruction. Planning and self-monitoring metacognitive reading strategy instruction was based on Cognitive Academic Language Learning Approach, or CALLA model (Chamot, Barnhardt, El-Dinary & Robbins, 1999).They received instruction on metacognitive strategies for five sessions of 60 minutes during the term. This model focuses on the integration of three aspects of learning: content of instruction, academic language development, and explicit instruction in learning strategies. It simply works for the students who have at least an intermediate or advanced level of English proficiency. This model, which was used in this study, contained five basic steps including preparation, presentation, practice, evaluation, and expansion (Oxford, 1990) as follows:

1. Preparation. First of all, in each class the teacher investigated students' needs by asking them some related questions to make appropriate decisions about which strategies to teach and how to teach them.

2. Presentation. In the second stage of strategy instruction, the teacher explicitly introduced and explained planning strategy in one class and self-monitoring strategy in another class to make the learners aware of that strategy. Furthermore, students were provided an appropriate situation to discuss the strategy and remember it.

3. Practice. In the third stage of strategy instruction, learners were supposed to practice the strategy that is being targeted through reading specific readings.

4. Evaluation. In the fourth stage of strategy instruction, learners put comments on their use of a specific strategy and evaluated its usefulness.

5. Expansion. In the final stage of strategy instruction, learners learned how to transfer the new strategy to different situations or tasks.

At the third phase, a reading comprehension test as a post-test was administered to three groups. Finally, the reading comprehension tests were scored by the researcher and the collected data were entered into the SPSS 19 for further analysis.

Design

The present research was a quasi-experimental study with the main concern of investigating the effect of meta-cognitive strategy (planning, self-monitoring) awareness raising instruction on reading comprehension of Iranian ESP learners. It included two experimental and one control groups, with a pretest and posttest design.

Data analysis

In order to test the first and the second research questions and examine the effectiveness of explicit instruction of each metacognitive strategy (planning, self-monitoring) on ESP learners' reading comprehension, the researcher employed paired-samples t-test. In order to test the third research question and to compare the effect of instructing planning and self-monitoring metacognitive strategies on ESP learners' reading comprehension, ANOVA was conducted. It is worth mentioning that among the pre-tests of the groups an ANOVA was run, the result of which indicated that there was no significant difference; thus, ANOVA instead of ANCOVA was used.

Results

Results of the data analysis for the first research question

The first research question sought to test the significant effect of metacognitive strategy (planning) instruction on reading comprehension of Iranian ESP learners. To test this hypothesis, a statistical technique of paired samples t-test was run. It should be mentioned that before running the main analysis, the needed assumptions such as the normality of data were considered.

Table 1 shows the summary of descriptive statistics for the first group performance on pre-test and post-test.

Table 1
Descriptive statistics for the first group performance on pre-test and post-test

	N	Minimum	Maximum	Mean	Std. Deviation
Planning Pre Test	21	10	30	19.9	4.84
Planning Post Test	21	15	30	21.8	4.33
Valid N (list wise)	21				

As it can be seen in the Table1, the mean score (mean=21.8) in post-test is higher than the mean score in pre-test (mean=19.9). In order to find out whether there is a significant difference between the reading comprehension scores of the students in the pretest and posttest, the researchers ran a paired samples t-test, the results of which are given in table 3 below.

Table 2
Paired samples t-test

		Paired Differences					T	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair1	Planning Pre Test Planning Post Test	1.905	2.119	0.462	2.869	0.940	4.119	20	0.001

As Table 2 indicates, there is a significant mean increase from the pretest (M= 19.9, SD= 4.84) to the posttest (M= 21.8, SD= 4.33), p= .001. This implies the significant effect of instructing planning strategy on the reading comprehension of the participants. Therefore, the first null hypothesis was rejected.

Results of the data analysis for second research question

The second research question attempted to see whether metacognitive strategy (self-monitoring) instruction has any significant effect on ESP learners' reading comprehension. To this end, the researchers ran some descriptive

statistics and a paired sample t-test. Table 4 contains the summary of descriptive statistics for the first group performance on pre-test and post-test.

Table 3
Descriptive statistics for the second group performance on pre-test and post-test

	N	Minimum	Maximum	Mean	Std. Deviation
Self-Monitoring Pre Test	21	6	32	19.6	6.80
Self-Monitoring Post Test	21	10	30	21.6	5.41
Valid N (list wise)	21				

As it can be seen in the table 4, the mean score (mean=21.6) in post-test is higher than the mean score in pre-test (mean=19.6). In order to test the second research question of the present study that Metacognitive strategy (self-monitoring) instruction does not have any significant effect on Iranian EFL learners' reading comprehension, a paired samples t-test was run (Table 4).

Table 4
Paired samples t-test

		Paired Differences						t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference					
					Lower	Upper				
Pair1	Self-Monitoring Pre Test Self-Monitoring Post Test	2.000	3.688	0.805	3.679	0.321		2.485	20	0.003

As it is indicated in table 4, the obtained P value is less than the set alpha t (20) = 2.48, p= 0.003 which means that the difference between the pre-test and post-test mean scores of this group is statistically meaningful, so the second null hypothesis was rejected.

Results of the data analysis for third research question

The third research question was an attempt to see whether there is significant difference in the effects of instructing planning and self-monitoring

metacognitive strategies on EFL learners' reading comprehension. To this end, one-way ANOVA was run. (See Table 5).

Table 5
ANOVA

Post Test	Between Groups	447.70	11	40.70	2.631	0.003
	Within Groups	139.25	9	15.47		
	Total	586.95	20			

Table 5 shows that the mean difference between instructing planning and self-monitoring metacognitive strategies on ESP learners' reading comprehension is significant, p= .003   . In this regard, the third null hypothesis was also rejected.

Discussion

The present study examined the effect of metacognitive strategies (planning, self-monitoring) instruction on reading comprehension of Iranian ESP learners. The first research question predicting that planning strategy instruction has no significant effect on the learners reading comprehension was rejected. The second research question predicting that self-monitoring strategy instruction has no significant effect on the learners reading comprehension was also rejected. The third research question investigating the significant difference in the effects of instructing planning and self-monitoring metacognitive strategies on EFL learners' reading comprehension was rejected, too. Traditionally, teachers have attempted decoding ability of learners through explaining the linguistic components without implementing metacognitive strategy training. As such, most learners were trying to translate word for word without strategic thinking, and thus easily became frustrated and lost concentration when reading ESP articles. The major concern of the present study was to explore the effectiveness of metacognitive strategies instruction and awareness raising of the learners on the reading comprehension of the ESP students. It was shown that participants outperformed in the post-test reading comprehension. Therefore, it can be concluded that the metacognitive reading strategy instruction played a great role in evaluating different reading strategies

in an effective way, helping them focus on the reading process, and facilitating their reading comprehension. The results of the present study revealed that training the students in using metacognitive strategies increased their reading comprehension ability at various cognitive levels. In other words, the explicit instruction the two groups received about planning and monitoring their reading, led to this improvement. The findings of the present study are in accordance with a number of previous studies (Mokhtari&Reichard, 2002; O'Malley & Chamot, 1990; Philips,1991) which support the present findings holding that metacognitive strategies (planning, self-monitoring) instruction has significant effect on learners' reading comprehension.

The results also do fit with Chumpavan (2000) who investigated the metacognitive strategies used by Thai students in learning English as a foreign language at Coat Illinois State University. In the study Chumpavan found that the participants applied their metacognitive strategies to facilitate their reading comprehension. However, the findings reported in this study did not fit with Mante's (2009) findings with Filipino high school students, where the use of metacognitive reading strategies did not predict the reading test scores. Significant evidence from ESP learners indicated that they benefited from the explicit metacognitive strategy training. When encountering ESP texts, they were less anxious. Moreover, they found the taught strategies useful for making pre-reading plans, monitoring their understanding while reading, and evaluating the information they processed after reading. On the other hand, learners' interest in holding longer strategy training sessions indicates that ESP reading teachers should devote more time and energy to guide the students. Although the introduction of metacognitive strategy training may be innovative to both ESP instructors and learners, ESP courses should be provided with such training in order to effectively increase learners' reading proficiency and confidence. The study of metacognitive reading strategy training is still at an exploratory stage and more theoretical and empirical studies should be conducted to improve teaching and learning of reading in English. Although metacognitive reading strategy training may not work the best for all the problems that ESP learners have in English reading comprehension, it provides students to increase their metacognitive reading strategy awareness, and part of their reading ability. The results of this study pave the ground for researchers

interested in investigating different areas such as listening and writing for future studies. Having just two metacognitive strategies for instruction and also not considering gender as a variable may be accounted as limitation of this study. Therefore, further studies can shed more light on the issue.

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Biodata

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