
Seperate and Simultaneous Cumulative Effects of Content and Formal Chemata on Turkish EFL Learners' Reading

İçerik Ve Metin Tiplerine İlişkin Ön Bilgi Oluşturmanın Türk Yabancı Dil Öğrencilerinin Okumasına Etkisi

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Abstract: *Due to the absence of a commonly accepted comprehensive reading theory, many researchers have been trying to understand the reading process by analyzing it into a set of components. Two of those components widely researched in first and second language are content background knowledge (content schemata) and the prior knowledge of rhetorical structures (formal schemata).*

The study aimed at investigating the separate and simultaneous combined effects of the content and formal schemata on Turkish EFL students' reading comprehension. In order to find out the probable effects of the two schemata, four main groups of subjects, comprising a total of 115 students, were subjected to different treatments: The first group was given treatment to build up both the content and the formal schemata simultaneously, the second group was trained to build up only the formal schemata, the third group was taught to build up only the content schemata, and the last group did not receive any special treatment and assigned as the control group. These groups of subjects were compared to one another by means of some statistical tests on the basis of their scores on reading. The results showed that the content schemata is an important factor in EFL reading, but the formal schemata and the combination of the content and formal schemata did not appear to be as important.

Key words: *EFL reading, content schemata, formal schemata*

Öz: *Kapsamlı ve genel kabul görmüş bir okuma-anlama teorisi bulunmaması sebebiyle birçok araştırmacı, okuma sürecini, sürecin oluşturanlarını inceleyerek anlamaya çalışmaktadır. Süreci oluşturan unsurlardan iki tanesi içeriğe ilişkin ön bilgi (content schemata) ve metnin söylem biçimine ilişkin önbilgidir (formal schemata)*

Araştırma, yabancı dil öğrencisinde içerik ve söylem biçimine ilişkin önbilgi oluşturmalarının hem tek başlarına hem de birlikte öğrencilerin okuma-anlamasına muhtemel etkilerini saptamayı amaçlamıştır. Bunun için toplam 115 öğrenciden oluşan dört denek grubu oluşturuldu ve gruplar farklı süreçlere tabii tutuldu: Birinci grupta hem içerik hem de söylem biçimleriyle ilgili önbilgi oluşturuldu, ikinci grupta sadece söylem biçimleriyle ilgili önbilgi oluşturuldu, üçüncü grupta sadece içerikle ilgili önbilgi oluşturuldu, son grupsa kontrol grubu olarak atandı ve hiçbir özel öğrenme sürecine tabii tutulmadı. Daha sonra gruplar iki ayrı testten elde ettikleri puanlar esas alınarak istatistiksel testlerle karşılaştırıldılar. Sonuçlar içerik önbilgisinin okuma-anlamada önemli bir faktör olduğunu gösterdi. Söylem önbilgisi ve aynı anda hem söylem hem de içerik önbilgisinin oluşturulduğu gruplarınsa anlamlı bir şekilde farklılaşmadıkları gözlemlendi.

Anahtar kelimeler: *Yabancı dilde okuma, içerik önbilgisi, anlatım biçimi önbilgisi*

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1. INTRODUCTION

Reading is probably the most important skill among the four basic language skills especially in the academic context for many different learners including the ones learning foreign languages. Owing to this importance, perhaps, a great number of books and journals have been dedicated to the study and teaching of reading and a large amount of research has been conducted in order to understand the reading process. However, it is still the least understood phenomenon, and there is not a generally accepted comprehensive theory.

As Clarke (1988) states, "The quantity and variety of theoretical models of reading in the first language (L1) has resulted in a great amount of theoretical and pedagogical diversity among second language (L2) researchers and teachers." (p. 114). It is apparent that based upon the models introduced by L1 reading researchers, research on and efforts to improve the instruction in L2 and foreign language reading has grown remarkably. Nevertheless, as contended by Grabe (1991) in agreement with Clarke, "It has become difficult to synthesize the array of research and instructional literature in L2 and foreign language reading." (p. 379).

The complexity of reading process and the lack of a commonly accepted theory has, therefore, led the researchers in the field to the attempts to understand and explain the reading by analyzing the process into a set of components (Barnet, 1986; Beck, 1993; Bernhard and Kamil, 1995; Blan, 1982; Block, 1992; Calfee and Drum, 1986; Carrell, 1991; Carrell and Wise, 1998; Carver, 1992; Davis and Bistodeam, 1993; Donin and Silva, 1993; Dowling and Mitchell, 1993; Gernsbacher, 1990; Ibrahim, 1979; Lee, 1986; Meyer, 1977; Tschirner, 1996; Wolf, 1993). A review of literature displays that the following factors have been the major concerns of reading researchers in L2 and foreign language:

- *Automatic decoding ability
- *Vocabulary knowledge
- *Structural knowledge
- *Content background knowledge
- *Knowledge of formal written discourse structure
- *Reading skills and strategies
- *Intensive and extensive reading

Early work on L2 reading comprehension assumed a rather passive 'bottom-up' view of reading; that is, it was viewed primarily as a decoding process of reconstructing the author's intended meaning via recognizing the printed letters and words and building up a meaning for the text from the smallest textual units at the bottom-letters and words- to larger units at the top-phrases, clauses, and sentences (Barnett, 1986; Carrell, 1988; Hammadou, 1991). As a result of this approach to reading, Word and sentence-level structures remained the principal units and measure of reading comprehension for a long period of time.

After the emergence of Adams and Collins' (1977) schema theoretic views and Goodman's (1988) Psycholinguistic model of reading, reading began to be seen as an interactive

process between the text and the reader. Consequently, the focus of later research has shifted mainly to reader's contributions to reading and understanding. According to these new approaches, a written text does not carry meaning in itself. Rather, a text only provides direction for readers as to how they should retrieve or construct the intended meaning from their own previously acquired knowledge.

Schema theorists have the idea that readers have several schemata or scenarios, which are in fact the organizations of the readers' past experiences that directly affect their perception of the text. New information from the text is fitted into existing schemata; if there is no particular fit, most of the new information is lost and not remembered.

Parallel to the schema theoretic views, Goodman's psycholinguistic model of reading offers a similar explanation of how comprehension takes place: Readers sample the graphemic, phonological, syntactic, and semantic cues in the text, make predictions or hypothesize what the text is about, test the predictions or hypotheses, and then either confirm or reject them. If the latter is the case, they make new predictions or hypotheses on the basis of new information and go on testing them through reading. In this process, too, the readers need to use their previous knowledge of world and experience with language in forming those predictions or hypotheses.

These 'top-down' approaches, which attribute an active role to the reader and great importance to his background knowledge, have been prevailing in both L2 and foreign language reading comprehension research. Many researchers like Bartu, 2001; Bernhard and Kamil, 1995; Block, 1986, 1992; Bugel and Buunk, 1996; Brantmeir, 2003; Carrell, 1983, 1984a, 1984b, 1987, 1988; Carrell and Eisterhold, 1983; Carrell, and Wise, 1998; Carver, 1992; Chiang and Dunkel, 1992; Davaudi, 2005; Gernsbacher, 1990; Gordon and Hanauer, 1995; Johnson, 1981, 1982; Karin, 1993; Nassaji, 2002; Perkins and Jones, 1985 did empirical studies based on schema theories and psycholinguistic model. In general, these studies found that subjects who have prior knowledge about the content of the text (content schemata) read the passage more rapidly and recall greater amount of information. Some others provided evidence that prior knowledge the readers have about the rhetorical organization of the text (formal schemata) also influence their comprehension (Allen, Bernhardt, Berry, and Demel, 1988; Carrell, 1985; Connor, 1984; Fayol 1991; Grabe, 1997; Johns and Paz, 1997; Kaplan, 1997; Kurtz, 1991; Meyer and Freedle, 1984; Sharp, 2002; Sharp, 2003).

In Turkey, the researchers seem to have focused on reading strategies and strategy training rather than on explicit schemata building. However, these studies on reading strategies have also shown that activation and use of content and formal background knowledge may have positive effects on reading comprehension in both Turkish and English (Kuzu, 2004; Salatacı and Akyel, 2002; Sariçoban, 2002; Yiğiter, Sariçoban, and Gürses, 2005).

In empirical studies on these two types of schemata, one of the factors is kept constant in order to test the effects of the other on reading comprehension. For example, while trying to test the effects of content schemata, the formal rhetorical structure of the text is kept constant, the content is manipulated, and then each different content is processed by the subjects. Any differences between groups of subjects regarding their scores, which are usually obtained by means of recall protocols, are then presumed to be due to the manipulation of content and the readers' background knowledge of that content. The same method is used when the effects of formal schemata is measured. According to Carrell

(1987), this way of investigating these two factors as independent and control variables in a single study might have confounded content and formal schemata, and thus failed to distinguish clearly the effects of them on comprehension.

In most of the previous studies, the content schemata was taken for granted on the basis of the subjects' membership to a certain nation or their rating of their own familiarity with the topic, and the formal schemata was assumed to exist depending on the existence of it in the subjects' recall protocol. The subjects were given no explicit training to build up content and formal schemata. It was, however, shown by Hammadau (1991) that one's rating his own familiarity with a topic is not able to predict his ability to comprehend what he reads about that topic. Moreover, every member of a given nation may not be equally knowledgeable in a given culturally bound topic.

Considering the indicated limitations of previous studies and the fact that most of them are conducted in L1 and L2 setting, this study aimed at demonstrating the separate effects of content and formal schemata and their simultaneous cumulative effects on Turkish university EFL students' reading comprehension when they are explicitly trained. Since the purpose was to show the possible differences in effectiveness of three different independent variables; content, form, and content and form together, on readers' comprehension, the research was designed as a 'planned variation experiment'. These kinds of research design are usually preferred when different models used in a program are to be evaluated because it allows the researcher to compare more than two sample means (Hatch and Farhady, 1982).

2. METHODOLOGY

The research was designed as a planned variation experiment, and following is the information about setting, subject, treatments to build content and formal schemata, and materials used to measure the subjects' understanding.

2. 1. Setting and Subjects

The study was carried out with the first-year EFL students of Education Faculty, Anadolu University, Eskişehir. A total of 134 students participated in the study, but 19 of them were excluded on account of absenteeism in either the treatment or the test (the reading protocol). The scores for the performance of the remaining 115 students on the reading tests comprised the data set of the study. All of the subjects were native speakers of Turkish and their average age was 20, ranging between 18 and 24. The proficiency level of the subjects during the study was upper-intermediate according to results of the tests they took for their placement.

The subjects were distributed into four major groups: One control group and three experimental groups, content, form, and content-form. Each of these four groups was later divided into two sub-groups within themselves for the purpose of some further comparisons

Distribution of the subjects in the groups is displayed in Table 1.

Table 1. The Final Distribution of the Subjects in Groups

GROUPS	NUMBER OF SUBJECTS					
	Sub-Group 1			Sub-Group 2		
	Fm	M	TOTAL	Fm	M	TOTAL
CF	13	1	14	8	4	12
F	13	4	17	11	6	17
C	14	2	16	14	3	17
Cr.	7	4	11	7	4	11
TOTAL	47	11	58	40	17	57

*CF: Content-Form Groups; F: Form Groups; C: Content Groups; Cr: Control Groups;
Fm: Female; M: Male*

The groups were equal in their reading proficiency. To see this, a standard reading proficiency test, the reading section of a TOEFL, was given to the subjects before the treatment. The one way ANOVA conducted in statistical analysis showed no significant difference among the groups' mean scores ($p>05$). Each of the experimental groups received different treatments during the study, but the control group followed through the normal regular schedule.

2.2. Content Schemata Building

In regular reading classes, each subject matter included in the schedule is handled first by presenting, explaining, exemplifying, and exercising for three hours in a week, and then by practicing for another three hours in the following week. The practice is done with the materials the student themselves find, work on, and bring into class. First they find a number of texts (at least five) from a variety of authentic sources and work on those texts by preparing exercises concerning the subject matter of that week, and then bring them into class for further practice the next week. In the next week's class, the students find the chance to choose from among and practice with a great number of texts (the number of students in each class multiplied by at least five) depending on their interests. Since the main concern is having the students practice the related week's subject matter as much as they can, the topics of the texts they are supposed to find, study, and bring into class are not limited. Moreover, it is known that letting students free in their choice of texts on the topics they are interested in is an important incentive to read more (Day, R. and Banford, J., 2002).

A week before the treatment started, the subjects in the content groups had dealt with the subject matter, 'supporting details; recognizing and distinguishing major and minor details from each other'. Therefore, they were to find, work on, and bring some texts into class to provide further practice for themselves and their classmates in relation to this subject matter. The subjects were directed on purpose to find texts on the topic of 'weight affairs in sports' so that they would build content schemata about this topic. This topic was thought to be general enough to cover information about the topic of 'the loss of body water', which is more specific in comparison to the former one. The topic, the loss of body water, is the overall topic of the two texts, which were used as testing material in this study

(see Figure 1). The subjects were also required to take notes considering the major and minor details while doing their weekly homework with the texts they were to find. It was expected that, in this way, they would have more knowledge about the topic, and prepare themselves for the discussions that were planned for the following class. During the following class, a discussion was held on the topic of 'the weight affairs in sports' for a class hour. All of the subjects participated in the discussion and contributed to it depending on their notes.

In addition to this, the subjects in the content group were given some further homework so that they would expand their knowledge about the topic, the weight affairs in sports. They were supplied with two more passages related to this topic and asked to write a summary for each. Because the weekly assignments were a part of course requirement and considered in the students' final exam, they seemed to be much eager to do the assignments given and participated in classroom activities.

2.3. Formal Schemata Building

Training the subjects in the form groups about the overall rhetorical structure of texts was largely based on Langan's (1989) course book, *Ten Steps to Improving Reading*. The chapter on Patterns of Organization from this book was used as the main teaching material in building the formal schemata. Five common types of rhetorical structures, including collection of descriptions and comparison, were thought to the subjects in two separate three-hour sessions in two successive weeks. During the first session, first the objectives were made clear, then the key aspects of each type were explained and illustrated by tree diagrams in a clear and simple way, and then a series of practice exercises were provided. The session went on with two review tests and a discussion on answers to the questions. It ended with a review of objectives emphasizing that by learning about the ways in which expository texts are typically organized, the subjects would improve their reading comprehension.

After the first session, the students were assigned homework requiring passages-at least one for each type of rhetorical structure-from different sources. After working on them, they were to bring the texts to the following week's class so that all of them would have opportunity to practice with a variety of materials from various sources. The passages supplied by the students formed the basis for further practice on recognizing the types of expository texts and reading and understanding them during the second treatment session. This session also ended with a review of the objectives and the main points of training. For additional practice, they were given a mastery test as homework, correct answers of which were provided later at the beginning of the next class for comparison, and brief discussions were held on the basis of students' questions.

2.4. Treatment of the Content-form Groups

No special treatment was given to the subjects in the content-form groups. As explained before, these groups followed the same procedures as the content groups did in order to build content schemata. To build formal schemata, they were thought the five common types of overall rhetorical structures in exactly the same way as the formal groups were.

As a result, they built up both the content schemata and the formal schemata at the same time.

2.5. Passages

The texts used as testing material in the study were taken from Carrell (1984b) who wrote four versions of a single text about the loss of body water in order to control for the structure and content of information while investigating the effects of discourse type on a variety of native speakers' reading comprehension. Two of these texts, the rhetorical structures of which were based on collection of descriptions and comparison, were used in the study to test the subjects' recall. Both texts contained identical information. The overall discourse structures differed, as did a minimal number of ideas which were necessary for altering the structure. The collection of description passage contained 135 words, and the comparison passage contained 137 words. Identical content information across the two passages is in lower-case letters, and different information is in capital letters. The capitalized and underlined words identify different ideas in two passages. The capitalized words without underlining explicitly signal the discourse type of each passage (see Figure 1)

The ideas in comparison texts are said to be more tightly organized, whereas the ideas in collection of description texts are more loosely organized. It is claimed that the more tightly organized a text is, the more easily it is encoded, stored in long term memory, and retrieved (Meyer and Feedle, 1984). These two types of texts were chosen especially to be used in the study expecting that it would provide the researcher with an opportunity for some further comparison – whether text type itself would cause any differences in the subjects' recall -though it was not the main concern of the study.

2.6. Testing and Scoring

The date and time for testing were decided in consultation with the subjects in order to find the most suitable time and ensure the maximum participation. The test was administered to eight groups of subjects at the same time in eight different classrooms: Four groups read the collection of description text, whereas the other four groups took the comparison text. That is, one sub-group from the four major groups, the control, the content, the form, and the content-form, read the collection of description text, and the other four sub-groups read the comparison text. Both of the texts were accompanied by written instructions, which informed them that they would be asked to carry out certain tasks on the basis of their reading. The instructions also demanded them to imagine that they had come across the text in a newspaper or magazine they liked reading, and that the topic of the text was of interest to them. They were further asked to read the text at their own reading rates to find out what it said about the topic, but not try to memorize. In this way, the subjects were stimulated to read the passages through and carefully.

In order to reduce the effect of short term memory-to prevent any possible memorization, they were then administered a brief questionnaire, which required their rating of how difficult or easy they found the text's grammar, vocabulary, content, and pattern of organization. When they finished completing the questionnaire, a written recall protocol

was administered. The subjects were asked to write down everything they could remember from the text, using their own words or words from the text. They were asked to write in complete sentences and not just isolated words or phrases. They were to try to show in their writing how ideas from the text were related to each other.

The free recall protocols of the subjects were scored on the basis of the identical idea units they recalled and produced. The identical information in the two texts is broken into its smaller meaningful components, each of which represents an idea unit. The two texts contained a total of 21 common idea units (see Figure 2). The subjects' free recall protocols were scored on the basis of these idea units; each idea unit recalled correctly was assigned one point.

3. PRESENTATION AND ANALYSIS OF DATA

The study aimed at primarily finding out the separate effects of content and formal schemata and their simultaneous cumulative effects on university level EFL learners' reading comprehension. Depending on the purpose of the study, the following hypotheses were formed and tested with similar groups of subjects and by means of two different texts, which are based upon the same content but different rhetorical structures.

1. Building content schemata facilitates EFL learners' reading comprehension.
2. Building formal schemata facilitates EFL learners' reading comprehension.
3. Simultaneous building of both content and formal schemata may have a cumulative effect on EFL learners' reading comprehension and increase it to greater extend.

The study was designed as a planned variation experiment containing three independent variables and four different mean scores. As a result, the statistical test chosen to be used was analysis of variance (ANOVA), which allowed us to compare several group means simultaneously.

The one way ANOVA was performed to analyze the mean scores for identical idea units obtained through free recall protocols done by four groups of subjects with the collection of descriptions text, and another four groups of subjects with the comparison text. An alpha level of .05 was chosen as the significance level. When the results of ANOVA reached the significance level, a Post Hoc multiple comparison test was performed in order to see precisely where the differences occurred. That is, which group or groups differed significantly from the others. Significant differences were reported, and non-significant ones were indicated by n.s. in the tables.

Descriptive statistics for the identical idea units recalled by the groups of subjects from the two texts, collection of descriptions and comparison, are presented in Table 2.

Table 2. Descriptive Statistics for Identical Idea Units Recalled from the Texts

COLLECTION OF DESCRIPTIONS	N. OF SS.	MEAN	STD. DEVIATION	STD. ERROR
CF	14	4.9286	2.9991	.8015
F	17	2.9412	2.7265	.6613
C	16	6.2500	3.2352	.8088
Cr.	11	2.8182	1.9400	.5849
TOTAL	58	4.3103	3.1131	.4088

COMPARISON	N. OF SS.	MEAN	STD. DEVIATION	STD. ERROR
CF	12	5.9167	2.6097	.7534
F	17	3.9412	2.7493	.6668
C	17	6.2941	3.6188	.8777
Cr.	11	3.4545	1.4397	.4341
TOTAL	57	4.9649	3.0176	.3997

CF: Content-Form Groups; F: Form Groups; C: Content Groups; Cr: Control Groups

The table show clearly that groups differ from one another on the basis of their mean scores. The one-way ANOVA also confirmed the results and displayed that the differences were statistically significant ($F=5.097$, $p=.004$ for the collection of descriptions text, and $F=3.475$, $p=.022$ for the comparison text).

In order to see where the difference is, The Post Hoc LSD multiple comparison test was performed on the set of data. The results of the multiple comparisons can be seen in Table 3.

Table 3. Results from Multiple Comparison for the Identical Idea Units Recalled from the Texts

COLLECTION OF DESCRIPTIONS				
GROUPS	CF	F	C	Cr.
CF		n.s.	n.s.	n.s.
F	n.s.		.001	n.s.
C	n.s.	.001		.003
Cr.	n.s.	n.s.	.003	

COMPARISON				
GROUPS	CF	F	C	Cr.
CF		n.s.	n.s.	n.s.
F	n.s.		.019	n.s.
C	n.s.	.019		.012
Cr.	n.s.	n.s.	.012	

As it is seen in the Table 3, For both of the texts, the collection of descriptions and the comparison, the content-form groups do not differ from any of the other three groups. However, the content groups are significantly different from the form groups (for collection of descriptions test, $p=.001$; for comparison test, $p=.019$) and from the control groups (for collection of descriptions, $p=.003$; for comparison, $p=.012$). There is no statistically significant difference between the content groups and the content-form groups. The results obviously reveal that the content schemata is a strong predictor of EFL readers' comprehension, whereas the formal schemata does not seem to affect reading comprehension in foreign language. The results also display that building the content and the formal schemata simultaneously does not have a cumulative effect on EFL readers' understanding.

4. DISCUSSION AND CONCLUSION

A close examination of the mean scores in Table 2 indicates that the numbers of identical idea units recalled by all the groups are fairly low-ranging from 2.81 for the collection of description text and 6.29 for the comparison text. Considering that there were a total of 21 identical idea units, this means that the subjects were able to remember only 13% to 29% of the total idea units, which suggests that the tasks were quite difficult for the subjects. However, comparable data from Meyer and Freedle's research (1984) with native speakers show a range of recall scores between 39% and 67% for graduate-level readers, and data from Carrell's (1984b) study with second language university students show a range of mean scores between 7% and 25%. Thus, on these same tasks, the Turkish EFL readers' rate of recall is slightly above Carrell's ESL learners but much below Meyer and Freedle's native speakers.

In spite of the low range in recalling the identical idea units, the results of both of the tests reveal clearly the facilitating effects of content schemata on readers' comprehension. These results confirm the first hypothesis that content schemata enhance the EFL readers' comprehension. As for the second and the third hypotheses about the effects of formal schemata and the possible simultaneous cumulative effects of content and formal schemata, the findings indicate that they are not so effective as content schemata in recalling the identical idea units.

This may be due to the nature of interaction between formal schemata and comprehension: As reported by Carrell (1985), Connor (1984), and Fisher and Mandel (1984) the formal schemata facilitate EFL learners' reading comprehension, but in a different way from the content schemata. The readers' awareness of rhetorical structure of the texts they read may have prevented them from relying sufficiently on their content schemata and have them focus especially on the high-level information. While the form groups and the content-form groups were receiving training about the rhetorical structures of texts, their attention was drawn particularly to how they could take advantage of their knowledge in patterns of organization to pick up the high-level information (the main idea and major details) in the texts they are to read. The relationship between the high-level ideas or the types of texts were made clear in the introduction of the related topic of the lesson (patterns of organization) and during the practice phase. The treatment may have led the subjects' concentration particularly to the high-level ideas rather than the low-level ones. This may explain why the numbers of identical idea units recalled by the form and the content-form

groups were lower than those of the content groups. If the quality of the idea units had been considered, different results might have been reached.

When the length of the testing texts are taken into account together with the fact that the minor details are usually high in number in any given written materials, the above interpretation may also explain why there are not any differences between the form and the control groups and between the content-form and the control groups: In their free recall protocols, the subjects in the form and the content-form groups, as a result of their training about the rhetorical structures, may have focused particularly upon the high-level idea units and produced them rather than the low-level ones. The scarcity of high-level ideas in comparison to low-level ones in the texts may have caused the similarity in scores of the three groups of subjects in the study.

The similarity in results from the two text types may be due to the subjects' familiarity to these types of rhetorical organization, the collection of descriptions and the comparison. Some researchers such as Carrell (1984b), Connor (1984), and Hinds (1983) points to the existence of a kind of relationship between native language groups and the types of texts. Some native language groups are better in recalling the information in certain types of texts, whereas others are adept at comprehending the passages based on other types of pattern of organizations. If it is remembered that all of the subjects participated in the study were Turkish ELT students, the results in this sense should not be surprising because Turkish people may be more accustomed to these types of texts.

To sum up, the study showed that the content schemata obviously affect EFL readers' reading comprehension. The formal schemata, on the other hand, do not seem to affect comprehension significantly but carries the potential to do so in a different manner. If the study were designed to test the quality of information, high-level vs. low-level, appearance of different results would be probable. According to the present data, the content and the formal schemata can not be said to have a simultaneous cumulative effect on EFL readers' comprehension. However, this may be due to the kind of complicated interaction between the content and formal schemata in the task. When the rough data (Table 2) are examined, there seems to be quite a lot of differences between the mean scores of the content-form and the control groups though statistically insignificant. This may be interpreted that the formal schemata probably function as a sort of moderator, which leads the reader to avoid excessive use of his content schemata by directing his attention mainly to the text itself, especially to the high-level information it contains.

The results of the study may have some implications for EFL reading pedagogy from a number of perspectives. First of all, it is clear that building and learning to activate the appropriate background knowledge of content may produce better reading comprehension.

This can be done in a variety of ways such as lectures; viewing movies, slides, pictures, demonstrations; real-life experiences; class discussions or debates; plays, and other role-play activities; teacher-, text-, or student-generated prediction questions about the text; introduction and discussion of special vocabulary; key-word/key-concept association activities, and prior reading of related texts (Barnett, 1986; Carrell, 1984a; and Carrell and Eisterhold, 1983).

As Carrell (1988) claims, considering the course books and the time spent on actual

teaching of reading in EFL classrooms, one can see that schemata building and activating are not given the emphasis to the extent they deserve. Many of the existing course books include a number of exercises in the form of information-seeking or prediction questions for the reader to keep in mind while reading. These kinds of pre-reading exercises primarily function to motivate students to read for a purpose; for example to gain the required information to answer the questions. They also supposedly function to get the students to predict, within a general content area, what the text is about. These sorts of questions may help the readers predict which prior knowledge to access or activate, but can not do much toward actual building that knowledge in the reader. Pre-reading activities should accomplish both goals; building new background knowledge as well as activating the existing one.

Even in EFL reading courses, most of the time is spent on various aspects of language, such as vocabulary and syntax or giving and checking assignments, rather than the actual teaching of reading comprehension. To avoid this situation, the students should be taught how to activate their existing schemata, to go beyond the literal information in the text, and to relate textual input to previous knowledge. Some of the pre-reading activities mentioned before, especially those involving student self-generated prediction questions, may be useful in this sense. These self-generated questions stand in contrast to teacher or text-posed questions, which have the disadvantage of teaching students to read to satisfy others' purpose and not their own. Apart from this, teacher- or text-posed questions may not take into account the students' possible schemata.

In addition to pre-reading activities for construction or activation of appropriate background schemata, selection of reading materials may also be of importance to EFL readers' comprehension. One of the greatest sources of miscomprehension is the mismatch between culture-specific schemata of a reader and the cultural information presupposed by the text (Aron, 1986; Hammadou, 1991). The students' selection of the texts to be read may be a way of overcoming such an obstacle in their reading comprehension and ensuring the conformity of content with their interest.

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APPENDICES

Collection of Descriptions

SEVERAL ASPECTS OF THE LOSS OF BODY WATER WILL BE DISCUSSED. FIRST, athletic coaches frequently require wrestlers, boxers, judo contestants, karate contestants, and football team members to lose body water so that they will attain specified body weights. These specified weights are considerably below athletes' usual weights. SECOND, THE LOSS OF BODY WATER SUSTAINED BY A 150-POUND INDIVIDUAL EACH DAY IS THREE PINTS OF WATER. THIRD, loss of body water impairs cardio-vascular functioning, which limits work capacity. More specifically, a loss of three percent of body water impairs physical performance and a loss of five percent results in heat exhaustion. Moreover, a loss of seven percent of body water causes hallucinations. Losses of ten percent or more of body water results in, heat stroke, deep coma, and convulsions; if not treated, death will result.

Comparison

Athletic coaches frequently require wrestlers, boxers, judo contestants, karate contestants, and football team members to lose body water so that they will attain specified body weights. These specified weights are considerably below the athletes' usual weights. IN CONTRAST TO THE ACTION TAKEN BY COACHES, THE AMERICAN MEDICAL ASSOCIATION STRONGLY CODEMNS THE LOSS OF BODY WATER FOR ATHLETES. THEY CODEMN LOSS OF BODY WATER DUE TO THE FACT THAT THE loss of body water impairs cardio-vascular functioning, which limits work capacity. More specifically, a loss of three percent of body water impairs physical performance and a loss of five percent results in heat exhaustion. Moreover, a loss of seven percent of body water cause hallucinations. Losses of ten percent or more of body water results in heat stoke, deep coma, and convulsions; if not treated, death will result.

Figure 1. The Two Different Versions of the Text, "The Loss of Body Water"

Source: Carrel (1984b)

1. Loss of body water is required athletic coaches
2. This is required of wrestlers
3. This is required of boxers
4. This is required of judo contestants
5. This is required of karate contestants
6. This is required of football team members
7. This is done so athletes will attain specified body weights
8. These specified weights are lower than their usual weights.
9. Loss of body water impairs cardio-vascular functioning
10. This limits work capacity
11. A loss of 3% of body water
12. impairs physical performance
13. A loss of 5% body water
14. results in heat exhaustion
15. A loss of 7% of body water
16. causes hallucinations
17. A loss of 10% or more of body water
18. results in heat stroke
19. results in deep coma
20. results in convulsions
21. If not treated, death will result

Figure 2. Analysis of Identical Information into 21 Common Idea Units

Source: Carrel (1984b)

- *Three factors of athletes' losing body water.
- *Several aspects of loss of body water.
- *The text is about aspects of water loss while doing sports.
- *An average athlete loses three pints body water every day.
- *This loss (of body water) can influence the athlete in negative way.
- *This (loss of body water) can cause some health problems.
- *Coaches and doctors think differently about loss of body water.
- *American medical association and coaches don't agree on athletes' water loss.
- * In contrast, some researchers do not accept this way (of loss of body water) because of health problems.
- *American doctors think that loss of body water is dangerous.
- *losing weight is very important in sports.
- *You shouldn't lose weight much, or you shouldn't put on weight much.
- *Sportsmen lose body water because they want to meet under their weight.

Figure 3. Some Examples of The Subjects' Recall of Identical Idea Units