

Iranian EAP Students' Reading Strategy Use and Their Beliefs about Reading Comprehension Components: Toward an EAP Reading Model

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Abstract: Reading strategies based on the most recent and important models of reading comprehension are believed to play a key role in the reading process. Due to the great importance which is attached to the reading skill for all EFL learners especially for EAP students, an investigation of the strategies used by them will, therefore, be plausible. Reading is also believed to be componential. Different models of L2 reading have attempted to list major components of reading comprehension. Nobody has, however, attempted to see what reading components are based on EAP students' points of view. This study was, therefore, an attempt to explore the reading strategies used by Iranian EAP students and to see what they consider as major EAP reading components. To do so, a questionnaire was developed based on the recent definitions and classifications of reading strategies and was given to 170 EAP students at Isfahan University of Technology and ACECR. A survey question was also developed to elicit their beliefs about major EAP reading components. The results of the study revealed that both bottom-up and top-down strategies were used by them. Bottom-up strategies were, however, used more. They also believed that vocabulary, topical knowledge and genre, structure and reading techniques and strategies were the basic components of EAP reading comprehension. Finally, an EAP reading model was developed based on the results of this study.

Key words: Reading models • Bottom-up strategies • Top-down strategies • Reading components • EAP reading model

INTRODUCTION

English as a foreign language occupies an important place in Iranian educational system in all stages especially in higher education where it is considered as a key factor in accessing information. In Iranian setting reading, however, plays a pivotal role due to the lack of exposure to the spoken language inside and outside the classroom and the provision of the much of the information through reading. In such contexts, students get more opportunities to read rather than to listen, speak and write in English. However, reading is a source of difficulty for most of the Iranian EAP students. In all stages especially in EAP classes, students are exposed to a wide variety of reading texts which are often difficult for them to tackle with and are the sources of anxiety.

The problems that they encounter are due to a number of factors including lack of appropriate reading strategies, lack of background knowledge related to the

topic of the target text, lack of attitudes toward reading or lack of vocabulary knowledge to name a few. These problems cannot be solved unless the ways learners approach the reading tasks and the processes and factors involved are studied. This article is, therefore, an attempt to review some of the models presented for L2 reading comprehension, to investigate cognitive reading strategies which are believed to be an indispensable part of reading process used by Iranian EAP students and to see what they consider as the most important factors contributing to their reading comprehension.

L2 Reading Models: Building a model for L2 reading is very difficult because a comprehensible model should encompass many factors like those related to learners of all ages and L1 literacy levels, L1 and L2 considerations etc. [1]. Two paramount and recent models cited in the literature are Bernhardt's (2005) compensatory model and Birch's [2] hypothetical model of the reading process.

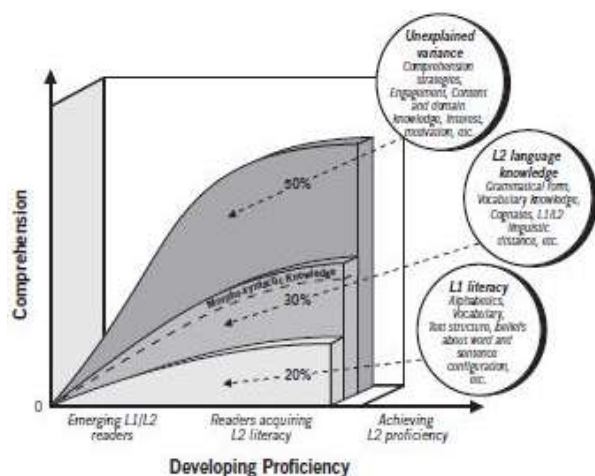


Fig. 1: A compensatory model of English language reading (Lems *et al.* 2010, 24)

Bernhardt studied research done on L2 reading comprehension in the literature and finally construed her model which, according to Lems *et al.* [1], is comprehensible and can accommodate a large number of L1 and L2 groups. Her model contains three important constituents, namely L1 literacy, L2 proficiency which is defined as word knowledge and syntax and unidentifiable factors which mostly include learners' personality factors like motivation, intelligence, attitude, etc.

As shown in figure 1, L1 literacy accounts for 20%, L2 proficiency about 30% and unidentifiable factors around 50% of L2 reading. By L1 literacy, Bernhardt (2005) means lower-level skills such as alphabets, oral/aural language and vocabulary and higher-level linguistic features such as background knowledge, knowledge of text structure and beliefs about word and sentence configuration. L2 proficiency, in her idea, refers to learners' morpho-syntactic knowledge, existence or absence of cognates and the linguistic distance that exists between the two languages in operation and unidentifiable factors refer to factors such as cognitive strategies, interest in the text and engagement in the reading process, content and domain knowledge. By presenting this model, Bernhardt wants to "revitalize the conceptualizations of the second language reading process as a juggling or switching process in cognition" (Bernhardt 2005, 140). It means that L2 readers can compensate for comprehension difficulty that they have in one knowledge source, e.g. L2 knowledge, by activating skills and knowledge from another dimension, e.g. L1 literacy.

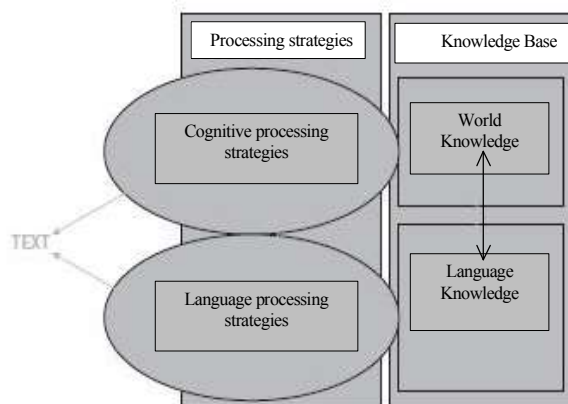


Fig. 2: Birch's (2007, 3) hypothetical model of the reading process

Birch's [2] hypothetical model of the reading process contains two important parts, namely the knowledge area and the strategies used to process the text. The knowledge area or base consists of world knowledge and language knowledge. World knowledge refers to our knowledge about our surroundings; people, places, events, activities etc. which can be obtained in any language, while language knowledge refers to our conscious and unconscious knowledge about the sentences, phrases, structures, sounds etc. of a specific language. The strategies domain on the next part of the model is also divided into two parts; cognitive processing strategies, which are universal in nature and language processing strategies, which are language-specific. Cognitive processing strategies refer to strategies like inferencing, predicting, problem solving etc. which are used in different settings, not just in reading. Language processing strategies, however, refer to strategies like chunking, recognizing letters etc. These strategies like language knowledge are specific to a particular language and without them reading cannot occur [2, 3].

As shown in figure 2, reading process includes four aspects, namely cognitive processing strategies, world knowledge, language processing strategies and language knowledge. Cognitive processing strategies and world knowledge are the universal factors or, as Birch [2] calls them, are the higher-order skills that cannot be accessed if the low level skills, language processing strategies and language knowledge, are not learned in any given language.

Reading Strategies: The term strategy has been one of the difficult terms in the field of applied linguistics to be defined, observed, measured and classified due to

the complexity which resides in its nature. Researchers [4-8] define strategy as conscious and subconscious mental processes which are employed by learners in language learning, language use and in language testing situations. These processes help them plan what to do and let them control the flow of data. Accordingly, reading strategies are a set of mental operations that are employed by the readers to comprehend the text or to solve their comprehension problems [9, 10].

Reading strategies are classified into two major groups, namely bottom-up and top-down strategies [2, 6, 11-14]." Bottom-up reading comprehension strategies are data-driven (i.e., they focus on linguistic parts and forms to interpret text on an element by element basis), whereas top-down strategies are conceptually or hypothesis-driven (i.e., they use existing schematic knowledge of real-life situations and discourse organization to make meaning)" [10]. Lems *et al.* [1] believe that to be able to read successfully, readers need to master two major sets of skills. The first group encompasses those that operate at the word level. They let readers decode the text and make sense of it. They are skills like scanning, breaking the lexical items into their constituent elements, using the knowledge of punctuation etc. These skills are called bottom-up skills or strategies. As readers proceed, they need other skills that let them make meaning of the text. These skills let them involve their world knowledge or their experience of the outside world to comprehend the text. They are skills like skimming, connecting or relating the information presented in different sentences or parts of the text, bringing background knowledge to the text etc. They are called top-down skills or strategies. Bottom-up strategies can be, therefore, defined as word-level skills which are needed to decode the text, while top-down strategies are defined as world-level skills which are analytical and are needed to comprehend the text. These two sets of skills must work in concert with each other [1, 15].

Research Questions: The questions addressed in this study are:

- Q1. What strategies (bottom-up or top-down) are used by Iranian EAP students?
- Q2. What do Iranian EAP students consider as the essential components of reading comprehension?

Method

Participants: To carry out the study, 170 EAP students studying at Isfahan University of Technology and

ACECR Institute of Higher Education (I.U.T. Branch) were chosen. These students took an EAP class in fall 2011. They studied different branches and fields of engineering like chemistry engineering, computer engineering, mechanical engineering, ICT, electrical engineering etc. Their age ranged from 18 to 24 and their native language was Farsi.

Reading Strategy Questionnaire (RSQ): To explore the cognitive reading strategies used by the subjects during their reading performance, a questionnaire was developed based on the available definitions and classifications of these strategies [6, 10, 12-14, 16-18]. The questionnaire consisted of 21 response categories which were divided into two parts. The first part of the questionnaire consisted of eleven response categories investigating the use of bottom-up strategies, while the second part consisted of ten response categories investigating the use of top-down strategies (Appendix A). It was reviewed by five experts and then was given to a group of 60 EAP students that were comparable with the subjects in the study. The reliability obtained is presented in Table 1.

As shown in table 1, Cronbach's Alpha is bigger than 0.7 which represents the reliability of the questionnaire. Students rated each category on a five Likert scale with anchor points of 1: always to 5: never. The questionnaire along with its Farsi translation was given to the subjects to help them better understand the items. The questionnaire was given to the subjects after they read some texts which were extracted from the books and materials used in EAP classes at IUT and ACECR.

The Survey: As stated by Scruggs and Mastropieri (1992), one of the important factors which are mostly overlooked in most of the studies is the opinions of the subjects for whom the treatment is used. In order to tap this important issue and to explore what they regarded as the most important components of a successful reading comprehension, an open-ended question was developed by the researcher requiring the subjects to name what they believed was needed to read a text successfully. To give the subjects conscious knowledge about the reading components and to organize their responses, some very key elements were, however, presented in parenthesis in front of the survey question. The survey was also reviewed by five experts and piloted.

The Pilot Experiment: Before being administered to the participants in the study, the questionnaire and the survey were piloted with a group of EAP students that

Table 1: The reliability statistics of the RSQ

	Cronbach's Alpha	N of Items
RSQ	0.718	21

Table 2: The texts used in the study

Passages		Total number of the words
1	Color sensor	255
2	Telecommunications	315
3	Car mechanics	267
4	Alloys	289
Sum	1126	

were comparable with the subjects in the study. The main purpose of the pilot experiment was to confirm the appropriateness of the instruments and to determine the time they needed to complete them.

The results of the pilot test was that the test instructions and items were well articulated and without any ambiguity. The results also showed that the tests (as discussed) had acceptable levels of reliability and validity to incur reliable and valid results.

Procedures: At first the subjects were asked to read the texts and answer the accompanying questions. There were four texts on different and common topics of engineering which were extracted from the books written for EAP students and used at I.U.T and ACECR as main EAP textbooks. Table 2 shows the characteristics of the texts used in the study. Then the RSQ was given to them to be completed. Finally the survey question was given to the subjects and they were asked to provide their answers in their mother tongue (Farsi).

RESULTS

To answer the research questions, the responses of the subjects on RSQ were fed into SPSS version 16 and the following results were obtained. Table 3 represents the results of the Wilcoxon signed rank test which was used to compare the median of the subjects' responses to the bottom-up categories with the median of their responses to the top-down categories of the RSQ. As shown in table 3, the significance level is less than 0.05 (Sig. = -5.467 < α = 0.05) which states that there is a significance difference between the median of the responses. So it shows that the subjects did not use the bottom-up and top-down strategies equally. By looking at table 4, it becomes evident that median of B(bottom-up strategies) is bigger than the median of T(top-down strategies) which states that bottom-up strategies were used more than top-down strategies by the subjects in this study (Median T- Median B= -55).

The frequency of the subjects' responses to each response category of the items available in the first part (bottom-up strategies) of the RSQ is shown in figure 3. As it is clear, for items 1, 4, 5, 6, 7 and 8 the anchor points of usually and always were mostly selected by the subjects, representing that the subjects usually looked for what was asked in the reading questions, paid attention to the punctuation marks available in the texts, thought about the meaning of single words and tried to translate the words and sentences into their mother tongue. For items 9 and 10 the anchor points of rarely were, however, selected by the majority of the subjects representing that the subjects rarely paid attention to the available cohesive ties and rarely broke the lexical items into their constituent elements.

Figure 4, however, represents the frequencies of their responses to the items available for the second part (top-down strategies) of the RSQ. As it is shown, for item 15 most of the subjects selected the anchor point of always and for item 19 the majority selected the anchor point of usually. To our surprise, it means that most of the subjects paid attention to the text type and used their background knowledge to comprehend the text. Figure 2 also shows that items 13, 16, 18, 20 and 21 were also used by most of the subjects. It means the subjects also tried to connect the information available in different parts of the text, paid attention to coherence, asked themselves questions about the content of the text to understand it better, tried to find different parts of the text like the topic sentence, the introduction and the conclusion and tried to evaluate their comprehension of the earlier parts of the text based on

Table 3: The results of the Wilcoxon Signed Rank Test

	MedianT - MedianB
Z	-5.467 ^b
Asymp. Sig. (2-tailed)	.000

Table 4: The results of the rank test

		Ranks		
		N	Mean Rank	Sum of Ranks
MedianT - MedianB	Negative Ranks	55 ^d	30.86	1697.50
	Positive Ranks	7 ^e	36.50	255.50
	Ties	113 ^f		
	Total	175		

d. MedianT < MedianB

e. MedianT > MedianB

f. MedianT = MedianB

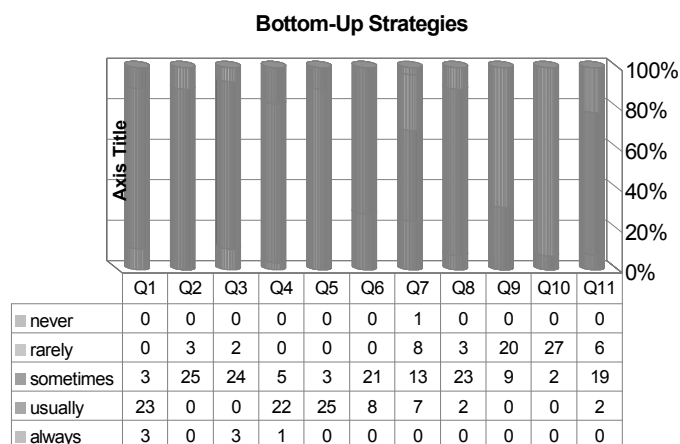


Fig. 3: The frequency of the bottom-up strategies used by Iranian EAP students

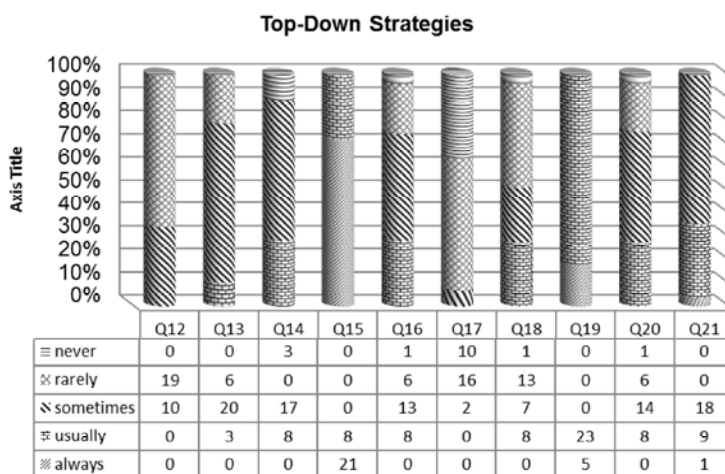


Fig. 4: The frequency of the top-down strategies used by Iranian EAP students

Table 5: EAP reading components in the subjects' point of view

The order of importance	Categories
1	Vocabulary
2	Topical knowledge and genre
3	Structure
4	Reading techniques and strategies

the information presented in the new parts of it. Items 12 and 17 were, however, rarely used by them meaning that they rarely skimmed the texts and rarely paid attention to how the ideas were supported by the use of facts and information.

The subjects' answers to the survey question were, however, summarized and coded down into four major categories represented in table 5 based on the order of the importance attached to them. As shown in Table 5, the subjects believed that vocabulary was number one component and some of them even

believed that vocabulary was the only thing needed in comprehending a text. Other components based on their ideas were topical knowledge or previous information about the subject area of the texts, structure or grammar and reading techniques and strategies. Some of them even believed that texts were different and in every field they were written differently and it was essential that a person become familiar with the text types. It is what underlies the definition of genre, so genre was the code which was given to these responses. Because genre or familiarity with the way texts are composed in a given field is a part of the topical knowledge, it was subsumed under topical knowledge. The last components that deemed essential by some of them were reading techniques and reading strategies. These subjects believed that familiarity with these techniques and strategies could importantly improve their reading performance.

CONCLUSIONS AND DISCUSSIONS

The present study was an attempt to delve into the strategies used by EAP students and the components they deemed essential for a successful reading comprehension. The results of the study showed that both bottom-up and top-down strategies were used by the subjects. They, however, used bottom-up strategies more. The responses of the subjects to the survey question also revealed that the subjects regarded elements like vocabulary, topical knowledge and genre, structure and reading techniques and strategies as the factors that familiarity with which can contribute effectively to their reading performance.

The results of the study are somehow in line with the previous research [2, 6, 11-14] done in the area of reading strategies. The results of this study in line with the previous studies show that reading strategies are an inseparable part of reading process. This fact is also made clear in the models reviewed earlier. Iranian students, however, tended to use bottom-up strategies more. As discussed, bottom-up strategies operate at the word-level and make readers focus on form. Scholars believe that culture, linguistic differences and L1 teaching methods affect L2 strategy use [10, 19-24] and the reason why Iranian EAP students tend to focus on form can be somehow traced in the way Farsi books are prepared and taught at Iranian schools. For long, Iranian scholars [25, 26] have considered form more important than meaning. Khanlari [26], for example, in his book which is designed for Iranian high school students, takes a structuralist view toward language and considers sentence as the smallest unit of language and talks about its constituent parts. This tendency can be apparently seen in school textbooks prepared by the Ministry of Education. Most of the exercises in these books ask students to focus on the role that each constituent element plays in a sentence, to paraphrase an expression or a sentence, provide multiple meanings, synonyms or antonyms of a single word etc. There are also exercises that make students focus on meaning, but these exercises are scant. The books and the teachers, therefore, make students pay close attention to word-level cues (i.e., morphology and syntax).

The results also place importance on the role of vocabulary in reading comprehension which is stressed in the previous studies [27-31]. The results also show that topical knowledge and genre are important factors for EAP reading tasks. These two components are either ignored or marginalized in the existing models of reading

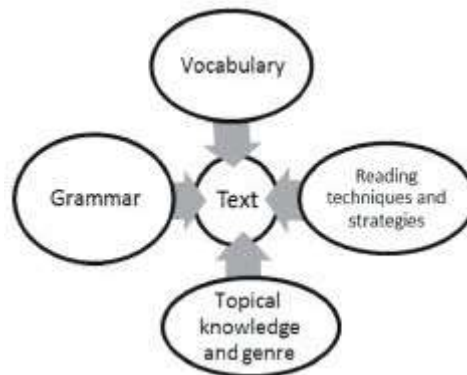


Fig. 5: EAP reading model

comprehension. So based on the results of the present study, the following model is presented for EAP reading comprehension.

As shown in figure5, to read an EAP text successfully learners need to know enough vocabulary, to be familiar with grammar and structures of English, to have some information about the topic of the text, if the topic, for example, is about sensors, having some information about sensors will facilitate their comprehension, to know and use reading strategies and techniques and finally know how words and structures are combined and used in the given field. EAP teachers, accordingly, should try to choose texts based on the students' topical knowledge, stress specific structures, words and phrases used in a given field, introduce and make students use reading techniques and strategies and increase their vocabulary knowledge as much as possible.

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Appendix A: Reading Strategy Questionnaire

Bottom up reading strategies		1	2	3	4	5
1	I scan the text for explicit information requested in the reading questions or exercises.					
2	I read aloud a word and/or a phrase while reading the text.					
3	I read aloud a sentence while reading the text.					
4	I question the meaning of a word or a phrase.					
5	I use knowledge of punctuation (;, i.e., that is, (), -).					
6	I translate some or all words / phrases into Farsi while reading the text.					
7	I translate some or all sentences into Farsi.					
8	I try to find the reference of words like "this".					
9	I notice the cohesive ties like "however, therefore, in addition to" used in the text.					
10	I break lexical items into parts and try to guess their meanings from their structures like "unbelievable: un + believe + able".					
11	I rephrase a portion of the text.					
Top down strategies		1	2	3	4	5
12	I skim for gist of the text or to identify the main ideas, themes, or concepts.					
13	I connect or relate the information presented in different sentences or parts of the text.					
14	I guess the meaning of the words and phrases based on the information presented in the text.					
15	I pay attention to the text type and discourse format.					
16	Coherence is important to me.					
17	I pay attention to how ideas and facts are used to support the main ideas					
18	I raise questions about the content of the text to understand it better.					
19	I bring my background knowledge to the text.					
20	I try to find the topic sentence, introduction and conclusion of the text.					
21	I try to evaluate my comprehension of the earlier parts of the text based on the information presented in the new parts of it.					