AENSI Journals

Advances in Environmental Biology

ISSN-1995-0756 EISSN-1998-1066

Journal home page: http://www.aensiweb.com/AEB/

Investigating the Differences Between the Effects of Schema and Language Proficiency on L2 Reading Comprehension

[1]Khadijeh Najafi and [2]Mustafa Zamanian

[1]Department of Foreign Languages, Kazerun Branch, Islamic Azad University, Kazerun, Iran.
[2]Department of Foreign Languages, Shiraz Branch, Islamic Azad University, Shiraz, Iran.

ARTICLE INFO

Article history:
Received 2 June 2014
Received in revised form
13 August 2014
Accepted 28 September 2014
Available online10 October 2014

Keywords:
Language proficiency; Schema (background knowledge); reading comprehension. ESP courses.

ABSTRACT

Reading comprehension is a complex mental activity and is affected by many factors .As schema and language proficiency have been hypothesized to be among important variables affecting reading comprehension, this research compared the effects of these two on the comprehension of some reading passages. For this purpose, 30 students of English at an advanced level of language proficiency and 30 students of medicine at an intermediate level of language proficiency were selected through a standardized proficiency test of English. A specialized reading test on some medical reading passages was given to these 60 students. An independent t-test was run to compare the scores of the students of English and Medicine. The analysis of the data gathered proved that when students suffer from language proficiency, their background knowledge in the field can compensate for that deficiency. On the other hand, when readers have not enough background knowledge on a subject, their good language proficiency can compensate for that drawback. If so, the existence of ESP courses in Iranian universities will call into question.

To Cite This Article: Khadijeh Najafi, Mustafa Zamanian, Investigating the differences between the effects of Schema and language Proficiency on L2 Reading Comprehension. ***Adv. Environ. Biol., 8(12),*** *1001-1007, 2014*

INTRODUCTION

In recent decades reading skill has been considered as one of the most important activities in any language class. The reason is that there are many people in non-English speaking countries who do not find the chance of communicating with the native speakers. However, they have access to magazines, journals, books and periodicals in the language they are learning. Still others read for enjoyment and pleasure when they have the opportunity to know more about their surrounding environment [22]. The challenge to explore basic comprehension processes and apply the findings for reading instruction has been another reason for the expansion of reading [20].

1.1. Perspectives on Reading Comprehension:

There has been extended controversy among reading authorities about the approach to use in teaching reading, a kind of controversy, the essence of which centers upon whether the emphasis in word recognition instruction should be phonics- or meaning-based. In the one view of reading, learners are perceived as being almost passive decoders of visual stimuli, while in the other, learners are viewed as active participants who construct their own encodings. In what follows these two processes are going to be discussed.

1.1.1. Bottom-up processing:

As Sincero [23] stated, in the bottom-up processing approach, perception starts at the sensory input, the stimulus. Thus, perception can be described as data-driven. Gough [16] proposes what may be classified as a phonics-based or "bottom-up" model of the reading process which portrays processing in reading as proceeding in serial fashion, from letters to sounds, to words, to meaning. According to Carlson *et al*. [9]:

In bottom-up processing (also called data-driven or stimulus-driven processing), the process starts with the features – the bits and pieces – of the stimulus, beginning with the image that falls on the retina. This information is processed hierarchically by successively higher levels of the visual systemuntil the highest levels (the “top” of the system) are reached, and the object is perceived. Top-down processing (also called knowledge-

Corresponding Author: Khadijeh Najafi, Department of Foreign Languages, Kazerun Branch, Islamic Azad University, Kazerun, Iran.
E-mail: najafi2548@yahoo.com

Advances in Environmental Biology, 8(12) July 2014, Pages: 1001-1007

driven processing) involves the use of contextual information supplied from memory – the "big picture".' (p. 202)

1.1.2 Top-down processing:

Top-down processing is defined as the development of pattern recognition through the use of contextual information [23]. In this model the flow of information proceeds from the top downward so that the process of word identification is dependent upon meaning first. Thus the higher level processes embodied in past experience (semantics) and the reader's knowledge of the language pattern (syntax) interacts with and direct the flow of information [24].

Top-down processes are those that proceed causally from 'higher' to 'lower' neural areas [21], where there is a pre-existing conception of which brain areas are higher and which lower in the hierarchy.

1.1.3. Interactive models:

Recent views see comprehension as drawing upon both top-down and bottom-up processing, in what is known as interactive processing. The claim is also that bottom-up processes influence top-down processing, and vice versa. Interactive processing is probably compensatory [24]: that is, one type of processing will take over if there is a problem with the other type. Some psychologists claim that when the quality of the stimulus is good, bottom-up processing is preferred, and it is only when stimulus quality deteriorates that top-down processing takes over as a compensatory device [13].

1.2. The effect of schemata (background knowledge) and Language proficiency on reading comprehension:

Reading comprehension is a complex mental activity and is affected by many factors. Among the different factors that influence reading comprehension, background knowledge has been extensively studied [18]. According to the empirical investigations the effect of background knowledge is very complicated and interacts with many text, task, and reader variables [2]. Among these variables, language proficiency has been found to be an important factor that interacts with background knowledge in reading comprehension tasks [26,10,11].

In the present study L2 language proficiency refers to knowledge of structure, vocabulary as well as reading comprehension. This is because vocabulary and grammar as two components of language and reading comprehension as a skill seem to be the clearest examples to represent language proficiency. Lexical knowledge and reading comprehension is included in many models of language proficiency, although there are differences in terminologies and categorizations of these types of knowledge [4]. Moreover, reading researchers are aware that lexical knowledge is related to reading comprehension [15].

1.3. The importance of ESP and development stages in Iran:

In recent years the explosion of science and technology and the emergence of various fields of knowledge have brought about the growing demand for English language teaching to meet the needs of particular groups of learners in different subject areas. This new emphasis on learners' needs and the auxiliary role of English language has led to the prominence of ESP within the domain of language teaching. Its use has prevailed so rapidly that Strevens [25] considers ESP as "fashion and band wagon effect.

In Iran, as in other parts of the world, ESP has been increasingly utilized due to its attractive claims. In Iran, knowledge of English has appeared to be a key to the vast technological and scientific information mainly delivered through English. Therefore, English language is called upon to take an auxiliary role rather than being treated as an end in itself. Another factor conceived for the growth of ESP is the opposition to general English courses. This opposition has partly resulted from the Iranian students' attitude. Dudley Evans [12] believes that: "…students in Iran are very sensitive about the relevance of what they consider to be not useful." [17].

Currently ESP has established itself as a distinct approach in ELT which is oriented toward the needs of specific groups of learners in a certain field of knowledge. In its present state ESP is confirmed to be more beneficial than general English courses on the ground that in an ESP course the time and efforts are centered on what the learner needs, not on irrelevant matters. Thus, the motivation, willingness and morale to learn through the ESP is more cost-effective than the same investment made on general English courses [25].

In the present study we are considering only two of factors affecting reading, that is, background knowledge and language proficiency in order to compare these two regarding comprehension of a text.

1.4. Objective of the study:

The main purpose of the present study is to examine whether background knowledge or language proficiency has more effects on reading comprehension. In other words, this study attempts to compare the effects of background knowledge and language proficiency on L2 reading comprehension of Iranian university students. In this regard, this research question has been formed. Do students with background knowledge in a subject but with lower language proficiency perform better at a reading task or those without the background knowledge but with higher language proficiency? In this relation the following null hypothesis has been formed

Advances in Environmental Biology, 8(12) July 2014, Pages: 1001-1007

regarding reading comprehension. There is no difference between reading ability of intermediate students with background knowledge in a subject and that of advanced students without the background knowledge.

1.5. Significance of the study:

Although much research has been done on the ESP courses and their importance in reading comprehension in particular and language learning in general, there has not been such a particular study to date. Furthermore, the results of the present study can help course designers to choose those texts with which the students are familiar, thereby enhancing their motivation and encouraging more involvement in foreign language.

2. Review of Literature:

The global need for communication and rapid advances in all branches of science and technology has made man realize that having a good command of other languages is a must. This requirement has created an impetus for further investigations into the study of language and thus great attempts have been made to find out the most effective ways of learning and teaching such languages as English. In what follows Schema theory, its key issues and assumptions; how knowledge is represented in the mind; how knowledge is used in comprehension and related empirical studies are to be discussed.

2.1. Schema theory: Key issues and assumptions:

The role of background knowledge in reading comprehension has been formalized as schema theory. According to this theory which is a psycholinguistic theoretical framework, the reader has a very active role in processing the language, that is s/he brings her/his stored background knowledge to the text, picks up the most productive cues from the text and makes predictions about content which later confirms them through the aid of his/her schemata. Background knowledge is a critical factor in learning, but in practice it is rarely addressed outside of assessment [14,19]. Yet it is an essential element of acquiring new knowledge. Background knowledge is not something that is suspended until it is needed rather it mediates the extent to which other reading comprehension behaviors are utilized. Instruction of strategies is likely to be pointless when background knowledge is overlooked.

2.2. How knowledge is presented in the mind and is used in comprehension

Alba and Hasher [1] identified five major processes postulated by schema-theoretic views to underlie how knowledge is represented in the mind. These processes are selection, abstraction, interpretation, integration, and reconstruction. According to schema theory, mental representations are formed selectively, that is, of all information in a given situation, only that part of the information that is related to the schema activated at the time of encoding is selected for the purpose of representation. Mental representations are also abstractive in that all of the information present, only its semantic components are extracted to be encoded in memory, not its surface components. Schema theory suggests that interpretation of new information hinges on its congruency with the schema currently activated. Individual pieces of information cannot exist in the mind on their own either; they have to be integrated into an organized and coherent global representation. Finally, the theory presumes that readers recall or reconstruct the information with reference to the schema activated during encoding.

Three assumptions are implicit in schema-theoretic approaches concerning the way knowledge is utilized in comprehension: (1) that schemata are preexisting knowledge structures stored in mind,(2) that comprehension is a process of mapping the information from the text onto these preexisting knowledge structures, and (3) that knowledge –based processes are predictive and reader-driven [5].

2.3. Related Empirical studies:

Throughout recent decades, researchers have conducted many studies on reading comprehension, its importance in learning as well as different factors which affect it. Among such studies are the ones which investigated the effect of background knowledge on reading comprehension on one hand the role that language proficiency played on comprehension on the other hand. In the following we are going to mention some of these studies and investigate its conclusions.

Al-Shumaimeri [3] investigatedthe effects of content familiarity and language ability (general L2 proficiency) on the comprehension performance of low- and high-ability Saudistudents of English as a foreign language. The results showed that content familiarity and language ability had significant effects on the students' comprehension performance. They indicated that content familiarity facilitated reading comprehension, and that language ability had a significant effect on the comprehension performance of students at different levels. Language ability level may have played a compensatory role in facilitating the comprehension of the unfamiliar text.

Yuet Hung Chan, C [10] investigated the effects of background knowledge and language proficiency on L2 reading comprehension in Hong Kong and he concluded that background knowledge facilitates L2 reading

comprehension. L2 proficiency also plays a significant role in reading comprehension and there are significant interactions between background knowledge and language proficiency. The findings have implications for teaching reading to L2 learners.

In an empirical investigation of the simultaneous effects of both culture-specific content schema and formal schemata on reading comprehension Carrell [7] came to the conclusion that content schema affects reading comprehension more than formal schemata. She adds, if a reader is familiar with both form and content, the reading is relatively easy. If both form and content are unfamiliar to the reader, the reading is relatively difficult and if either form or content is unfamiliar to him / her, unfamiliar content brings about more difficulties for the reader than unfamiliar form.

Yazdjerdy [27] also conducted a study intended, first to investigate the effectiveness of the presently used courses in the Iranian universities specifically at the Islamic Azad university of Shiraz, in two areas: computer science and Industrial Engineering; Second to obtain empirical information about the English language skills mostly needed by the graduate students of these majors in real target situations and to compare it with the objectives of ESP courses and third to see whether or not ESP courses meet the needs and interests of students. The results of the analysis of the data showed: a positive relationship between the participants' levels of proficiency and their scores on ESP test; 2) a high relationship between the objectives of ESP courses and target situation needs. Since reading comprehension has a vital role in the process of second language acquisition as stated in the Introduction of this chapter, it is hoped that the results of the present study may improve teaching this basic skill in EFL classes.

3. Methodology:

The purpose of this chapter is to present a detailed description of the subjects of the study and the procedure which was used to collect data.

3.1. Participants:

The participants of the present study consisted of 60 students, both male and female, majoring in medicine and English. 30 students of Medicine with intermediate level of language proficiency serving as group one and 30 students of English with advanced language proficiency serving as group two were selected for this study. These subjects were chosen from among those students who had taken part in a standardized test of English proficiency.

The first group, that is, the students of medicine was chosen from among 200 medical students at Shiraz University of Medical Sciences. They had passed the basic and some specialized courses in medicine. Therefore, it was supposed that they had some background knowledge regarding reading medical texts. Of course, as it was mentioned before, their language proficiency was at an intermediate level which was measured by a standardized test of English proficiency.

On the other hand, the students of English were selected from among 240 senior students of English at Shiraz Islamic Azad University. They were majoring in English language teaching and translation. After the administration of language proficiency test 30 advanced students were selected for the study. Regarding language proficiency they were at a higher level, but they did not have the required background knowledge in medicine.

3.2. Instruments:

The instruments which were used in the present study were two types of tests. The first one was a standard test of language proficiency which was used to assign subjects into their level of language proficiency. It was Version I of Cambridge First Certificate Test developed by Cambridge University Press. Reliability estimate of this test is reported to be 0.878 by Bachman [4].

The other test was a reading comprehension test that was constructed by the researchers of the study. This reading comprehension consisted of four ESP reading selections in medicine. After determining the two groups of subjects with intermediate and advanced level of language proficiency, each group was given another test which consisted of 25 multiple choice questions. It includes 4 specialized reading comprehension texts about medicine. This test was constructed by the researchers of the present study. The questions were intended to investigate students understanding of medical texts. In a pilot study, the KR20 reliability of the test was found to be 0.914. The questions were not controlled for either lexical or syntactic complexity, that is, both group of subjects were given the same reading comprehension passages.

3.3. Data collection Procedures:

First the proficiency test was administered to both 200 medical students and 240 English students. Then for the first group of the sample, that is, students with some background knowledge in medicine, 30 students were chosen who were at an intermediate level regarding language proficiency.

Advances in Environmental Biology, 8(12) July 2014, Pages: 1001-1007

The same procedure was applied to choose 30 students with advanced language proficiency. Of course for the second group this sample was chosen from among 240 students majoring in English.

After selecting these two groups, each consisting of 30 students, the researcher administered the reading comprehension test which consisted of specialized reading selection of medicine.

The administration procedure was the same for both groups. That is, they were given the text with instructions both oral and written. They were given about 55 minutes to answer the questions. Because there were 25 multiple choice reading comprehension items, about 30 minutes was allocated to answering these questions. Also about 25 minutes was allocated to read 4 passages. The items were not of display types. Some of the items were of the synthetic type, that is, the students had to combine the information in different parts of the paragraph to answer the questions. Other items were of the inferential type, which is the subjects had to infer what the writer had not said directly but had implied.

Scoring was objective because the items were multiple- choice. After scoring the final grades of the students some t-tests were performed to find the following information:

Is there any significant difference between reading scores of students of medicine and English?

The null hypothesis is that there is no difference between students of high proficiency but low background knowledge and those with enough background knowledge but intermediate language proficiency in reading comprehension. In other words, the background knowledge on a specific area can be compensated for by high language proficiency. After making use of statistics the final results were recorded in tables. A complete description of the above-mentioned points is given in the next chapter.

4. Data Analysis and Results:

In this section a t-test was run in order to see whether the difference between the means is significant or not. Then the results will be interpreted according to the research question.

The main objective of the present research was to see whether there is any significant difference between background knowledge and language proficiency in the comprehension of reading texts in a second language.

As it was mentioned before in this research the role of background knowledge in reading comprehension has been formalized as schema theory. According to this theory which is a psycholinguistic theoretical framework, the reader has a very active role in processing the language, that is, s/he brings her/his stored background knowledge to the text, picks up the most productive cues from the text and makes predictions about content which later confirms them through the aid of his/her schemata.

In this study, it was assumed that the students of medicine who were in the third year of their medical education must have enough background knowledge about medical texts. It should be mentioned that they were at an intermediate level of language proficiency.

On the other hand, EFL students had not passed any medical courses so they did not have any background knowledge about specialized medical texts. But they were at an advanced level of language proficiency.

Regarding the above mentioned points we are going to test our null hypothesis that is, whether background knowledge is more important in understanding a specialized reading text or language proficiency.

In order to achieve this goal at first mean scores of all of the subjects were computed and then the mean scores of the two groups were compared in order to see whether the difference between them is significant or not. The results are displayed in Table 4.1.

Table 4.1: T-test table to identify the difference between reading scores of the students of medicine and English, Independent Samples Test

		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	.004	.953	.193	48	.848	.200	1.034	-1.880	2.280
	Equal variances not assumed			.193	47.795	.848	.200	1.034	-1.880	2.280

Group Statistics					
	group	N	Mean	Std. Deviation	Std. Error Mean
scores	Eng	25	19.00	3.536	.707
	Med	25	18.80	3.775	.755

An independent- samples t-test was conducted to compare the scores of the students of English and Medicine. There was no significant difference in the scores of the students of English (M=19, SD= 3.53) and

Medicine (M= 18.8, SD=3.75); t (48) =0.193 *P=0.848 (*two-tailed). The magnitude of the differences in the means (mean difference=1.034) was small. According to Table 4.1., the difference in the mean scores of the two groups is not statistically significant, that is there is no difference between language proficiency and background knowledge in comprehension of a reading text. In other words, having background knowledge on one subject area can compensate for the lack of language proficiency. On the other hand, having language proficiency can compensate for the lack of background knowledge on one area.

5. Conclusion and Discussion:

This study was performed to examine whether there is any difference between the effect of background knowledge and language proficiency on the comprehension of reading texts.

Based on the research question, the following conclusion was drawn. There is not any significant difference between students with a background knowledge but intermediate language proficiency and students without enough background knowledge but with an advanced language proficiency in understanding a reading passage. In other words, if one is absent, the other one can compensate for the lack of it.

Reading is an evolved and a complex process and many factors may affect it. As it was mentioned before, background knowledge on a certain area and language proficiency have been hypothesized to be among important variables affecting reading comprehension.

Regarding the active role of language proficiency in reading comprehension, Chastain maintains that the more proficient a learner, the better he can comprehend a reading text.

On the other hand as Coady [8] quoted by Carrell and Eisterhold [7] by the use of background knowledge we can make up for certain grammatical weaknesses. In other words if the subjects have the related background knowledge, they will get the message "semantic input" which can make up for poor syntactic knowledge. Wecan say that having the required background knowledge will get the reader to stick to the main idea without falling into syntactic pitfalls [8].

According to the above-mentioned points, it can be stated that if a person has both language proficiency and the background knowledge on one subject area, naturally he can understand that reading text without any difficulty, but when a person lacks one of these factors the other one can compensate for the lack of it.

6. Implications of the study:

Based on the findings of the study, it seems that there has been no difference between background knowledge and language proficiency in the comprehension of reading texts. In other word we can say that background knowledge and language proficiency has the same role in comprehension of reading texts. It calls into question the effectiveness of the ESP courses among other university courses. In other words if some body's language proficiency compensates for lack of background knowledge then existence of ESP course among university courses will be nonsense. That is although background knowledge on a subject area has an effective role in the comprehension of a text, the language proficiency itself can supply the demand. In other words the level of language proficiency of the EFL students can help them in understanding a text even if they do not have enough background knowledge about that subject area.

7. Suggestions for further research:

No single study is complete in all aspects. The domain of second language learning is so vast that no one is able to cover all aspects of a given problem. Furthermore, in the process of any research new questions and problems arise. Here are some suggestions for further study.

1. The relationship between the effects of background knowledge and language proficiency on listening comprehension
2. The relationship between the effects of background knowledge and language proficiency on vocabulary
3. The same study may be repeated in other situations
4. This study took place in an EFL context; a similar one may be done in an ESL situation
5. The same study in other universities or with a large sample would be fruitful if the findings are to be generalized or disconfirmed
6. The major of the participants was English and medicine. Participants with other majors can also be chosen and studied.

REFERENCES

[1] Alba, J., L. Hasher, 1983. Is memory schematic? Psychological Bulletin, 93: 203- 231.
[2] Alderson, J.C., 2000. Assessing reading. Cambridge, UK: Cambridge University Press.
[3] Al-Shumaimeri, Y.A.N., 2006. The effects of content familiarity and language ability on reading comprehension performance of low-and high-ability Saudi tertiary students studying English as a foreign language. King Saud University, Educational Sciences & Islamic Studies, 18(2): 1-19.

[4] Bachman, Lyle F., 1990. Fundamental Considerations in Language Testing. Oxford: Oxford University Press.
[5] Bereiter, C., M. Scardamalia, 1996. Rethinking learning. In D.R. Olson, & N. Torrance (Eds.), The Handbook of education and human development: New models of learning, teaching and schooling (pp 485-513).Cambridge, MA:Basil Blackwell.
[6] Carrell, P.L., 1983. Three Components of Background Knowledge in Comprehension. Language Learning, 33: 183-207.
[7] Carrell, P.L., 1987. Content and Formal Schemata in ESL Reading. TESOL Quarterly, 21: 461-18.
[8] Coady, J., 1979. A Psycholinguistic Model of the ESL Reader. Reading in a 2nd Language, R. Mackay, B. Barkman& Mass: Newbury House publication.
[9] Carlson, N.R., H. Miller, C.D. Heth, J.W. Donahoe, G.N. Martin, 2010. Psychology: the science of behavior (7th (International) ed.). Boston,MA: Allyn & Bacon (Pearson).
[10] Chan, C.Y.H., 2003. Cultural content and reading proficiency: A comparison of mainland Chinese and Hong Kong learners of English. Language, Culture and Curriculum, 16: 60-69.
[11] Chen, Q., J. Donin, 1997. Discourse processing of first and second language biology texts: Effects of language proficiency and domain-specific knowledge. The Modern Language Journal, 81: 209-27.
[12] Dudley-Evans, T., C.C. Shettleworth, M.K. Philips, 1976. The ESP Materials of the University of Azarabagan, Tabriz, Iran, In J. Richards. (Ed.), Teaching English for Science and Technology, SEAMEo Regional English Language Center, (pp.163-197). Singapour: Singapour University Press.
[13] Eysenck, M.W. and M.T. Keane, 1990. Cognitive Psychology: A Students Handbook. Hove: Lawrence Erlbaum, 25-34.
[14] Fisher, D., N. Frey, 2009. Background knowledge: The missing piece of the comprehension puzzle. Portsmouth, NH: Heinemann.
[15] Freebody, P. and R.C. Anderson, 1983. Effects of Vocabulary Difficulty, Text Cohesion, and Schema Availability on Text Comprehension". Reading Research Quarterly, 18: 277-294.
[16] Gough, P.B., 1972."One Second of Reading," In J.F. Kavanagh and I.G. Mattingly (Eds.). Language by Ear and by Eye. Cambridge, Mass.: MIT Press.
[17] Hitchocock, J., 1978. Reading and Scientific English: Prospects, Problems and Programs in Iran. In M.T. Trimble, L. Trimble,& K. Drobnic (Eds.), English for Specific Purposes: Science and Technology (pp.1-22). United States of America: Oregon State University.
[18] Hudson, T., 2007. Teaching second language reading. Oxford, UK: Oxford University Press.
[19] Kamil, M.L., G.D. Borman, J. Dole, C.C. Kral, T. Salinger and J. Torgesen, 2008. Improving adolescent literacy: Effective classroom and intervention practices: A Practice Guide (NCEE #2008-4027). Washington, D.C.: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved from ies.ed.gov/ncee/wwc.
[20] Littlewood, W., 1992. Foreign and 2nd Language Learning. Cambridge: Cambridge University Press.
[21] Mechelli, A., C.J. Price, U. Noppeney, K.J. Friston, 2003. A dynamic causal modeling study on category effects: Bottom-up or top-down mediation? Journal of Cognitive Neuroscience, 15(7): 925-934.
[22] Rivers, W.M., 1980. Teaching Foreign Language Skills (2nd Ed). Chicago. Educational Psychology, 13: 259-266.
[23] Sincero, S.M., 2013. Top-Down VS Bottom-Up Processing. Retrieved Sep 07, 2014 from Explorable.com: https://explorable.com/top-down-vs-bottom-up-processing.
[24] Stanovich, Keith, E., 1980. "Toward an Interactive- Compensatory Model of Individual Differences in the Development of Reading Fluency," ReadingResearch Quarterly, 16: 32-71.
[25] Strevens, P., 1977. New Orientations in the teaching of English. Oxford University Press.
[26] Usó-Juan, E., 2006. The compensatory nature of discipline-related knowledge and English language proficiency in reading English for academic purposes. The Modern Language Journal, 90: 210-227.
[27] Yazdjerdi, K., 2000. A Summitive Evaluation of Two ESPcourses inengineering at the Islamic Azad university.Unpublished M.A. Thesis. Azad University, Shiraz, Iran.