

Facilitating Reading Comprehension Among Engineering Students: Acquiring Successful Strategies

Zohreh Ziyaeimehr^{1*}

¹ Department of English, Mahshahr Branch, Islamic Azad University, Mahshahr, Iran.

* Corresponding author.

Received 12 November 2011; accepted 31 January 2012.

Abstract

The present study aimed at finding out the effect of two different methods of reading instruction, namely, the traditional grammar translation method and reading comprehension strategies on improving the reading comprehension of Iranian engineering students. The participants included 40 male and female Iranian university students majoring in chemistry that randomly divided into two groups of experimental and control. The participants in the experimental group were taught their textbooks focusing on reading comprehension strategies, while the participants in the control group were exposed to the conventionally-used grammar-translation method. Having run 10 sessions of instruction, the performances of the two groups were compared with each other by an independent-samples t-test to find possible differences between the two groups. The findings were indicative of the effective role of reading comprehension strategies on the reading comprehension of Iranian university students.

Key words: ESP; Reading Comprehension Strategies; English for Engineering Students

Zohreh Ziyaeimehr (2012). Facilitating Reading Comprehension Among Engineering Students: Acquiring Successful Strategies. *Studies in Literature and Language*, 4(1), 1-5. Available from: URL: <http://www.cscanada.net/index.php/sll/article/view/j.sll.1923156320120401.236>
DOI: <http://dx.doi.org/10.3968/j.sll.1923156320120401.236>

INTRODUCTION

Perhaps the most important ability that a non-native

speaking student of science needs is reading and the most important thing about reading is comprehension. According to Tankersley, (2003), we do not comprehend unless we make connections and are able to process the words that we read at the thinking level. As research shows there should be some skills and strategies to improve reading comprehension. This is to be done through active and selective use of comprehension strategies. Reading comprehension strategy can be defined as “a cognitive or behavioral action that is enacted under particular contextual conditions with the goal of improving some aspects of comprehension” (Graesser, A. C., 2007, p.6).

To the researcher's best knowledge, in Iran, the students are accustomed to simplified texts at pre-university level but at the university level they are exposed to the textbooks which they find difficult. As a result, the strategies that they use are the intensive use of the bilingual dictionary and translation. In other words, teachers and students use a grammar-translation method in which the focus is on the vocabulary and grammar. In this regard, Farhady (2006) asserted that the activities and exercises in the ESP Iranian textbooks do not give learners a sense of achievement in terms of the reading skill. The available findings in this area reveal that emphasizing on reading based on traditional approaches has been the source of new problems. Due to these shortcomings, it is intended that reading comprehension strategies may be used as an efficient strategy in Iranian ESP textbooks.

REVIEW OF LITERATURE

Since 1960s, ESP has gone through different developmental stages. During the 60s and 70s, the need for ESP grew out of the global expansion of scientific, technical and economic activities and the focus of instruction concentrated on the lexical and grammatical

characteristics of academic registers at the sentence level (Dudley-Evans & St. John, 1998). In retrospect, the history of ESP can be divided into four phases. The first phase can be traced back to the 1960s and the early 1970s when ESP researchers and teachers concentrated on the lexical and grammatical characteristics of academic/professional registers at the sentence level. The second phase ranged from late 1970s and early 1980s when the focus became more rhetorical and researchers and practitioners began to examine the organization and function of discourse at a number of levels of abstraction. The third phase was integrated with the discoveries of Phase 1 and Phase 2 where researchers centered on systematic analyses of the target situations in which learners' communicative purposes were more attended. Recently, in the last phase, researchers have shifted their emphasis to learners' strategies for their effective thinking and learning (Chien, Lee, & Kao, 2008).

Although it is believed that reading is enhanced through practice, specialists (Zamel, 1992; Brown, 2001) argued that efficient reading can be taught to learners. The reading strategies for the present paper were taken from Brown's taxonomy (2001, p.306-311) that are as follows:

- 1- Skim the text for main ideas
- 2- Scan the text for specific information
- 3- Use efficient silent reading techniques for relatively rapid comprehension
- 4- Use semantic mapping and clustering
- 5- Guess when you aren't certain
- 6- Analyze vocabulary
- 7- Capitalize on discourse markers to process relationships

Strategy 1 and 2: Skimming and Scanning

These strategies are of primary importance for the ESP students who need to extract specific information from a text. According to Brown (2001), skimming consists of quickly running one's eyes across a whole text for its gist. It also gives reader the advantage of being able to predict the purpose of the passage, the main topic, or the message, and some of the developing or supporting ideas. Skimming is a twofold process: rapid reading to desired piece of information and slower reading to assimilate it fully (Rubin, 1982, cited in Pritchard & Nasr, 2004).

The second in the most valuable category is scanning that is quickly searching some pieces of information in a text. The purpose of scanning is to extract specific information without reading through the whole text (Brown, 2001). A reader scans a text when looking for a particular name, word, place, and data. As a result, it is considered as a specific technique for ESP reading comprehension.

Strategy 3: Use Efficient Silent Reading Techniques for Relatively Rapid Comprehension

This strategy is of primary importance to ESP learners.

To develop this skill, it is necessary to ask students to perceive more than one word at a time and skip the unnecessary information while reading a text.

Strategy 4: Use Semantic Mapping and Clustering

Mostly, students are confused by a long string of ideas. Clustering and mapping is a graphical or spatial representation of text concepts. Empirical studies support the benefits of graphic organizer and mapping in helping reader's memorization and comprehension of descriptive text contents (Alvarman, 1981). Moreover, Amer (1994) carried out a study among science students and drew conclusions that using visual reading strategies like making knowledge maps and clustering helps in reducing the language barrier and makes content information more comprehensible. Teachers can make use of this strategy to organize information to make it easier to understand.

Strategy 5: Guess When You aren't Certain

Another strategy which is really helpful to ESP learners is guessing. ESP teacher can help students become accurate guessers by using effective compensation strategies in which they fill gaps in their competence. As Brown (2001) stated, learners can use guessing to their advantages to:

- guess the meaning of a word
- guess a grammatical relationship
- guess a discourse relationship
- infer implied meaning
- guess about a cultural reference
- Guess about content messages

Strategy 6: Analyze Vocabulary

It seems that vocabulary is necessary to reading comprehension. However, many EFL students have limited vocabulary knowledge of English. Due to this problem, many students show strong preferences for bilingual dictionaries. As Schimit (2002) maintained, dictionaries may be used "receptively", to support reading and listening, or "productively", to support writing and speaking, but studies of dictionary use indicate that many learners do not use dictionaries as effectively as they could. Moreover, Summers (1988, cited in Pritchard and Nasr, 2004), referred to the danger of dictionaries being used slavishly, and disrupting the flow of concentration when a student is reading a passage. Interpreting the meaning of a word by means of prefixes, suffixes and word families is a useful vocabulary strategy. In this regard, the teacher can provide students with a list of prefixes, suffixes and roots. Since in scientific and engineering fields most of prefixes and suffixes are derivatives from Greek and Latin, through prefixes, suffixes and roots, students learn how to analyze a word into its building blocks and figure out its meaning.

Strategy 7: Capitalize on Discourse Markers to Process Relationships

Discourse markers show the relationships among the parts of a sentence. Mackey (1987, cited in Brown, 2001) introduced some important discourse markers that help learners make connection among the parts of a text and process information easily. They are as follows:

- Enumerative (first, second/ then, ...finally)
- Additive (again, in addition... / equally, likewise, similarly...)
- Logical Sequence (so, thus, to sum up .../ as a result, accordingly...)
- Explicative (namely, in other words, we mean...),
- Illustrative (for example, for instance)
- Contrastive (alternatively, on the other hand.../ any way, in spite of, at the same time....)

RESEARCH QUESTION

The present study seeks to answer the following question: Is there any difference between the participants who receive reading instruction through some successful strategies and those who use the traditional method of grammar-translation in their reading comprehension classes?

METHOD

Participants

Participants of this study were 2nd year students of Shahid Chamran university of Ahvaz majoring in chemistry. They were all native speakers of Persian, ranging from twenty to twenty two years of age.

Instrumentation

The instruments utilized in this study were as follows:

1-To determine the homogeneity of the participants, a standard proficiency test from the TOEFL practice test was administered. The test included 70 questions, 25 items of grammar, 25 vocabulary items and 4 reading comprehension passages each with 5 questions.

2- The pretest was a reading comprehension test. It consisted of 5 reading comprehension passages with 25 multiple-choice questions.

3- The posttest which contained 5 reading comprehension passages followed by 25 multiple-choice questions. The pretest and posttest were the same length and from the same source.

Procedure

To accomplish the purpose of the study, the following procedure was followed. Beginning the research, a sample TOEFL proficiency test, was given to 40 students of Shahid Chamran university of Ahvaz to ensure the homogeneity of the participants. Then, the students were randomly divided into two groups, the experimental and the control. Since the purpose of this

study was to compare teaching reading comprehension through some strategies, with the traditional one that is grammar-translation method, the two groups were treated differently. The students in the control group received the traditional reading instruction that was, the teacher introduced the meaning of new words and phrases in Persian, and the students began to translate the passages into Persian. While, the students in the experimental group received reading instruction through some successful strategies, i.e. skimming, scanning, using efficient silent reading techniques, using semantic mapping and clustering, guessing, inferring meaning by the use of prefixes, suffixes, and roots, and understanding discourse markers. Before the instruction began, the participants in the experimental group were trained for about one hour in order to be able to use reading strategies effectively. Then, the reading instruction began that was held twice a week during five weeks, which was 10 sessions in total. The students in the experimental group were asked to refrain from using dictionaries in the class during the experiment. At first, they resented this, and wanted to look up unfamiliar words. During the lessons, the students were shown how to retrieve meaning by using textual clues, prefixes and suffixes. It was demonstrated to them how understanding context helps one to guess words and predict ideas. It was found that those with greater background knowledge about the text topic understood the text with greater speed and this highlighted the role of schemata in the reading comprehension. Gradually, they began to rely more on vocabulary recognition strategies.

Incorporating Reading Comprehension Strategies in Pre-Reading, Reading and Post-Reading Activities

The pedagogical sequence of pre-reading, reading and post-reading activities is not new. However, this sequence of teaching strategies can guide students for successful reading comprehension. During pre-reading activity, the teacher prepared students for what they would read and what they were expected to do by introducing the topic of the reading, familiarizing the students with the key words, and activating related background knowledge. At this stage, students were asked to predict the reading text by looking at the titles, subtitles, and figures. During reading activity, the students read the text silently or followed the teacher as he read. It was during this stage that students were expected to employ the reading comprehension strategies such as skimming, scanning, guessing, and inferring meaning by prefixes, suffixes, and roots. At this stage, students needed to evaluate continually what they were reading and make decisions about the strategy use. At this stage, the teacher could use the graphic organizers and clustering in order to organize the information more easily. Finally, the primary goal of post-reading activity was to make sure that satisfactory comprehension had taken place. A useful activity for developing post-reading

activity was summarizing and drawing conclusions about a text.

Data Analysis

The effect of reading strategies on the reading comprehension of ESP students was investigated by using pretest-posttest group design. A pretest was given to both groups of experimental and comparison groups before the treatment. During the experiment, students in the control group received the conventional method of reading comprehension, that is, the teacher introduced the new words and phrases, and the students began to translate passages into Persian and answer the traditional comprehension questions. For the experimental, the same passages were taught by the teacher using reading comprehension strategies. Finally, an independent t-test was used to check if there was any significant difference between the experimental and control groups.

RESULTS AND FINDINGS

Table 1
Descriptive Statistics Showing the Mean of the Experimental and the Control Groups in the Pretest

Group	N	Mean	Std.Deviation	Std.Error. Mean
Experimental	20	15.20	2.285	.51
Control	20	15.25	2.268	.50

Table 1 indicates the descriptive statistics of the experimental and the control group in the pretest. As shown in the table, the mean and standard deviation of the experimental group are 15.20, 2.285, respectively, and the control group 15.25, 2.268. To check if this mean difference is significant, an independent t-test was conducted (see table 2).

Table 2
Independent Samples T-Test Comparing the Pre-Test Mean of the Experimental and Control Groups

	Levene' Test for Equality of Variances		T-test for Equality of Means				
	F	Sig	T	df	Sig.(2-tailed)	Mean difference	Std. Error Difference
Equal variances assumed	.007	.933	-.069	38	.945	-.050	.720
Equal variances not assumed			-.069	37.998	.945	-.050	.720

As table 2 indicates, $F=.007$, $p>.05$, so, equal variances is confirmed. Considering the results of the independent t-test ($t(38) = -.069$; $p=.945$), it can be concluded that there is not any significant difference between the experimental and control group before the instruction. In other words, the two groups were homogeneous before the instruction and the test distribution was normal.

Table 3
Descriptive Statistics Showing the Mean of the Experimental and the Control Groups in the Posttest

Group	N	Mean	Std.Deviation	Std.Error. Mean
Experimental	20	19.35	2.870	.64
Control	20	17.45	2.665	.59

Based on the results of table 3, the mean and standard deviation of the experimental group in the posttest are 19.35, 2.870, respectively, and the control group 17.45, 2.665. To check if this mean difference is significant, an independent t-test was conducted (see table 4).

Table 4
Independent Samples T-test Comparing the Posttest Mean of the Experimental and Control Groups

	Levene' Test for Equality of Variances		T-test for Equality of Means				
	F	Sig	T	df	Sig.(2-tailed)	Mean difference	Std. Error Difference
Equal variances assumed	.138	.712	2.169	38	.036	1.900	.876
Equal variances not assumed			2.169	37.792	.036	1.900	.876

According to the table 4, ($F=.138$, $p=.712$), so the assumption of equal variances is confirmed. Based on the results, ($t(38)=2.169$; $p<.05$). As a result, there is a remarkable difference between the experimental and control group which confirmed the importance of reading strategies on Iranian university students' ESP reading comprehension.

CONCLUSION

The major aim of the current research was to improve reading comprehension of Iranian engineering students by equipping them with proper reading strategies and techniques. The results showed that there was a significant difference between the experimental group that received reading comprehension strategies and control group that used grammar-translation method in reading a text. It was based on the idea that reading a text does not necessarily require understanding of every word or even every sentence since it hinders the reading comprehension or leads to a lack of understanding while reading. In the reading process, the focus should be on the text as a coherent unit and once the reader gets its gist, he can move towards understanding its details. In addition, the use of bilingual dictionaries is not regarded as the optimal way to find the meaning of difficult words; but rather, the learners can get the meaning of the unknown words by vocabulary recognition strategies and background knowledge.

REFERENCES

- Alverman, D. E. (1981). The Compensatory Effect of Graphic Organizers on Descriptive Text. *Journal of Educational Research*, 75, 44-48.
- Amer, A. A. (1994). The Effect of Knowledge-Map and Underlining Training on the Reading Comprehension of Scientific Texts. *English for Specific Purposes*, 13(1), 35-45.
- Brown, H.D. (2001). *Teaching by Principles: An Interactive Approach to Language Pedagogy*. Second Ed. White Plains, NY: Pearson Education.
- Chien, N. C., Wei, L., & Li, H. K. (2008). Collaborative Teaching in an ESP Program. *Asian EFL Journal*, 10(4). 6. Retrieved 2 October 2011, from www.Asian.efl-journal.com/December_08_cnc.php
- Dudley-Evans, T., & John, M. St. (1998). *Developments in English for Specific Purposes*. Cambridge: Cambridge University Press.
- Farhady, H. (2006). Reflections on and Directions for ESP Materials Developments in SAMT. In Kiani & Khayamdar (eds.) *Proceedings of the First National ESP/EAP Conference*, Vol.3, Tehran, SAMT Publication.
- Graesser, A. C. (2007). An Introduction to Strategic Reading Comprehension. In McNamara, D. S. (Ed.) *Reading Comprehension Strategies: Theories, Interventions and Technologies* (pp.26). Taylor & Francis Group, LLC.
- Pritchard M.O. & Nasr, A. (2004). Improving Reading Performance Among Egyptian Engineering Students: Principles and Practice. *English for Specific Purposes*, 23, 425-445.
- Schmitt, R. (2002). *An introduction to Applied Linguistics*. Oxford University Press.
- Tankersley, K. (2003). *The Threats of Reading: Strategies for Literacy Development*. Association for Supervision and Curriculum Development (ASCD).
- Zamel, V. (1992). Writing One's Way into Reading. *TESOL Quarterly*, 26(3), 463.