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The Effect of Grammar vs. Vocabulary Pre-teaching on EFL Learners' Reading Comprehension: A Schema- Theoretic View of Reading

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Abstract

This study was designed to investigate the effect of grammar and vocabulary pre-teaching, as two types of pre-reading activities, on the Iranian EFL learners' reading comprehension from a schema-theoretic perspective. The sample consisted of 90 female students studying at pre-university centers of Isfahan. The subjects were randomly divided into three equal-in-number groups. They participated in a test of overall language proficiency, and the results indicated that they were linguistically homogeneous. Then, the three groups were exposed to different treatments. Group A received grammar pre-teaching, whereas group B received vocabulary pre-teaching. The subject in group C (the control group), however, received no pre-teaching. The subjects in each one of the experimental groups took reading comprehension posttests. The results showed no significant difference among the three groups though the vocabulary group performed slightly better than the other two groups, and the performance of the grammar group was seemingly worse than the control group. The findings of the study are discussed in detail with reference to the schema-theoretic view of reading.

Keywords: reading comprehension; grammar; vocabulary pre-teaching; schema theory.

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1. Introduction

“Without doubt, in any academic or higher learning context, reading is perceived as the most prominent academic skill for university students” (Noor, 2006, p.66).

Learning a foreign language involves acquiring four types of skills: listening, speaking, reading, and writing. It is generally believed that reading is the most important of all these skills. The reading skill is often required for academic, professional, and personal purposes. This is particularly true of an international language like English to which most people are exposed in the world today.

According to reading specialists, reading is not actually a skill but a process composed of many different skills. It is defined as "the ability of an individual to recognize a visual form, associate the form with a sound and / or meaning he has learned in the past, and on the basis of past experience, understand and interpret its meaning" (Kennedy, 1974, p.3). It follows from the above definition that reading is not a passive activity. In other words, the reader must make an active contribution to acquire the available information.

Goodman (1967) describes reading as a "psycholinguistic guessing game" which requires ability in choosing the fewest, most productive cues needed to generate guesses which are right the first time. As mentioned in Carrell & Eisterhold (1983, p. 554), Goodman views this act of the construction of meaning as being "an ongoing, cyclical, process of sampling from the input text, predicting, testing and confirming or revising those predictions, and sampling further".

Widdowson (1979) has discussed reading as "the process of combining textual information with the information a reader brings to a text". In this view the reading process is not simply a matter of extracting information from the text. Rather, it is viewed as a kind of dialogue between the reader and the text. Similarly, Carrell & Eisterhold (1983) state that our understanding of reading is best considered as "the interaction that occurs between the reader and the

text, an interpretive process". The interactive view of the reading process can help present a more comprehensive definition of reading. In the light of this view of reading, Nassaji (2003, p.261), for example, contends:

Reading is not a single-factor process. It is a multivariate skill involving a complex combination and integration of a variety of cognitive, linguistic, and nonlinguistic skills ranging from the very basic low-level processing abilities involved in decoding print and encoding visual configuration to high-level skills of syntax, semantics, and discourse, and to still higher-order knowledge of text representation and integration of ideas with the reader's global knowledge.

Now there is widespread agreement that without the activation of relevant prior knowledge by the reader and mixing of that knowledge with the text information, there can be no reading of text. Recent empirical research in the field which has come to be known as "schema theory" has shown the importance of background knowledge within a psycholinguistic model of reading (Carrell & Eisterhold, 1983). According to Widmayer (2003), the learner in schema theory actively builds schemata and revises them in light of new information.

According to schema theory, reading comprehension is an interactive process between the text and the reader's prior background knowledge through which readers interact with the text in order to recreate meaning. In other words, reading comprehension involves activating the appropriate schemata in order to make sense of incoming information. Recent trends, therefore, emphasize the activation of background knowledge prior to reading to facilitate comprehension.

As Carrell & Eisterhold (1983) observe, accessing appropriate content schemata depends initially on textual cues. For second language readers, then, obviously some language proficiency is

required to activate relevant schemata. To this end, language teachers can initiate vocabulary and grammar pre-teaching, as two important pre-reading activities. However, it has not been made clear in the present literature which of these two techniques has a greater influence on reading comprehension. Studies by Brisbois's (1995) and Haynes and Carr's (1990) showed that vocabulary knowledge was a better predictor of L2 reading ability than grammar. Conversely, there are also research studies showing that grammar has an equal or even a stronger effect on L2 reading (Alderson, 1993; Shiotsu & Weir, 2007). There is a state of indeterminacy as to the relative prominence of vocabulary and grammar in L2 reading as a result of mixed results from different studies (Shiotsu & Weir, 2007).

A need is felt, therefore, to pay closer attention to pre-reading activities in order to see how they influence reading comprehension. The present study is an attempt to explore the issue of schema activation or schema construction through pre-reading activities. In fact, this study is carried out with the intention of finding some empirical evidence to support the hypothesized relationship between grammar and vocabulary pre-teaching, as two types of schema activation/construction pre-reading activities, and reading comprehension of Iranian EFL learners.

2. Literature Review

According to Anderson and Pearson (1984), Sir Frederic Bartlett (1932) is usually acknowledged as the first psychologist to use the term "schema". According to Bartlett in his classic book *Remembering* (1932, p. 201) the term "schema" refers to "an active organization of past reactions, or past experience". Schema theory suggests that our past experience or world knowledge we have in our mind is organized into interrelated patterns. These patterns enable us to make predictions about what we might expect to experience in a given context. Such

patterns serve as devices for categorizing and arranging information so that it can be interpreted and retained (Widdowson, 1983).

Anderson and Pearson (1984) focus on the issue of how the reader's "schemata", or knowledge, already stored in memory, function in the process of interpreting new information and allowing it to enter and become a part of the knowledge store. In other words, Anderson and Pearson's Schema-Theoretic Model of the reading process addresses the interaction between old and new information.

According to Anderson and Pearson (1984), a schema is an abstract knowledge structure. A schema is abstract in the sense that it summarizes what is known about a variety of cases that differ in many particulars. It is structured in the sense that it represents the relationships among its component parts. Some components of a schema are particularly salient; that is to say, words mentioning the component have a high probability of bringing to mind the schema and only that schema and, therefore, these words have great diagnostic value for the reader.

Most discussions of schema theory have emphasized the use of schemata to assimilate information (Anderson and Pearson, 1984). Here, we deal with how a schema may be modified to accommodate new information. Obviously, a person may modify a schema by being told new information. When we read or experience something that fits in logically with what we already know, we add this information to our existing schemata. In this way, we build or expand our schema for a concept.

However, a schema may change because it cannot handle incoming data which contradict existing schemata. This alteration may take a great deal of time as well as a great deal of evidence since most people generally resist changing their schemata (Matthews, 2002). Similarly, Barnett (1999, p.32; cited in Mirhassani & Khosravi, 2002) states that "if the new textual information does not fit into a reader's schemata, the reader misunderstands the new material, ignores the new material,

or revises the schemata to match the facts within the passage".

2.1. Schema theory and reading comprehension

Reading researchers distinguish between three types of schemata, namely formal, content, and abstract schemata. Formal schema, often known as textual schema, refers to the organizational forms and rhetorical structures of written texts. It can include knowledge of different types and genres, and also includes the understanding that different types of texts use text organization, language structures, vocabulary, grammar, level of formality / register differently (Singhal, 1998). Content schema, according to Carrell & Eisterhold (1983), refers to a reader's background or world knowledge and provides readers with a foundation, a basis for comparison. As Carrell (1988 a) puts it, content schemata or background knowledge of the content area of the text may be culture-specific. It is thought that readers' cultures can affect everything from the way readers view reading itself, the content and formal schemata they hold, and their understanding of individual concepts (Stott, 2001).

Oller (1995) talks about a new type of schema, namely "abstract schema". According to Oller (*ibid*, p.287), "abstract schemata carry the inductive integration [formal schemata] to the completely general (abstract, nonmaterial, non-syntacticized) level of pure symbols".

In L2 reading research, the schema-theoretic focus on both the content and the structure of a text was adopted by some researchers, best represented by (Johnson, 1981, 1982; Carrell, 1984; Carrell and Eisterhold ,1983). This work has explored how a text's content and form influence L2 learners' reading comprehension (Barnitz, 1986).The research has generally relied on written recalls and multiple-choice comprehension tests to measure students' comprehension of short reading passages.

Schema theory is important to language teaching because schematic knowledge is as essential a component of successful

communication as linguistic knowledge (Widdowson, 1983). As Cook (1997) also puts it, schema theory can help explain students' comprehension problems and suggest the kind of background knowledge they need. Accordingly, comprehension occurs when a reader is able to use prior knowledge and experience to interpret an author's message (Norris and Phillips, 1987). The relevance of schema theory to reading comprehension is that it acknowledges semantic constructivity. In this relation, Adams and Collins (1979, p. 3) contend:

A fundamental assumption of schema-theoretic approaches to language comprehension is that spoken or written text does not in itself carry meaning. Rather, a text only provides directions for listeners or readers as to how they should retrieve or construct the intended meaning from their own, previously acquired knowledge. The words of a text evoke in the reader associated concepts, their past interrelationships and their potential interrelationships.

Therefore, a reader's failure to activate an appropriate schema can bring about problems in text comprehension. According to Carrell (1984), this failure to activate an appropriate schema may be due to either the reader not efficiently utilizing his / her bottom-up processing mode to activate schemata the reader may already possess, or it may be due to the fact that the reader does not possess the appropriate schema anticipated by the author. To compensate for this deficiency, Carrell (1988b) recommends using appropriate pre-reading activities to activate existing background knowledge as well as to build new background knowledge.

2.2. Pre-reading activities and schema activation

Schema theory research shows that the greater the background knowledge of a text's content area, the greater the comprehension of that text (Carrell, 1984). The implication of this for teaching is that

some students' reading problems may be problems of insufficient background knowledge, which can be provided for through appropriate pre-reading activities. In defining pre-reading activities Tudor (1990) contends:

Pre-reading is a term used to refer to the range of pedagogical techniques whereby learners are engaged, prior to their main processing of a target text, in text-related conceptual activities designed to help them to process their text in a more meaningful manner (P. 96).

Pre-reading activities, according to Ausubel (1963), are regarded as "advance organizers" which provide useful information and activate existing knowledge so that the reader has a framework or schema ready to assist in processing and retaining the text. Similarly, (Hyde, 2002) has reported that the use of pre-reading instructional activities can facilitate comprehension through the provision of context and the activation of the reader's background knowledge.

According to Widdowson (1990, p.104), in the process of making and interpreting meaning, "grammar and lexis serve as directions instructing discourse participants to make a particular kind of connection between the linguistic sign and the relevant aspect of their schematic knowledge. Similarly, Eskey (1971) contends that the two linguistic impediments to the process of decoding the meaning of sentences are vocabulary and grammar problems. Actually, this study intends to find empirical support for the hypothesized relationships between grammar and vocabulary pre-teaching, as two types of schema activation or pre-reading activities, and the reading comprehension of Iranian EFL readers.

2.3. Grammar pre-teaching

Among various types of pre-reading activities is grammar pre-teaching. According to Bossers (1992), limited syntactic knowledge and a basic unawareness of syntactic boundaries have been found to

impede the second-language reading process. Learners can presumably acquire new knowledge from moderately unfamiliar texts when the necessary structural cues are provided.

As we all know, words usually do not come in isolation in natural texts, and their combination into larger units is governed by the syntax of the language (Lyons, 1981). Readers need syntactic knowledge to construct an interpretation of what they read. Berman (1984, p.153) notes that "efficient foreign language readers must rely in part on syntactic devices to get at text meaning".

In a more recent study conducted by Shiotsu and Weir (2007), where the scope of grammar was clearly delineated as encompassing the knowledge of inflectional morphology, verb forms, and transformations, grammatical knowledge emerged as a stronger predictor of L2 reading ability.

Even though grammatical competence is presumed to be indispensable for identifying syntactic relations of sentence components, there has been little research on how readers' knowledge of grammar contributes to L2 reading comprehension (Shiotsu & Weir, 2007).

2.4. Vocabulary pre-teaching

It is well-documented that vocabulary and L2 reading share a reciprocal relationship (Pulido, 2009; Stæhr, 2008). Empirical studies on the relationship between vocabulary size and L2 reading comprehension have consistently produced a strong correlation between the two, ranging from 0.50 to 0.85 (Jahangard, 2010). This has directed researchers to see vocabulary development as a precondition for successful L2 reading comprehension, in addition to a strong predictor of L2 reading ability.

Poor L2 reading is viewed to be not due to the deficit in L2 grammar, but to the insufficient knowledge of vocabulary that carries semantic information (Strother & Ulijn, 1987).

From a schema-theoretic point of view, vocabulary pre-teaching, as

an effective type of pre-reading activity, triggers schema activation and aids comprehension. Nevertheless, because of the complexity of the process of reading comprehension, it is very difficult to establish a definitive, causal tie between vocabulary knowledge and reading comprehension (Ruddell, 1994).

Schema theory explains the paradoxical nature of the role of vocabulary instruction in reading pedagogy. On the one hand, an important part of teaching background knowledge is teaching the vocabulary related to it and, conversely, teaching vocabulary means teaching concepts, new knowledge (Carrell, 1984). Vocabulary pre-teaching can, therefore, help EFL readers both to build the background knowledge needed for reading and to show them how to activate or access such knowledge in the reading process. The empirical evidence for the facilitating effect of vocabulary pre-teaching on L₂ readers' reading comprehension has also been provided, for example, in (Hyde, 2002). Also, Findings from Brisbois's (1995) and Haynes and Carr's (1990) studies, where vocabulary knowledge was shown to be a better predictor of L2 reading ability than grammar.

On the other hand, there is also research showing that grammar has a comparable or a stronger effect on L2 reading (Alderson, 1993; Shiotsu & Weir, 2007). The respective weight of vocabulary and grammar in L2 reading still remains inconclusive mainly due to the marked contrast in research findings (Shiotsu & Weir, 2007).

2.5. The Purpose of the Study

The study aimed at investigating whether pre-teaching affects reading comprehension and also to see which pre-teaching activities (grammar or vocabulary) are more effective in enhancing reading comprehension.

To provide tentative answers to the above questions the following two null hypotheses were formulated:

H₀ 1. Pre-teaching has no significant effect on reading comprehension.

H₀ 2. There is no significant difference between the effect of grammar pre-teaching and that of vocabulary pre-teaching on reading comprehension.

3. Method

In this research, the effect of two types of pre-reading activities, namely, grammar and vocabulary pre-teaching, on EFL learners' reading comprehension was explored from the perspective of schema theory. In other words, the researcher intended to see if the provision of grammar versus vocabulary pre-teaching, as two types of schema-activation devices, influenced EFL reading comprehension equally and in the same way. In technical terms, grammar and vocabulary constituted our independent variables, and reading comprehension was the dependent variable in this study.

3.1. Subjects

The sample consisted of 90 female students studying at pre-university centers of Mobarakeh, Isfahan. They were all participating in English classes for the University Entrance Examination preparation held in Fatemeh Zahra High School of Mobarakeh. The subjects were randomly divided into three equal-in-number groups: two experimental groups and one control group. All three groups were nearly the same on the basis of their language proficiency levels because they had the same educational background, the same years of study in English, and, most importantly, they had scored nearly the same on the language proficiency test administered to them.

3.2. Materials

The materials of this study consisted of: 1) a pretest which was one of the versions of Nelson English Language Tests, as a test of overall language proficiency, 2) four short reading passages each followed by five multiple-choice questions prepared by the Iranian Sanjesh Organization, 3) a list of main grammatical structures or patterns used in the reading passages, to which only the subjects in one of the experimental groups were exposed in the form of a pre-reading activity. The grammatical structures which were presented as grammar pre-teaching were: passive forms, conditional sentences, comparative and superlative adjectives, adjectives after linking verbs, relative clauses, infinitival phrases of purpose, the gerund, the infinitive after certain verbs, the parallel constructions "both.....and" and "neither.....nor", that-clauses, nouns as modifiers, the present perfect tense, and the anaphoric or cataphoric use of pronouns, and 4) a list of main vocabulary items used in the reading passages, which only the subjects in the other experimental group received in the form of another type of pre-reading activity. The vocabulary list contained the following items : consideration, root, supply, prepare, weapon, tools, gain, develop, culture, attend, income, increase, save, look for, production, convenience food, take away, suitable, contain, natural, raw, destroy, values, describe, process, society, take place, scientists, population, growth, exist, frozen, fresh, notice, effect, habits, skills, and education.

3.3. Procedures

In this study, three groups of pre-university students were used. To make sure that all the subjects were linguistically homogeneous, one of the Nelson English Language Tests (250 D) which measured the students' overall language proficiency at the intermediate level was administered to them. The test included 50 multiple-choice items on grammar, vocabulary, and English sounds. The time allotted for the test was 45 minutes, as recommended by the test makers. The

subjects' scores on the test were subjected to an ANOVA and an obtained probability of 0.988 indicated the subjects' linguistic homogeneity. The following table shows the ANOVA results for the pretests. This shows that there was no statistically significant difference between the learners' in terms of language proficiency.

Table 1. The ANOVA Results for the Pretests

	Sum of squares	df	Mean Square	F	P-Value
Between groups	2.489	2	1.244		0.988
Within groups	9305.067	87		0.012	
Total	9307.556	89	106.955		

Then, the subjects in the two experimental groups received the treatment of the study for one month, sixty minutes a week. The treatment in each group was different.

The first experimental group (group A) was exposed to grammar pre-teaching, as a type of pre-reading activity. The instructional materials were taught both deductively and inductively through a variety of techniques such as giving example sentences, question and answer, and stating the grammatical rules explicitly. In fact, the main focus of the activities was the clarification of linguistic forms and the activation of the subjects' previous knowledge.

The subjects in the second experimental group (group B) were exposed to vocabulary pre-teaching, as another type of pre-reading activity. The instructional materials were taught through a variety of techniques such as word definition, synonyms and antonyms, using the words in contexts, question and answer in English, and giving the Persian equivalents of certain items. The main focus of such activities was actually activating the subjects' prior knowledge and triggering their schemata so that they might come to a sound interpretation of the

texts they were going to read.

In group C which was the control group, obviously, there was no treatment. In other words, no pre-reading activities were presented to the students. They were just asked to go directly to the reading texts and read them for comprehension.

All the three groups were given a short reading text to read for comprehension. Then, they were asked to answer the multiple-choice items based on the text they had read. All the tests had been made by the Iranian Sanjesh Organization and had been used as part of the university entrance examination some years ago. The students' answer sheets were then collected for correction and statistical analyses.

3.4. Results

After the correction and scoring of the subjects' answer sheets, the obtained data were subjected to an ANOVA. The ultimate results revealed no significant difference between the performance of the subjects in the three groups in terms of reading comprehension.

Table 2 presents the obtained scores of the three groups on the reading comprehension tests (posttests) on a 0-20 scale.

Table 2. The Scores Obtained on the Posttests

Group A		Group B		Group C	
Score	Frequency	Score	Frequency	Score	Frequency

13	1	15	1	14	5
12	3	14	3	13	2
11	4	13	4	12	5
10	9	12	4	11	2
9	4	11	5	10	3
8	3	10	5	9	4
7	3	9	3	8	3
6	3	8	2	7	3
		6	2	6	1
		4	1	5	2
n=30		n=30		n=30	

3.5. Statistical findings

Table 3 presents the basic descriptive statistics for scores of the three groups on the comprehension tests (posttests).

Table 3. Descriptive Statistics for the Posttests

Group	No.	Mean	SD	Std. Error	Min.	Max.
A	30	9.40	1.90	0.35	6	13
B	30	10.70	2.59	0.47	4	15
C	30	10.17	2.80	0.51	5	14
Total	90	10.09	2.49	0.26	4	15

3.6. ANOVA results

An ANOVA procedure was run to find out if the mean difference among the performance of the three groups on the reading comprehension tests was significant. Table 4 shows the results of the ANOVA. The F value was 2.112 which was not statistically significant, showing that there was no difference between the performances of the groups involved in the study.

Table 4. The Results of the ANOVA for the Posttests

	Sum of Squares	d f	Mean Square	F	P-Value
Between Groups	25.622	2	12.811	2.112	0.127
Within Groups	527.667	87	6.065		
Total	553.289	89			

4. Discussion

As the results of the study reveal, the subjects in the three groups performed similarly on the reading comprehension tests. In other words, no significant difference was found among the performance of the first group, who received grammar pre-teaching, the second group, who were exposed to vocabulary pre-teaching, and the third group (the control group) who received no treatment.

The first null hypothesis of the study, i.e., 'Pre-teaching has no significant effect on reading comprehension' is retained because there was no significant difference between the experimental and the control groups.

The results of the study also lead us to retain the second null hypotheses, i.e., 'There is no significant difference between the effect of grammar pre-teaching and that of vocabulary pre-teaching on reading comprehension.'

However, the descriptive statistics presented earlier revealed that the mean and the maximum score of the second experimental group, who received vocabulary pre-teaching, were a little bit higher than those of the other two groups. Though the difference was not statistically significant and could have been due to chance, however, it can be said that the vocabulary pre-teaching technique had a slightly more facilitative effect on the Iranian EFL learners' reading comprehension. This is in line with the findings of the previous

researches which confirm the facilitative effect of vocabulary knowledge on reading comprehension (Jahangard, 2010; Hyde, 2002; Pulido, 2009; Stæhr, 2008; Strother & Ulijn, 1987). On the other hand, the subjects who received grammar pre-teaching had a mean score even lower than that of the control group though statistically insignificant. However, this finding seems to run counter to the researches which showed that grammar has an equal or even stronger effect on L2 reading comprehension (Alderson, 1993; Shiotsu & Weir, 2007). A possible explanation is that the grammatical pre-teaching activities in the experiment were not effective enough to help the learners internalize the grammatical rules. Moreover, even if the subjects had gained a declarative knowledge of the syntactic points at issue, they could not have converted the knowledge into the procedural automatic one which could be used immediately in the reading. Also, an alternative explanation for the debilitating effect of grammar pre-teaching can be attributed to the fact that too much attention to the language forms might have resulted in losing track of the content of reading texts.

5. Conclusion

The rationale behind the present study was to investigate whether such pre-reading activities as grammar and vocabulary pre-teaching have a significant impact or just a relatively facilitative or even a debilitating effect on reading comprehension. The results obtained in this research revealed that grammar and vocabulary pre-teaching had no significant effect on the enhancement of reading comprehension. Rather, vocabulary pre-teaching had a relatively facilitative effect on reading comprehension whereas the effect of grammar pre-teaching was seemingly debilitating.

The findings of this study support Interactive-Compensatory Model as proposed by Stanovich (1980) of the reading process according to which a process at any level can compensate for deficiencies at any

other level. In other words, any reader may rely on better developed knowledge sources when particular knowledge sources are temporarily weak. The similarity of the performance of the three groups in this study can be indicative of the existence of a kind of compensatory processing applied by the subjects left with differing bottom-up and top-down knowledge sources.

Moreover, the results of this study can be interpreted as a piece of evidence for Eskey's (1988) view of reading comprehension as "a constant interaction between bottom-up and top-down processing, each source of information contributing to a comprehensive reconstruction of the meaning of the text" (P.94). In other words, this study empirically supports Widdowson's (1979) contention that reading is a process of combining textual information with the information a reader brings to a text.

The results of this study can also provide empirical support for the importance of background knowledge within a psycholinguistic model of reading. In Goodman's (1988) terms, the reader concentrates his total experience and learning on the task, drawing on his experiences and concepts he has attained as well as the language competence he has achieved. In other words, from a schema-theoretic point of view, the reader actively builds schemata and revises them in light of new information (Widmayer, 2003).

One of the major limitations of the current study was that the effectiveness of the pre-teaching activities was not examined. Further research is needed to investigate the very same research question of the present study in a more rigorous design in which two post-tests are administered immediately after the pre-teaching activities to check their effectiveness.

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