THE EFFECTS OF RHETORICAL ORGANIZATION ON EFL FEMALE READERS AT UMM AL-QURA UNIVERSITY

by

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تبحث هذه الدراسة النقاط التالية: تأثير أربعة من أنواع المقالة على تذكر الطلبات من مستوىين مختلفين من مستويات الدراسة بعد قراءتها ؛ واختلافات بين أنواع المقالة الأربعة في استخدام الطلبات لتنسيق المقالات، لنفس المستوى يجري في كل مستوى ؛ واختلاف بين المستويين في استخدام الطلبات لتنسيق المقالات البينية للقطعة الأصلية لكل نوع من أنواع المقالة الأربعة ؛ وتأثر استخدام التنظيم البياني للقطعة الأصلية.

هو ما يسمى بالاستراتيجية التنظيمية على التذكر في كل مستوى.

للحصول على البيانات تم اختيار عينة الدراسة من طلاب المستوى الثالث والخامس من قسم اللغة الإنجليزية كلغة أجنبية في جامعة أم القرى للمشاركة في هذا البحث. أما القطب المستخدمة في هذا البحث فهي أربع نسخ معدلة من قطعة مقالة واحدة. تحتوي هذه النسخ على معلومات متماثلة وتنظيمات بينية مختلفة. تم إجراء مهمة تذكر فورية و مهمة تذكر متأخرة في هذا البحث. بعد ذلك تم حساب المعلومات المماثلة المذكورة في مسودات التذكر وتحديد أنواع التنظيمات البيانية المستخدمة من قبل الطلبات.

دلت نتائج طلاب المستوى الثالث على أن أنواع المقالة الثلاث الأكثر تنظيماً (أي المقالات التي تحتوي على المقارنة ومشكلة وحلها وسببية) مهتها تذكر الطلبات اللاي يستخدم الاستراتيجية التنظيمية أكثر من نوع المقالة الأقل تنظيماً (أي المقالة التي تحتوي على مجموعة أوصاف) وأن نوع المقالة التي تتضمن مشكلة وحلها وهما تذكر الطلبات اللاي لا يستخدم الاستراتيجية التنظيمية أكثر من نوع المقالة التي تتضمن السببية. أما بالنسبة لطلاب المستوى الخامس فقد دلت النتائج على أن أنواع المقالة الأربعة لا تؤثر على تذكر الطلبات.

أما من حيث استخدام الطلبات للتنظيم البياني للقطعة الأصلية لكل نوع من أنواع المقالة الأربعة فقد دلت النتائج على أن طلاب المستوى الثالث ليس براعات في استخدام التنظيمات البيانية لأنواع المقالة الأربعة. إلا أن لبيهم بعض العلم عن التنظيمات البيانية لنوعين من هذه أنواع. أما بالنسبة لطلاب المستوى الخامس فقد دلت النتائج على أن طلاب هذا المستوى قارنوا على استخدام التنظيمات البيانية لأنواع المقالة الأربعة، إلا أن ليس لديهم علم كافي عن أهمية استخدام التنظيم البياني للقطعة الأصلية

الذكر.

أما من حيث تأثير استخدام الاستراتيجية التنظيمية على التذكر فقد دلت نتائج طلاب المستوى الخامس على أن الطلبات اللاتي يستخدمن هذه الاستراتيجية تتذكر معلومات أكثر من اللاتي لا يستخدمنها. وتشير هذه النتيجة إلى أهمية استخدام هذه الاستراتيجية للذكر.
Abstract

The present study investigates the following points: the effects of four discourse types on the recall of L2 students of reading from two educational levels; the differences among the four discourse types in the students' use of rhetorical organization of the original text at each educational level; the difference between the two educational levels in the students' use of rhetorical organization of the original text for each of the four discourse types; the effect of using the rhetorical organization of the original text, that is the organizational strategy, on recall at each educational level.

The subjects of the study were L2 female students from level three and level five at Umm Al-Qura University in the English Department. The texts used were four versions of a single text. These versions contained identical information and different rhetorical organizations. An immediate recall task and a delayed recall task were administered in this study. The recall protocols were scored for the presence of the identical information, and the types of rhetorical organization used by the students were defined.

The results for the third-level students indicate that the three more organized types of discourse—comparison, problem/solution, and causation—facilitate the recall of the students who use the organizational strategy more than the less organized type, collection of descriptions. In addition, the problem/solution type facilitates the recall of the students who do not use the organizational strategy more than the causation type. As for the fifth-level students, the results indicate that the four discourse types do not affect the recall of the students.

As regards the use of rhetorical organization of the original text for each of the four discourse types, the results indicate that the third-level students are not skilled in using the rhetorical organizations of the four discourse types. However, they have some knowledge about the rhetorical organizations of two of these types. With respect to the fifth-level students, the results indicate that the students are able to use the rhetorical organizations of the four discourse types. However, they do not have an adequate knowledge about the importance of using the rhetorical organization of the original text for recall.

As for the effect of using the organizational strategy on recall, only the results for the fifth-level students indicate that the students who use this strategy recall more information than those who do not. This result indicates the importance of using this strategy for recall.
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CHAPTER ONE
THE PROBLEM

1.1. Introduction

Reading in English as a foreign language (EFL) or as a second language (ESL) (hereafter L2) is influenced by factors which are normally not considered in first language (hereafter L1) reading research. Some of these factors are L2 acquisition and training background differences such as the large store of oral language vocabulary and intuitive sense of the grammar of the language that L1 learners have in comparison to L2 learners. Also there are linguistic differences at syntactic and discourse levels, such as Carrell’s (1984a) conclusion that different cultures may prefer different ways of organizing information. Given these differences in L2 reading, findings from research with L1 students cannot always be applied directly to L2 students. Because L2 students are distinct from L1 students, research on L2 students is essential (Grabe, 1991).

One recent development in L1/L2 reading theory is schema theory (Grabe, 1991). Schema theory has shown that reading comprehension is an interactive process between the reader and the text. More specifically, as mentioned in Carrell and Eisterhold (1983), much of the meaning that is understood from the text is not actually in the text, per se, but in the background or schematic knowledge of the reader. That background knowledge can be understood more fully if we draw a distinction between formal schemata and content schemata. Formal schematic knowledge is the reader’s background knowledge about the rhetorical organizational structures of different types of texts. Content schematic knowledge is the reader’s background knowledge about the content area of a text.

One type of schema which readers are said to possess is background knowledge about, and expectations of, differences among rhetorical structures, such as differences in genre, differences in the structures of scientific texts, newspaper articles, narrative texts, expository texts, and so forth. The schema the readers have for narrative texts includes information that the story should have, minimally, a setting, a theme, a plot, and a resolution (Carrell and Eisterhold, 1983). For expository texts, Meyer and her colleagues (Meyer, 1975a, 1977a; Meyer and Rice, 1982; Meyer and Freedle, 1984) recognize six different types of expository rhetorical organization. The first one is description. In this type descriptive ideas give attributes, specifics, or setting information about a topic. The second one is sequence. The ideas in this type
are grouped on the basis of order or time. The third one is causation. This type presents causal or cause-effect-like relations between ideas. The fourth one is problem/solution type. The main ideas in this type are organized into two parts: a problem part and a solution part that responds to the problem by trying to eliminate it. The fifth type is comparison. The ideas in this type are related on the basis of differences and similarities. The main idea is organized in parts that provide a comparison, contrast, or alternative perspective on a topic. The final type is collection. This type occurs with any of the previous five types of rhetorical organization. It can occur when groups of descriptions, causes and so on are presented (Meyer and Poon, 2001).

In spite of the explosion of research about the effect of formal schemata on the recall and comprehension of L1/L2 readers, little is known about the effect of different types of rhetorical organization of expository prose on the recall and comprehension of L1/L2 readers. This study investigates the effects of four different types of expository texts—collection of descriptions, causation, problem/solution, and comparison—on the recall of L2 readers.

1.2. Theoretical Background of the Problem

Schema theory has shown that much of meaning that is understood is in the schematic knowledge of the reader. The role of background knowledge in reading comprehension can be understood fully if we draw a distinction between formal schemata and content schemata (Carrell and Eisterhold, 1983). A reader’s failure to activate an appropriate schema, either formal or content, during reading results in various degrees of non-comprehension (Carrell and Eisterhold, 1983). According to the results of Johnson’s study (1981) and Carrell’s study (1987), that have investigated the effect of content schemata on L1/L2 reading comprehension, a text on a familiar topic is recalled better by L2 readers than a similar text on an unfamiliar topic.

The effects of the formal schemata of expository texts on the recall and comprehension of L1/L2 readers have been investigated from different perspectives. First, the two main purposes of most of studies are investigating the effect of the hierarchy of the text on reading recall, that is examining the difference between L1/L2 readers’ recall of high-level information, which corresponds to the superordinate ideas, in the content structures of the text and their recall of low-level information, which corresponds to the subordinate ideas, and examining the effect of following the rhetorical organization of the original text on the amount of information recalled (Meyer et al., 1980; Meyer 1975a; Taylor 1980; Taylor, 1979). Second, examining the effect of the formal
schemata of expository texts by comparing the effect of well organized material versus scrambled material on the recall and comprehension of L1/L2 readers (Jonz, 1989; Taylor and Samuels, 1983; Richgels et al., 1987; Schnotz, 1993; Carrell, 1984b; Kintsch and Yarbrough, 1982). Third, comparing the effect of the formal schemata on L1 readers versus L2 readers (Conner, 1984). The fourth perspective is examining the effect of the presence and absence of signaling, e.g. using words such as as a result, in contrast and so forth, on the recall and comprehension of L1 readers, and on their use of rhetorical organization of the original text (Lorch and Lorch, 1996; Meyer et al., 1980; Meyer and Rice, 1982). The fifth perspective is investigating the effect of different rhetorical organizations on the recall and comprehension of L1/L2 students (Meyer and Freedle, 1984; Carrell, 1984a) and examining L1/L2 students' awareness of different types of rhetorical organization and the effect of this awareness on the recall and comprehension of these students (Englert and Hiebert, 1984; Hiebert et al., 1983, Carrell, 1992; Richgels et al., 1987). Finally, examining the facilitating effect of teaching the rhetorical organization of different discourse types and the use of organizational strategy on the recall and comprehension of L1/L2 readers (Bartlett, 1978; Carrell, 1985) and the effect of teaching the organizational strategy in comparison to other strategies (Meyer and Poon, 2001; Meyer et al., 2001; Slaton, 2001).

Since very few studies have examined the effects of different rhetorical organizations on the recall of L2 readers at different educational levels, the main purposes of the present study are to examine the effects of different rhetorical organizations on the recall of L2 readers at two educational levels and to examine L2 readers’ awareness of the different rhetorical organizations.

1.3. Stating the Problem

Many studies have investigated the effect of hierarchical organization on the recall of L1/L2 readers. However, few studies have investigated the effect of different types of discourse on the recall of L1/L2 readers and the differences among these types of discourse in L1/L2 readers’ use of rhetorical organization of the original text, and still fewer have been conducted with L2 readers at different educational levels to investigate these aims.

In two recall tasks, the present study investigates the effects of four discourse types on the recall of L2 readers from two educational levels. It also examines the differences among the four discourse types in L2 readers’ use of rhetorical organization of the original text at each educational level. In addition, it studies the difference between the two educational levels in L2 readers' use
of rhetorical organization of the original text for each of the four discourse types. Moreover, it investigates the effect of using the rhetorical organization of the original text on the amount of information recalled at each educational level.

1.4. Significance of the Study

Only a few studies have investigated the effects of different rhetorical organizations on the recall of L2 readers. One of these studies is Carrell’s study (1984a). In this study the results for L2 students as a whole suggest that the more organized types of discourse—comparison, causation, and problem/solution—tend to be more facilitative of recall of specific ideas than the less organized type, collection of descriptions. In this result, L2 readers appear to be similar to native English speakers in Meyer and Freedle’s study (1984). Carrell (1984a: 464) speculated that "if readers, of whatever native language background, possess the formal schemata against which to process the more highly structured types of discourse, these more highly structured types may generally facilitate encoding, retention and retrieval of information." In addition, in Carrell’s study there were differences among native language groups as to which English discourse types were more or less facilitative of recall (See Section 2.4.4). For example, the Arab students recalled the loosely organized type, collection of descriptions, as the problem/solution type and better than the causation one. By investigating the effects of the four discourse types on the recall of L2 readers at two educational levels and examining the readers’ use of rhetorical organizations of these types, it is hoped that the present study will add to the research in this area. It is assumed that the fifth-level students will recall more information from the more organized types of discourse than from the less organized one. Specifically, since the students at the fifth level are presumed to have previous knowledge about the four discourse types, according to the curriculum presented to them, specially in Composition Four. This assumption is based on the speculation made by Carrell (1984a).

Furthermore, by having more L2 Arab students participating in the present study, it is hoped that the present study will give more accurate results than those reported in Carrell’s study in which there were only 16 L2 Arab students. In the present study, each discourse type was read by 15 L2 Arab students.
Finally, by using modified text versions of those used in Carrell’s study (1984a), it is hoped that the present study will avoid the low mean scores, and hence, the difficulty of the task in Carrell’s study (1984a).

At the pedagogical level, by examining the effects of different types of rhetorical organization on the recall of L2 students, the results of the present study will help teachers to determine which type facilitates the recall of L2 students and, hence, should be included more in the curriculum of Reading.

Furthermore, by examining the differences among the four discourse types in L2 students’ use of rhetorical organization of the original text at each educational level, the findings of the present study can aid teachers to determine which type of rhetorical organization to emphasize at each educational level.

Finally, by showing the expected benefit of using organizational strategy in increasing the recall scores of L2 students, the results will emphasize the importance of teaching the fifth-level L2 students the use of organizational strategy and show the need to teach the third-level L2 students the use of organizational strategy.

1.5. Questions of the Study

Question 1. Do L2 students at each of the two educational levels recall more information from the more organized types of discourse—comparison/contrast, causation, and problem/solution—than from the less organized type, collection of descriptions, in each of the two recall tasks?

Question 2. Do L2 students at each of the two educational levels use the rhetorical organization of the original text differently according to the discourse type of the original text in each of the two recall tasks?

Question 3. Do the fifth-level L2 students use the rhetorical organization of the original text for each of the four discourse types more than the third-level L2 students do in each of the two recall tasks?

Question 4. Do L2 students at each of the two educational levels who use the rhetorical organization of the original text recall more information than those who do not in each of the two recall tasks?
1.6. Hypotheses of the Study

In carrying out this study the following null hypotheses have been formulated:

**Hypothesis 1:** There is no significant difference in the amount of identical information recalled between the third-level students and the fifth-level students in each of the two recall tasks.

**Hypothesis 2:** There is no significant difference in the amount of identical information recalled between the immediate recall task and the delayed recall task for students from each of the two educational levels.

**Hypothesis 3:** There are no statistically significant differences among the four discourse types in the amount of identical information recalled by the third-level students in each of the two recall tasks.

**Hypothesis 4:** There are no statistically significant differences among the four discourse types in the amount of identical information recalled by the fifth-level students in each of the two recall tasks.

**Hypothesis 5:** There are no significant differences among the four discourse types in the students’ scores on the fill-in-the-blank instrument for each of the student levels of education.

**Hypothesis 6:** There are no significant differences in the third-level students’ use of rhetorical organization of the original text among the four discourse types in each of the two recall tasks.

**Hypothesis 7:** There are no significant differences in the fifth-level students’ use of rhetorical organization of the original text among the four discourse types in each of the two recall tasks.

**Hypothesis 8:** There is no significant difference between the third-level students and the fifth-level students with regard to the use of rhetorical organization of the original text for each of the four discourse types in each of the two recall tasks.

**Hypothesis 9:** There is no significant difference in the amount of identical information recalled by the third-level students between those who used the rhetorical organization of the original text and those who did not in each of the two recall tasks.

**Hypothesis 10:** There is no significant difference in the amount of identical information recalled by the fifth-level students between those who used the rhetorical organization of the original text and those who did not in each of the two recall tasks.
1.7. Definitions of Terms

The following key terms are used.

**Discourse**: spoken or written language.

**Rhetorical organization**: the overall organization of a text. According to Meyer and Freedle (1984: 127) “the content structure of a text is the organization that binds it together; at the top of this hierarchical content structure is the overall structure used to characterize the discourse type”.

**Organizational strategy**: According to Meyer (1979: 111), "the reader who employs the organizational strategy is expected to approach text with knowledge of how texts are conventionally organized. The reader selects from his/her long-term memory a schema that corresponds to the rhetorical organization of the passage and instantiates this schema with the passage information. Aspects of text structure and signaling words in the text, such as the solution is, suggest which schema can be best employed. The schema employed to comprehend the text functions like an outline to guide the reader in organizing the text during the process of encoding into memory. During recall, the reader activates this same kind of superordinate response schema which began the encoding and uses it to retrieve information in stored memory about the text. The reader begins his/her retrieval search with the top-level structure and systematically works from the superordinate relationships and content downward". In the present study, only the students’ use of rhetorical organization of the original text in their recall protocols was measured. The student is considered to be able to recognize the rhetorical organization of the original text if she used that organization in her recall protocol, although the recognition may be unconscious recognition.

**Third-level students**: the students who were attending the third-level courses at Umm Al-Qura University (hereafter UQU), and were at the third level according to the autobiographical questionnaire.

**Fifth-level students**: the students who were attending the fifth-level courses at UQU, and were at the fifth level according to the autobiographical questionnaire.

1.8. Limitations of the Study

This study has four limitations. The first limitation is that the subjects of this study are L2 students from only level three and level five in the English Department of UQU. The selection of the third-level students is appropriate for the research purposes since these students can be introduced to reading and recalling a short passage after one reading, the prerequisite that cannot be
pursued with a high school population or university L2 students at the first and second levels because of their limited control of English as a foreign language.

As for the fifth-level students, the selection of these students is also appropriate for the research purposes for two reasons. First, two of the main purposes of the present study are to examine the effect of having previous knowledge about four discourse types on the effects of these types on the recall scores of L2 students and the effect of having this knowledge on the ability of these students to use the rhetorical organizations of these types in their recall protocols. The textbook for Composition Four contains expository texts and explanations about the rhetorical organizations of the four discourse types, and the textbook for Reading Four contains expository texts, some explanations about the rhetorical organizations of some of the four discourse types, and an explanation about the use of the organizational strategy. Therefore, the students who passed level four are presumed to have previous knowledge about the four discourse types.

Also, the curriculum of Reading Four is part of the curricula constructed to teach the basic rules of the English language to L2 students in the first two years. This curriculum contains expository texts with different types of rhetorical organization, some explanations about the rhetorical organizations of some of these types, and an explanation about the use of the organizational strategy. Therefore, it is possible to modify this curriculum by having more expository texts with more organized types of rhetorical organization and/or having more explanations and activities for the use of the rhetorical organizations of the four discourse types. However, the curricula of the more developed levels of education are constrained in their content. They are mainly constructed to give more details about the English language, such as Phonology and Syntax, or to give theoretical and empirical information about learning this language, such as Reading in English as a Foreign Language and Writing in English as a Foreign Language. Due to these facts only the fifth-level students were selected from the more developed levels of education because the results for the fifth-level students are due to the curricula of level four more than the results for the students from more developed levels of education.

The second limitation is the use of short unnaturally occurring text versions. However, the reasons for selecting these versions are as follows: First, very few passages reflecting only one rhetorical organization can be found in texts that students are likely to encounter. Second, these text versions are standardized versions that have been used before by Meyer and Freedle (1984) and Carrell (1984a). Finally, these text versions have identical
information except the rhetorical organization and a minimal number of ideas necessary for altering the rhetorical organization. No other factors except the rhetorical organization could affect the readers’ recall.

The third limitation is that the present study examines versions of only one text. That is, there are no additional versions of texts with different contents to verify the results of this study.

Finally, the subjects of the study were female students. This is because female researchers do not have direct access to male students. There should be a man employed to test male students for female researchers to include L2 male students as subjects in their research.
CHAPTER TWO
REVIEW OF RELATED LITERATURE

2.1. Introduction
This chapter gives an overview of language acquisition theories, reading models, a historical perspective on text analysis, theoretical background of the study and empirical studies concerned with the rhetorical organization of expository texts.

2.2. Theories of Acquisition
This study investigates the effects of different rhetorical organizations on the recall of L2 readers at two educational levels and the use of rhetorical organization of the original text by these readers. This section gives an overview of some of the theoretical and empirical research in the field of second language acquisition (hereafter SLA), then studies examining the awareness of L1 readers at different educational levels of rhetorical organizations of expository texts.

SLA research is a wide-ranging field of inquiry, drawing on and contributing to a number of distinct disciplines: linguistics, cognitive psychology, sociolinguistics, and education. Much of the early work concentrated on descriptions, whereas later work has been concerned with the search for a theory of SLA and hence explanation (Ellis, 1994).

Though the field of SLA research is wide, it can be defined, as Ellis (1994) noted, into four different areas. The first area of work concerns the description of the characteristics of learner language. By describing learner language, researchers will have information about how learners learn L2. Some of the aspects of learner language that have received attention are errors, order and developmental sequence, and, more recently, pragmatic features. Prior to the late 1960s there was the contrastive analysis hypothesis (hereafter CAH) (Lightbown and White, 1987). According to the CAH, it was assumed that the habits of the L1 would carry over into the L2. In cases where the patterns of the first language and the target language were different, negative transfer would result. But in cases where the patterns were similar, positive transfer would result. It was in late 1960s that the claims of the contrastive analysis were investigated. The results of error analysis studies, which looked at the language performance of learners, cast doubts upon the validity of the previous analysis, such as the fact that transfer did not occur when there are differences between the two languages (Ellis, 1994). After that the researchers have recognized the
need to consider the entirety of learner language in order to uncover the systems of rules that learners construct at different stages of development instead of analyzing only the learner language errors. Central to this enterprise is the description of how learner language develops over time. Finally, by investigating pragmatic features of learner language, the researchers examine the way language is used in context for communicative purposes.

The second area, which emerged in the 1970s, concerns learner external factors which affect L2 learning, such as social factors and the relationship between input and interaction and SLA. Studies of social factors examine the relation of these factors to L2 proficiency rather than developmental patterns. These factors have been generally assumed to influence the process of SLA indirectly. For example, it has been found by Gardner (1985) that social factors shape learners’ attitudes which, in turn, influence learning outcomes.

The relationship between input and interaction and L2 acquisition was explored in a number of ways in 1980s. For example, Long’s study (1981) proposed that input, which is made comprehensible by means of conversational adjustment, e.g. teacher talk, and foreigner talk, and occur when there is a comprehension problem, is especially important for acquisition.

The third area, learner-internal mechanisms, concerns how acquisition takes place and how learners use their resources in communication. These mechanisms are mental. Most of the studies of this type emerged in the 1980s. They relate to different issues such as the universal processes involved in converting input into intake, such as the transfer of L1, the overgeneralization process, and the simplification process identified in the interlanguage theory. Another example of the learner-internal mechanisms is the utilization of innate knowledge of linguistic universals. As Lightbown and White (1987) mentioned, one must explain how L2 learners come to know things that they have not been taught. One possibility is that universal grammar might still be in operation (Ellis, 1994). However, L2 learners differ from L1 learners in having knowledge of another language and adult L2 learners may be past the so-called “critical period” for language acquisition. In the current view of universals it is hypothesized that L2 learners may have to ‘reset’ certain parameters if the L1 and L2 differ, and that a range of consequences follows from a failure to reset (Ellis, 1994).

The final area is the investigation of individual learner differences and what causes them. Learners differ with regard to general factors such as motivation and in the use of various strategies, such as self-monitoring, for obtaining input and for learning from it. This kind of investigation helps to
answer questions such as why some learners reach higher levels of proficiency than others do (Ellis, 1994).

One of the aspects of the first area of SLA research is investigating the acquisition order and the developmental sequences in the language of L2 children or L2 adults in order to improve L2 pedagogy. In such an investigation, as Ellis (1994) noted, the researchers try to discover the system of rules that learners construct at different stages of development. By investigating the acquisition order the researcher tries to see if some of the target language features are acquired before the other. As an example, morpheme studies (e.g. Pica, 1983) provide evidence for a definite order in the acquisition of a set of grammatical functors in English, such as, plural s, past tense-ed, verb-ing, articles, and claim to show that there was a natural order of acquisition that was not influenced by the learner’s age or first language. Most of these studies were cross-sectional in design. Studies of this type measure specific grammatical features in the language of learners from different ages or educational levels.

By examining the developmental sequence of language acquisition, the researcher investigates some specific feature in detail in order to know how learners gradually arrive at the target language. In such an investigation, the researcher uses longitudinal study. Longitudinal studies involve data collection of the language of the same learners over a period of many months, and in some cases several years. For example, Ravem’s study (1968) and Huang’s study (1970) showed that L2 learners appeared to construct reviews of transitional rules of English negatives and interrogatives before they mastered the target language rules. Acquisition order and developmental sequences can be investigated in different areas of language: phonological, lexical, grammatical, semantic, and functional (Ellis, 1994).

Few studies have examined the acquisition of formal schemata by L1 readers at different educational levels. In a cross-sectional study, Taylor (1980) examined the relationship of different developmental levels to L1 children’s recall of expository text after reading and to their sensitivity to rhetorical organization of the original text. The findings of the study showed that the sixth-grade L1 children recalled more information and were more skilled in following the rhetorical organization of the test passage than the fourth-grade L1 children. Englert and Hiebert (1984) showed that the sixth-grade L1 children were better than the third-grade L1 children in their awareness of rhetorical organization of the original text and that the saliency of different discourse types differed according to the developmental level of the children.
(See Section 2.4.4). Thus, there is a need to investigate the effects of formal schemata on the comprehension of L2 readers at different educational levels. As Carrell (1984b, 201) mentioned “SLA can be viewed, in part, as the process of acquiring appropriate new formal and content schemata and of learning to instantiate or activate the appropriate schema during comprehension.”

2.3. Reading Models

Most reading models are related to theories of learning (Dechant and Smith, 1980). The two major types of reading models are linear models and interactive models. Linear models may be either a bottom-up or top-down model. They are linear because according to these models the information passes only in one direction and there is no interaction between the higher and the lower order processes. However, interactive models allow for such interaction (Samuels and Kamil 1984). Schema theory is the most recent interactive model. The following section will shed some light on these two major types of reading models and schema theory.

2.3.1. Linear Models

In the middle to late 1960s, behaviorist accounts of language comprehension dominated both linguistics and psychology (Pearson and Stephens, 2000). Reading was assumed to be a passive, bottom-up process (Carrell, 1990). As Carrell (1990, 2) noted "It was viewed as a decoding process of reconstructing the author’s intended meaning via recognizing the printed letters and words, and building up a meaning for a text from the smallest textual units at the 'bottom' (letters and sounds) to larger and larger units at the 'top' (phrase, clause, intersentential linkages)." In general, bottom-up models had a tendency to depict information flow in one direction in a series of discrete stages, with each stage transforming the input and then passing the recorded information to the next higher stage for additional transformation and recording (Pearson and Stephens, 2000). Some examples of these bottom-up models are Bloomfield 1942, Fries 1963, Gough 1972, and Lefevre 1964.

In the 1970s, the previous view of the reading process was challenged by changing views of the reading theory. The emergence of the transformational generative theory in the field of linguistics paved the way for dramatic changes in the way language comprehension processes are understood and studied. As Chomsky (1957, 1965) contended that language comprehension could not be explained by stringing together the meaning of the adjacent words, because that will not explain how people know well the
relation between subject and verb in a complex sentence in which other clauses have been embedded between the subject and the verb (Pearson and Stephens, 2000).

Bottom-up models of reading run into difficulty because they cannot account for sentence-context effects and the role of prior knowledge on comprehension (Carrell, 1990). After the emergence of the transformational generative theory, psycholinguistic models of reading evolved. These models conceptualize the reading process as one in which stages which are higher up and at the end of the information-processing sequence interact with stages which occur earlier in the sequence (Samuels and Kamil, 1984). However, in such models reading is viewed as being conceptually driven by higher-order stages rather than by low-level stimulus analysis. These models are called top-down models. Two of the prominent models of this kind are Goodman’s model (1967) and Smith’s work (1971).

Goodman (1967) demonstrated that the errors children make while reading orally are better viewed as windows into the inner workings of their comprehension processes than as mistakes to be eradicated. According to Goodman’s model, there are three cue systems of language that readers use to make sense of the text. These cues are the syntactic, semantic, and graphophonemic cues. This model prefers the cognitive economy of reliance on well-developed linguistic (syntactic and semantic) rather than graphic information (Samuels and Kamil, 1984). The reading process, as Goodman states, is “a psycholinguistic guessing game. It involves an interaction between thought and language. Efficient reading does not result from precise perception and identification of all elements, but from skill in selecting the fewest, most productive cues necessary to produce guesses which are right the first time” (Silberstein, 1987: 30).

The other work, which is concurrent with Goodman’s model, is by Frank Smith (1971). His work is not so much a model of reading as a description of the linguistic and cognitive processes of reading (Samuels and Kamil, 1984). Like Goodman, Smith argued that reading was an imprecise hypothesis-driven process (Grabe, 1991). The greatest contribution of Smith’s work was to explain how the redundancy inherent at all levels of language, i.e., the redundancy inherent in letter features, within letters, within words and so forth, provide readers with enormous flexibility in marshaling resources to create meaning for the text (Samuels and Kamil, 1984).
2.3.2. Interactive Models

Although top-down models added to understanding of the reader and the reading process, these models have been criticized. Some of these criticisms are as follows: for many texts, the reader has little knowledge of the topic and cannot generate predictions. Moreover, even if the skilled reader can generate predictions, the amount of time necessary to generate a prediction may be greater than the amount of time the skilled reader needs simply to recognize the words (Samuels and Kamil, 1984). Just as bottom-up models have problems, so, too, do the top-down models. In an attempt to remedy deficiencies in previous reading models, the models of the 1980s tended to be interactive. In these models meaning is created through the interaction of text and reader. Interactive models include any model that attempts to account for both higher order processes and lower order processes (Samuels and Kamil, 1984). The two prominent interactive models are Rumelhart (1977) and Stanovich (1980).

According to Rumelhart’s model (1977), the graphemic information enters the system and is registered in a visual information store (Hereafter VIS). A feature extraction device is then assumed to operate on this information, extracting the critical features from VIS. These features serve as the sensory input to what Rhumelhart (1977) called a pattern synthesizer. In addition to this sensory information, the pattern synthesizer has available nonsensory information about the orthographic structure of the language, information about lexical items in the language, information about the syntactic possibilities, information about the semantics of the language, and information about the current contextual situation which is the pragmatic information. The pattern synthesizer, then, uses all of these information to produce a most probable interpretation. In this model all of the various sources of knowledge, both sensory and nonsensory, come together at one place and the reading process is the product of the simultaneous joint application of all the knowledge sources. In this model, all the knowledge sources provide input simultaneously. To give a representation of the operation of the pattern synthesizer, Rumelhart (1977) suggested a mechanism, which he called a message center. The message center accepts the sources of information, holds the information, and redirects the information as needed. As Rumelhart (1977: 589-590) noted “the message center keeps a running list of hypotheses about the nature of the input string. Each knowledge source constantly scans the message center for the appearance of hypotheses relevant to its own sphere of knowledge. Whenever such a hypothesis enters the message center the knowledge in question evaluate the hypothesis in light of its own specified
knowledge. As a result of its analysis, the hypothesis may be confirmed, disconfirmed and removed from the message center, or a new hypothesis can be added to the message center. This process continues until some decision can be reached. At that point the most probable hypothesis is determined to be the correct one”.

The Stanovich’s model (1980) added to the interactive model an assumption of compensatory process. As Stanovich mentioned (1980: 32) “this assumption states that a deficit in any knowledge results in a heavier reliance on other knowledge sources, regardless of their level in the processing hierarchy” (Samuels and Kamil, 1984). In adding this assumption, the interactive models provide a better account of the existing data on the use of orthographic structure and sentence context by good and poor readers. One of the problems in the top-down models is that in many texts, the reader has little knowledge of the topic and cannot generate predictions. However, in Stanovich’s model, if the reader is skilled at word recognition but does not know much about the text topic, he/she can rely on bottom-up processes. As for poor readers who may be inaccurate at word recognition but who has knowledge of the text topic, top-down processing may provide compensation (Samuels and Kamil, 1984).

2.3.3. Schema Theory

Schema theory is the most recent psycholinguistic model of reading. It describes how prior knowledge is integrated in memory and is used in higher-level comprehension processes (Grabe, 1991). As Carrell and Eisterhold (1983) mentioned, traditionally in the study of second language comprehension, the emphasis has been almost exclusively on the language to be comprehended and not on the listener or reader. In schema theory, reading is an interactive process between the text and the reader’s background knowledge, that is, a text only provides directions for readers as to how they should retrieve or construct meaning from their previously acquired knowledge. These previously acquired knowledge structures are called schemata (Carrell and Eisterhold, 1983).

According to this theory, the process of interpretation is guided by the principle that every input is mapped against some existing schema and that all aspects of that schema must be compatible with the input information. This principle results in two basic modes of information processing. The first one is an information processing based on linguistic input from the text. This mode of information processing is called bottom-up processing. The second one is an information processing based on a reader’s prior knowledge of language,
rhetorical conventions and the world. This mode of information is called top-down processing. Bottom-up processing is evoked by the incoming data; the features of the data enter the system through the best fitting, bottom-level schemata. Schemata are hierarchically organized, from most general at the top to most specific at the bottom. As these bottom-level schemata converge into higher level, more general schemata, these too become activated. Top-down processing, on the other hand, occurs as the system makes general predictions based on higher level, general schemata, and then searches the input for information to fit into these partially satisfied, higher order schemata. These two types of processing occur at all levels simultaneously. That is the data instantiate the schemata through bottom-up processing. Top-down processing facilitates their assimilation if they are consistent with the reader’s conceptual expectations (Carrell and Eisterhold, 1983).

To understand the role of background knowledge in reading comprehension, it is useful to draw a distinction between formal schemata and content schemata. Formal schematic knowledge is the reader’s background knowledge about, and expectations of, differences among the rhetorical organizational structures of different types of texts, such as differences in genre, e.g. newspaper articles, poetry, and differences in the structures of expository texts, e.g. collection, causation, problem and solution. Content schematic knowledge is the reader’s background knowledge about the content area of a text, such as a text about washing clothes, or the history of Canada. A reader’s failure to activate an appropriate schema during reading results in various degrees of non-comprehension. This failure is either due to the writer’s not having provided sufficient clues in the text, or that the reader does not possess the appropriate schema anticipated by the author (Carrell & Eisterhold, 1983).

2.4. A Historical Perspective on Text Analysis

Changes in linguistic theory have influenced perceptions of text. Bloomfield’s (1933) structural descriptive theory paid special attention to spoken rather than written language. The structuralists’ method of analysis was to describe observable language forms in ordered levels: phonetics, phonology, morphology and syntax. Semantics, the study of meaning, was considered beyond the realm of linguistics. Chomsky’s (1957) break with structuralism, with its fixation on the structural relations among words in a sentence was the first great change in linguistic theory. Chomsky (1957) brought linguistics closer to dealing with meaning in prose with his significant insight that
sentence-length texts can be analyzed in terms of levels of structure, including the surface structure level form in which they are spoken and the deep structure level which characterizes their syntactic relations (Richgels, 1982).

Since at the deep structure level Chomsky (1957, 1965) makes a distinction between subject and verb, this theory encountered two problems. The first one is where to fit the semantic component (Richgels, 1982). The second one is that when analyzing the structure of an entire passage one ends up with a multitude of subjects and verbs (Meyer, 1975a). One of the linguists who tried to solve these problems is Fillmore (1968). He allied himself with generative semantics (Lakoff 1963, Postal 1971) by stating that the deep structure of Chomsky is only on an intermediate level between the semantic deep structure and the surface structure. Fillmore’s (1968) position is that a sentence consists of a verb and one or more noun phrases, each associated with it in a particular case relationship, e.g., agentive, instrumental, dative, factitive, objective (Richgels, 1982). Grimes’ (1972) semantic grammar of propositions is a revision and elaboration of Fillmore’s (1968) case grammar (Meyer, 1975a).

In 1952, Harris (1952: 357) pointed out that “linguistic description has to deal with discourse, because language does not occur in stray words or sentences, but in connected discourse”. In the early stages, discourse and text analysis were dealt with in structuralist frameworks such as those of Harris (1952), who is one of the linguists of the tagmemic school. Later, text and discourse were studied in linguistic approaches with a wide range of theoretical perspectives, such as that of the speech act school. The analysis of discourse that has thrived most in linguistic theories is that with functional orientation (Morgan and Sellner, 1980).

Functional linguists consider language as an instrument of interaction and the individual as a social being. They investigate the way in which the individual acquires language and uses it in order to communicate with others in his/her social environment. The first functional school of linguistic is the Prague School. Two of the linguists who originated the Prague School are Mathesius (1928) and Danes (1974). Mathesius (1928) divided the sentence into preceding theme, which corresponds to old information, and following rheme, which corresponds to new information. Danes (1974) proposed the functional sentence perspective model in which Danes organized the text in terms of thematic progression (hereafter TP). He distinguished three basic types of TP. The first one is a simple linear progression, in which the original rheme becomes the second theme. The second one is a thematic progression
with a continuous theme, where the same theme is repeated, given a new rheme in every new sentence. The last one is a thematic progression with derived themes, where sub-theme-rheme nexuses branch off a hypertheme. The previous theme-rheme relation will be referred to as information structure (Morgan and Sellner, 1980). Information structure implicates the linearity of texts. A careful discussion of information structure is found in de Beaugrande (1984) (Grabe and Kaplan, 1996).

Drawing on the work of the Prague School linguists, many linguists tried to define the relationships between the ideas in prose. For example, Halliday (1968) and later Halliday and Hasan (1976) provided a theory of cohesion. Cohesion is a semantic relationship, realized through grammar and vocabulary, allowing sentence sequences to be understood as a connected discourse, rather than autonomous sentences. Cohesion is a matter of presupposition; that is, cohesion happens when some element of discourse depends for its interpretation on another. Halliday and Hasan (1976) defined five semantic relations that establish the cohesion necessary to text. They are reference, such as personal pronouns; substitution, such as the use of ones in nominal substitution; ellipsis, such as the verbal ellipse of laughing in the answer of the question were you laughing? No, I was not; the conjunction, such as additive conjunction; and lexical cohesion, such as repetition (Richgels, 1982). Other linguists (e.g. Brown and Yule 1983) have proposed different classification systems of cohesion.

Cohesion theory represents the formal signaling of features of texts beyond the limits of the sentence. However, it lacks a perfect match with the organizational logic of the text. Drawing on previous research, many psychologists in the 1970s provided models of text structure that match with the organizational logic of the text. Text structure refers to the underlying relations that hold between propositions and how these propositions contribute to the overall discourse theme. These psychologists tried to account for text comprehension by trying to ferret out how it is that readers come to understand the underlying structure of text (Grabe and Kaplan, 1996). For example, David Rumelhart (1975) offered us story grammars and Frederiksen (1975), Walter Kintsch (1974), and Bonnie Meyer (1975a) offered text structures for expository texts. These models accounted partially for text comprehension (Pearson and Stephens, 2000). In the majority of these models, text analysis is based on having a discourse theme, which is an overall topic of discourse; comparing a set of relevant propositions relating logically among themselves by means of subordination, coordination and/or superordination, from the level
of the sentence to the top-level structuring of a text; and being organized by information structure imposed on propositions most effectively to guide the reader in understanding the theme or the intent of the author, such as the information structure of theme-rheme (Grabe and Kaplan 1996).

However, analyzing the text on the basis of text structure alone did not explain the relationship between knowledge of the world that readers bring to text and comprehension of these texts. This task fell to one of the 1970s most influential movement, schema theory that has been presented by Anderson and Pearson (1984) and Rumelhart (1980) (Pearson and Stephens, 2000).

2.5. Theoretical Background of the Study
In the next three sections the following points are discussed: 1) a brief review of some of the beginning text-structure systems; 2) types of rhetorical organization; and 3) model of discourse processing.

2.5.1. A Brief Review of Some of the Beginning Text-Structure Systems
Educators have long recognized that reading comprehension involved skill in following the structure of a passage and recognizing the writer’s purpose. Many books, e.g. Dechant (1970) and Mcguire and Bumpus (1971), have encouraged teachers to teach students to look for the writer’s organization in a passage in order to increase their efficiency in identifying the message of the passage and to increase their retention of it. This recommendation was based on common-sense notions. What was needed was a theoretically based procedure for identifying the author’s organization of a passage and the organization used by the reader to remember the passage (Meyer, 1977a, 1977b, Meyer, 1979, Meyer et al., 1980).

The lack of tools for specifying this text variable led most psychologists to avoid research on prose and, instead, confine their investigations of learning processes to the learning of nonsense syllables and words. However, in the 1970s, psychologists, such as Kintsch (1974), Meyer (1975a), and Frederiksen (1975), applied work in linguistics, such as the works of Fillmore (1968), Grimes (1972), and Halliday (1968), to the problem of specifying the type and organization of information in texts. Specifying the structure of the text permits theorizing about how readers process and understand it. For example, aspects of text structure provide significant dimensions along which passages may be evaluated as to their similarities and differences. It also allows the researcher to identify the amount and type of information which readers remember from text.
In addition, it allows for the identification of variations that arise between the text and the reader’s understanding of the text (Meyer et al., 1980).

The systems developed by Kintsch (1974) and Friederiksen (1975) assign more emphasis to a schema that could serve as either a model of text structure or the structure of knowledge in memory. However, Meyer’s system (1975a) is concerned with representing text per se. She developed a text-structure system that emphasizes relations among propositions in a text (Pearson and Camperell, 2000). Her system has lexical propositions that show the case relations between words within simple sentences. It has rhetorical propositions that establish the relations between and among sentences, paragraphs, and longer units of text. Rhetorical predicates are labels used to specify the relationships within these rhetorical propositions. Rhetorical predicates order the ideas in a text into hierarchical relationships and allowed Meyer to develop a richer, higher level of organization than either Kintsch or Frederiksen. Meyer’s parsing of a passage looks like an outline of the passage, except that all the ideas from the passage are included. Top-level discourse structures in the outline are simply the relations that occur in the top-third of the diagram (Pearson and Camperell, 2000, Meyer, 1975a, Meyer, 1975b). The top-level structure is the overall structure used to characterize the discourse type. Top-level structure is also called the rhetorical organization. Meyer’s system will be discussed fully in Section 3.4.1.

This present study investigates the effects of different types of rhetorical organization on reading comprehension.

### 2.5.2. Types of Rhetorical Organization

Meyer and her colleges (Meyer 1975a, 1982, and Meyer and Freedle, 1984) provide evidence for five basic ways to organize the discourse of expository texts: collection, description, causation, problem/solution, and comparison. These are not exhaustive, but they are significantly distinct types of discourse. The description of the organizational components of each of these types is presented in Figure 1.

According to Meyer and Freedle (1984), the collection type is merely a grouping or listing of concepts or ideas by associations. If the association is by sequence, then it becomes more organized, such as in a historical chronology. The description type is a kind of grouping by association in which one element is subordinate to another, namely to the topic. By presenting a particular attribute, specification, or setting, the description gives more information about the topic. The collection of descriptions type is formed when a collection of
attributes, specifications, or settings are given about a topic. The description, collection, and collection of descriptions types are the least organized types, as can be seen in Figure 1. In the causation type, ideas are grouped chronologically, that is, before and after in time and causally related. It surpasses the collection and description types in organization. The problem/solution type contains all the organizational components of the causation type with the addition of overlapping content between propositions in problem and solution in that one of the propositional elements of the solution can block an antecedent of the problem. This is the most organized type in the first scale in Figure 1. As can be seen in Figure 1, the first scale is cumulative. That is, the information in this scale are organized on the basis of time or causality. As for comparison, this type is on a different scale from the other types. It is organized on the basis of opposing viewpoints (Carrell 1984a, Meyer and Freedle 1984).

The rhetorical relationships that occur at the top-level in the content structure of a text can be pointed out to the readers through the use of signals. The types of signaling identified by Meyer (Meyer et al., 1980, Meyer and Rice, 1982, Meyer 1975a; Meyer and Poon 2001) include an explicit statement of the structure of relations that occur at the top-level in the content structure of a text, preview statements, summary statements, and pointer devices, such as underlining and italics. Examples of the first kind are in contrast for the comparison relationship, as a result for the causal relationship. The first type of signaling which is an explicit statement of the structure is parallel to Halliday and Hasan’s (1976) conjunction cohesion; however, it is at the macroproposition or macrostructure level where it interrelates groups of sentences and paragraphs rather than clauses and sentences at the microproposition or microstructure level of text structure (Meyer et al., 1980).

This present study investigates the effects on recall of four types of top-level organization, which is also called the rhetorical organization. These types are collection of descriptions, causation, problem/solution, and comparison. As Taylor (1980) mentioned, these four types are the most common top-level structures used by authors to develop main ideas. The rhetorical relations of these types will be signaled by explicit statements of the structure of relations in the texts. The texts used are standard texts that have been used by Meyer and Freedle (1984) and Carrell (1984a). The passages used have the same content but differ in the way similar introductory information was organized in the top-level in their content structure diagram (See Section 3.3).
2.5.3. Model of Discourse Processing

In order to understand why some types of discourse structure should be more memorable than other types, and to explain why certain types are perceived as being more highly organized than others, Meyer (1979) relates her research to schema theory. Like other investigators, she adheres to the idea that conceptual schemata play a central role in comprehension (Carrell, 1984a).

Conceptual schemata, both formal and content, are believed to function during encoding of prose into memory making inferences and retrieving information about a passage from memory (Meyer, 1979). According to Rumelhart (1977) the reading comprehension model based on schema theory is a process of choosing and verifying conceptual schemata to account for the text.

Figure 1: Organizational Components of Each Discourse Type
(Meyer and Freedle, 1984)
to be understood. Skilled readers have a finite number of formal schemata which are used in text comprehension. These schemata are more abstract and general than content schemata (Carrell, 1984a).

As Meyer (1979) explained, it is hypothesized that the skilled reader approaches text with knowledge of how texts are conventionally organized. The reader selects the formal schema in his/her repertoire that best accounts for it (Meyer, 1979). Aspects of text structure and signaling words in the text, such as the solution is, suggest which schema can be best employed (Meyer, 1975a). The schema employed to comprehend the text functions like an outline to guide the reader in organizing the text during the process of encoding into memory. During recall, the skilled reader activates this same kind of superordinate response schema which began the encoding and uses it to retrieve information in stored memory about the text. The reader begins his/her retrieval search with the top-level structure and systematically work from the superordinate relationships and content downward. This strategy of following the text structure is called the organizational strategy (Meyer, 1979).

According to Meyer (1979), the superordinate, or top-level, structure, which corresponds to the main ideas and the relationships among these main ideas, is cognitively more salient than the lower levels, which correspond to supporting ideas, detailed subordinate information. The top-level structure is cognitively more salient because it is rehearsed continually from long-term storage to the short-term memory buffer with each new piece of information the reader processes and attempts to integrate with the main ideas of the text. However, peripherally subordinate information stored in the proper place in the hierarchy does not get rehearsed as new information is taken in. Thus, it is more quickly forgotten than the top-level information (Meyer 1979, Carrell 1984a, Kintsch and Van Dijk 1978).

According to Anderson (1976), the probability of retrieval from memory is increased by links among propositions (Meyer, 1979). The causation, problem/solution, and comparison structures are considered more highly organized types of top-level structures than the collection of descriptions structure because of the relationships that hold between the top-level propositions in the former types. The more highly organized types are expected to facilitate encoding, economy of storage in long-term memory, and subsequent retrieval processes. Thus, for example, during recall, remembering that a discourse was presented in a comparison structure should provide more retrieval cues than remembering that the discourse consisted of a collection of unrelated descriptions about a topic. In addition, as Meyer and Freedle (1984)
mentioned, the three more organized types of discourse may lead to efficient storage in memory over time than the less organized one (Carrell, 1984a, Meyer and Freedle, 1984) (See Section 2.5.2).

2.5.4. Empirical Research on Rhetorical Organization

This section presents first empirical studies on the effect of different rhetorical organizations on the amount of information recalled and on awareness of the rhetorical organization of the original text. Then empirical studies on the effect of following the rhetorical organization of the original text on the amount of information recalled will be presented.

The studies most related to the present research are those of Meyer and Freedle (1984) and Carrel (1984a). In 1984, Meyer and Freedle investigated the effects of four discourse types on the recall of forty native English-speaking graduate students. The researchers also investigated the effects of these types on the students’ awareness of the rhetorical organization of the text by determining the number of the students who used and those who did not use the same rhetorical organization of the text in their written recalls for each discourse type. At that time, this study was the first of its kind. The subjects of this study were divided into four groups; each group listened to one of the four discourse types. The content and structure of the texts were the same except for the rhetorical organization of the text and a minimal number of ideas necessary for altering the rhetorical organization of the text. Comparison, problem/solution, and causation, which are more organized discourse types, due to the organizational components they have, were expected to yield superior recall of information than the collection of descriptions type, which is a less organized type. According to Meyer and Freedle (1984), "the facilitative effects of the more organized types of rhetorical organization would not be expected for subjects with deficits in using these rhetorical organizations and their organizational components". Therefore, the subjects of this study were native English-speaking graduate students. These students were expected to be able to use the rhetorical organizations of the four discourse types.

The first finding of this study is the superior recall scores of the students who listened to the comparison and causation types in comparison to the recall scores of the students who listened to the collection of descriptions type. The second one is that the students were more aware of the comparison, causation, and collection of descriptions structures than of the problem/solution structure. Although students displayed as much awareness of the collection of descriptions structure as of the comparison and causation structures, Meyer and
Freedle argued that collection of descriptions type was recalled less because it has fewer organizational components. Meyer and Freedle (1984) assumed that the reason for not finding the problem/solution type more facilitative of recall than the collection of descriptions type by the students is the fact that most of them did not use the rhetorical organization of the original text for the problem/solution type that may have been due to the departure from convention in the construction of the original text for the problem/solution type. In an attempt to investigate the generalizability of the effect, the researchers used the same procedures with a different topic to compare the effects of the comparison and collection of descriptions types. The results of this study were similar to that of the first one.

On the basis of this research, Carrell (1984a) conducted her study, but with a different presentation mode and population. Eighty L2 students participated in this study. They were from the highest three levels of the intensive English language program for prematriculated L2 students. The prematriculated L2 students are those who did not get the required scores in TOFEL test to be matriculated students. The linguistic background of the students who participated in Carrell's (1984a) study were different. Thirty-two students were L2 Spanish-speaking students, 16 students were L2 Arabic-speaking students, 12 students were L2 Altaic- and Sino-Tibetan-speaking students, whom Carrell (1984a) named the Oriental group, and 20 students were predominantly L2 Malay-speaking students, whom Carrell (1984a) named the Other group. The students were presented with the same material that had been used by Meyer and Freedle (1984), which consists of four versions, one for each of the four rhetorical organizations. Each version was read by 20 students.

The results showed that, in general, L2 students who utilized the rhetorical organization of the original text recalled more information than the ones who did not. However, only 26% of L2 students utilized the rhetorical organization of the original text in their immediate recall protocols, and 38% of the students who did were Spanish speakers. According to Carrell (1984a), that may be attributed to the absence of appropriate formal schema, particularly if the students come from a non-European background. In addition to these results, the two main findings of this study showed that the more highly organized types of discourse—comparison, problem/solution, and causation—tended to facilitate the recall of L2 students as a whole more than the less organized type, collection of descriptions. Based on this result, Carrell (1984a: 464) speculated that "if readers of whatever native language background
possess the formal schemata against which to process the more highly structured types of discourse, these types of organization may generally facilitate encoding, retention, and retrieval of information”. However, the effects of the discourse types on the recall of L2 readers were not the same for each language group. Specifically, for the Spanish group, the more organized types were recalled better than the less organized type. For the Oriental group, the problem/solution and causation types were recalled better than the comparison and collection of descriptions types. For the Arabic group, the comparison type was the best recalled type, secondly, the problem/solution and collection of descriptions types. Causation was the least recalled passage. Finally, for the Other group, the causation type was the best recalled type, secondly, the problem/solution and comparison types. Collection of descriptions was the least recalled passage. As Carrell (1984a: 464) noted "the reason that the Arabic-speaking subjects found the collection of descriptions type equal to the problem/solution type, and better than the causation type may be due to the preferred rhetorical patterns of the Arabic language, which has been described by Kaplan (1966) and Ostler (1981) as being one of ‘coordinate parallelism’". However, Carrell (1984a) wrote a caution due to the relatively low mean scores for the number of idea units recalled by L2 students, which may indicate the difficulty of the task, specifically the difficulty of the vocabulary used in the passages.

According to Kaplan (1972), each language and each culture has a paragraph order unique to itself. L2 learners writing expository prose in English will show organizational patterns different from those of native speakers. His explanation is that the learner is transferring rhetorical organization from the mother tongue and culture (Kaplan, 1972). The rhetorical organizations of English texts, as Kaplan (1966) mentioned, are sequential and linear in their development. An English expository paragraph usually begins with a topic statement, and then, by a series of subdivisions of that topic statement, each supported by examples and illustrations, proceeds to develop that central idea and relate it to all other ideas in the whole essay, and to employ it in its proper relationship with other ideas, in order to prove something or perhaps to argue against something. Maturity of style in English is often gauged by subordination. On the other hand, paragraph development in the Arabic language is based on a complex series of parallel constructions, both positive and negative. These parallelisms can be synonymous parallelisms, in which the two parts are often connected by a coordinating conjunction, such as and; synthetic parallelism, in which the conjunctive adverb is often stated or
implied, such as *therefore*; antithetic parallelism, such as the use of the conjunctive tie *but*; and climatic parallelism, in which the subject is postponed to the very end of the sentence. This type of parallel construction is found in sentences and form the core of paragraphs in some Arabic writing. Kaplan (1966) found that the compositions of L2 Arab students were written in a pattern characterized by repetition and elaborate parallelism rather than by a linear pattern.

In an effort to explore Kaplan’s generalizations more carefully, Ostler (1987) argued that Arabic-speaking L2 writers are heavily influenced by classical Arabic, a language which is more reflective of oral traditions in language use. Ostler (1987) reached a similar conclusion that the writing patterns of L2 Arab students reveal greater use of coordination and apposition than subordination, as well as greater use of parallelism and symmetry in and across the clauses.

The preference for coordinate parallelism has also been shown in other studies, such as Sa’adeddin’s (1989) study, of Arab students’ writing and in Arabic writing. However, the availability of subordination in Arabic language has also been shown. For example, in a study investigating textual features of Arabic language written texts, Sa’adeddin (1989) found out that the many oral features in written Arabic texts had been reinterpreted as representing one rhetorical option in written Arabic which is an *aural* mode of writing. This mode is preferred because it indicates solidarity and shared cultural beliefs. Some of its salient features are a loose pattern of organization, overemphasis, repetitions of specific syntactic structures, development by addition and accumulation. Another available option of writing in Arabic is the visual mode. This mode is seen as distant and noninteractive. Its salient features include linearization, elaboration of sentences and paragraphs, complicated thematic structure, and a clearly determined ending. Thus, the Arabic language writers have the option to write in a *visual* style, much as English writers do, but it is culturally dispreferred (Sa’adeddin, 1989).

Also, in a thesis by Jan (1993) investigating the coherent features of less and more coherent compositions written by advanced L2 Arab students in the English language, the results revealed that the rhetorical organization of the more coherent compositions contain far more frequent use of introduction and conclusion, and have more traceable global and local linearity of logic. This linearity is a result of an explicit or implicit thesis statement and a central superordinate idea that governs the whole essay. The use of the conjunctive ties in the less coherent compositions are more additive, adversative, and causal.
Jan concluded (1993: 87) “the overuse of conjunctions is only one of a group of linguistic and rhetorical characteristics that distinguish the writing of high and low coherence groups of Arab students. This suggests that the overuse of conjunction by Arab students is developmental, related to their overall linguistic and rhetorical levels of maturity in L2 rather than to negative transfer from Arabic”. As a support for that explanation, Jan mentioned some of the findings of Scarcella’s study that conjunction is used by low proficiency native and non-native Korean, Taiwanese, Romance and Japanese students more than their counterparts (Scarcella, 1984). The study of Arabic-English differences, as Grabe and Kaplan (1996) mention, has been an interesting source of contention through much of the history of contrastive rhetoric.

In addition to the availability of subordination in Arabic Language (Sa’adeddin, 1989) and Jan’s (1993) suggestion that the overuse of conjunction by Arab students is developmental, Kaplan (1972) was criticized by Hinds (1983) for using written compositions in English gathered from speakers of various languages. Because such data do not necessarily say anything about the rhetoric of the first language, and it has now been recognized that at least some errors in the target language are not the result of negative transfer from the first language (Hinds, 1983). As Mohan and Lo (1985) state, there is a need for detailed comparative studies of academic discourse in a number of languages to know which aspects of academic discourse are culture-specific and which are universal. Furthermore, there are a number of alternative explanations for errors at the organizational level in compositions. For example, a student’s English may be inadequate for expressing complex ideas; a student who is unfamiliar with a topic may be unable to write a well-organized essay about it in any language; a student may feel the teacher values correct grammatical expression more than organizational form; and a student may not be familiar with the constructions of expository writing in the native language, just as there are many native English speakers who are not skillful writers of expository prose. In studies of grammatical transfer, it can be assumed that students are competent in the grammar of their first language; in studies of the transfer of written discourse one cannot make the equivalent assumption (Mohan and Lo, 1985).

Other researchers examined students’ awareness of different rhetorical organizations using different measures, different types and on the performance of native speakers of English at different educational levels.

Richgels et al. (1987) examined the awareness of 30 sixth-grade native speakers of English of the four types of rhetorical organization of expository
The investigators wanted to know whether students’ awareness of the rhetorical organization varies, depending on the type of the rhetorical organization. The materials used in this study were twenty-four short passages, six passages for each of the four expository rhetorical organizations. In composing the materials, the investigators used graphic organizers because it was necessary that the rhetorical organizations for the four types be similarly complex. Three measures of awareness with different cognitive demands were employed to provide a deep probing of students’ awareness of the four types of rhetorical organization. These measures are the use of organization in written recalls, the use of organization in composition, and the response of interviews. In addition, two recall measures were used that were found to be sensitive to differences in readers’ awareness of rhetorical organization. These measures are the students’ recall of main ideas versus details, and their recall of normal passages versus scrambled ones. The researchers expected that readers who were aware of the rhetorical organization of the text would recall more main ideas than details when reading the normal passage; and that when reading the scrambled passage, they would not recall more main ideas than details. For the recall task, four of the six passages for each rhetorical organization were randomly selected, two of them were presented as well-structured passages and two as scrambled ones. In scoring the written recalls the researchers first scored the percentage of main ideas and of details recalled. Then for each rhetorical organization, a scale from zero to seven was developed to rate how closely the students’ organization of their recall of the normal passage resembled the organization the author had used. This scale was used to classify the rhetorical organization use as full, partial, or none, or as use of another rhetorical organization. For example, the students whose recall protocols were rated in the seventh, sixth, or fifth level were considered as having full knowledge of the rhetorical organization.

The results of this study showed varying degrees of awareness of rhetorical organization depending upon the type of rhetorical organization and the task. However, it is noteworthy that the students’ high awareness of the comparison/contrast structure persisted across all the tasks, as did the students’ low awareness of the causation structure. The finding of high awareness of the comparison type is similar to the results of Meyer and Freedle’s (1984) study. However, in Meyer and Freedle’s (1984) study high awareness of the causation structure was also found. As Richgels et al. (1987: 190) noted, “It could be that the causation structure is easier to detect when listening, or that college
students have had more experience with texts cast in causation structure than sixth-grade students have, and so have developed greater awareness of that structure”.

Hiebert et al. (1983) examined the awareness of native English-speaking college students of four expository rhetorical organizations. These rhetorical organizations were comparison/contrast, description, sequence, and enumeration. In contrast to Meyer’s (1975a) text classification system, the collection category was subdivided into the two separate categories of sequence and enumeration. The main purposes of this study were, first, to determine whether the students were more aware of some rhetorical organizations than of others in reading and writing; second, to determine how performance on these rhetorical organizations measure related to a general comprehension measure. Fifty-two college students were equally divided into two achievement groups: a high ability group and a low ability group. These groups were given two tasks, one to assess their awareness of the rhetorical organizations in reading and the other to assess their awareness of these rhetorical organizations in writing. The task used to measure the awareness of the rhetorical organizations in the reading skill in this study is different from the previous studies. For each discourse type, there were three test items. Each test item was constructed so that the students first read two stimulus sentences. These stimulus sentences were constructed so that they indicated the topic of the paragraph, signaled a specific type of rhetorical organization, and provided an exemplar of a sentence that conformed to the particular topic and rhetorical organization type. Then four sentences were presented to the students. Two of these sentences were target sentences in that they extended the ideas introduced in the first two sentences of the paragraph and were consistent with the original rhetorical organization. The remaining two sentences were distractors because they intruded on the paragraph structure by introducing new rhetorical organization. The students were asked to rate how well target and distractor statements belonged to the original stimulus sentences. Two days later the writing task was administered. It consisted of twelve items. For each of the four rhetorical organizations, there were three items. Each item presented the students with the topic sentence of a paragraph which also signaled a specific type of rhetorical organization. The students were asked to write two additional sentences that would “fit closely” with the topic sentence and rhetorical organization of the paragraph.

The results of this study showed that high-ability students were more skilled in both the reading and writing tasks, in recognizing and producing
topically and structurally relevant statements. Concerning the rhetorical organization types, high-ability students performed significantly better on comparison/contrast and enumeration types than low-ability students on the reading recognition task. On the writing task, the students of the two proficiency levels found the comparison/contrast type more difficult than the other types of rhetorical organization. As the authors explained, the reason for the difference between this study and Meyer and Freedle’s (1984) study as regards the comparison type is the use of recognition and production tasks rather than a recall task. Recall, as Hiebert et al. (1983, 76) stated “places greater burden on memory and fully examines other factors that influence comprehension, such as associative and mnemonic strategies”. Since comparison/contrast structure is based on associative networks and linkages among the elements of the structure, comparison/contrast might lend itself more to recall, and hence to the use of organizational strategy in the recall protocols, than a recognition task. For the same reason, comparison/contrast might be more difficult in a production task because it requires that the learners recall and systematically delineate the parallel features and attributes of the two components being compared. Therefore, the facilitative effects of rhetorical organizations might vary for different types due to differential processing loads and cognitive demands.

Another possible explanation, as Hiebert et al. (1983) mentioned, is that the specific structure of the comparison/contrast structure in Meyer and Freedle’ (1984) study is different from the structure of the comparison/contrast in their study. As Meyer and Freedle (1984) noted, comparison/contrast can be more or less complex depending on how many organizational components are included in the structure. In Meyer and Freedle’s (1984) study the definition of the comparison/contrast structure is relatively simple. It required only the contrast of two opposing points. However, in Hiebert et al.’s (1983) study it seems to be of a more complex type, one requiring delineation of parallel attributes (Hiebert et al., 1983).

Finally, Englert and Hiebert (1984) examined the awareness of child native speakers of English of the previous four types of expository text. The children were in third and sixth grades at three ability levels based on a reading achievement test. The task used to measure the awareness of the rhetorical organizations in the reading skill in this study was the same task used in the reading task of the previous study, which consisted of twelve items. For each discourse type there were three test items. However with different materials. The results of this study showed that children who were more in tune with the
various rhetorical organizations performed significantly better on a measure of reading comprehension than children who were not attuned to these rhetorical organizations. Also, overall, sixth-grade children were more capable of detecting mismatches between the rhetorical organization of the passage and incoming passage information than third-grade children. In addition, the two categories *sequence* and *enumeration*, which were classified by Meyer (1975a) as *collection*, were the most salient to children and were perceived as relatively well-defined rhetorical organizations that set up strong expectations for related details. Description and comparison/contrast were the most difficult rhetorical organizations for children at both grade levels. As the researchers explained, the reasons for the difference between the results of this study and Meyer and Freedle’s study (1984) as regards the comparison type are the use of different tasks and the age of the subjects. As Englert and Hiebert (1984) stated, young children differ from adults because young children had less cognitive development and memory capabilities for recalling parallel features and attributes than adults. Moreover, the findings of Englert and Hiebert's study (1984) showed that the third-grade students were more aware of the rhetorical organization of the sequence type than of the description type. As for the sixth-grade students, the results showed that there were no differences among the four discourse types in the students' awareness of the rhetorical organization. These findings suggest that from the third to the sixth grade, children made the greatest gains in their acquisition of the description type. Rather than knowledge of all rhetorical organizations developing in parallel fashion, some discourse types were acquired earlier than others; whereas other discourse types underwent more rapid growth later in the elementary school years.

As regards the effect of using the organizational strategy on the amount of information recalled, the results of Carrell’s study (1984a) showed that L2 readers who used this strategy recalled more information than those who did not. In addition, Meyer and Rice's study (1982) of adult native speakers of English of all ages showed that readers who used the organizational strategy tended to recall more information than those who used the default strategy, in which the reader has no plan and simply try to remember something from the text.

Using different variables, the effective role of using the organizational strategy in increasing the recall scores was shown in the results of other studies as well. In Meyer et al.’s study (1980), one hundred and two ninth-grade native speakers of English were defined as good, average, and poor readers according to the results of a standardized test. The texts read were two well-organized
expository texts with clearly identifiable rhetorical organizations—the comparison rhetorical organization and the problem/solution rhetorical organization—but with different contents. The results of this study showed that most good readers used the same rhetorical organization for organizing their recall protocols as the author of the passage, while poor readers did not. In addition, readers who employed this organizational strategy recalled much more information from the passage as a whole, the message, major ideas, and details than those who did not.

Even the recall of child native speakers of English was affected by the use of the organizational strategy. Taylor (1980) found that sixth-grade good readers and sixth-grade poor readers who used the organizational strategy recalled significantly more information than their peers who did not.

The use of the rhetorical organization of the text was one of the reading strategies used by good readers. Using a think-aloud protocol, Block (1986) investigated comprehension strategies used by L1/L2 college level students while reading textbook material. Using retelling and multiple-choice questions, Block (1986) examined the amounts of information understood and remembered. One of the important reading strategies that was found is the recognition of rhetorical organization through which the reader distinguished between the main ideas and the supporting details or discussed the purpose of information. This strategy was used by the integrators group, as Block (1986) called them. In this group, the readers were aware of rhetorical organization with relative frequency, and monitored their understanding consistently and effectively. Their retellings tended to include the thesis of the article and focus more on main ideas than on details. On the other hand, the nonintegrators made fewer attempts to connect information and tended to refer to personal experiences more than the first group. Their retellings focused more on details and included few main ideas. On multiple-choice tests, participants who had reported the thesis statement and main ideas tended to achieve high scores on their measure.

Finally, Carrell’s study (1992) also examined the differences in the number of total ideas recalled and in the number of ideas recalled in different levels of text structure between two types of awareness measurements: the use of rhetorical organization of the original text in L2 students’ recall protocols, and a question about the plan the writer used to organize the passage which demands more conscious awareness. This study also examined the differences in the number of the students between the two types of awareness measures. Forty-five L2 students participated in this study. They were from level four of
the intensive English language program for prematriculated L2 students. The results of the study showed that it was the use, not the conscious recognition, that helped the students to recall more information. That is, L2 students who used the organizational strategy recalled more information than those who did not, and that no such difference was found in the recall scores of the students who consciously recognized the rhetorical organization of the original text and those who did not. In addition, there was no significant interaction between these two variables. The results of Carrell's study (1984a) also showed that the students who used the organizational strategy recalled more top-level and high-level ideas than those who did not. Finally, the students who used the rhetorical organization of the original text either consciously recognized the rhetorical organization of the original text or did not. However, the students who did not use the rhetorical organization of the original text did not consciously recognize the rhetorical organization of the original text. Only two of 38 students consciously recognized the rhetorical organization of the original text and did not use this rhetorical organization in their recall protocols.

2.5.5. Summary of Literature

Several important points are presented in this chapter. First, SLA research is a wide-ranging field of inquiry that helps to describe and explain the process of SLA and the factors affecting it in order to improve the acquisition of this language. Moreover, there is a need to examine the acquisition of formal schemata, such as the reader's background knowledge about different types of rhetorical organization of texts, by L2 students at different educational levels.

Second, in schema theory, which is the most recent psycholinguistic model of reading, reading is an interactive process between the text and the reader's background knowledge, that is, a text only provides directions for readers as to how they should retrieve or construct meaning from their previously acquired knowledge. These previously acquired knowledge structures are called schemata. They are both formal schemata and content schemata.

Third, the rhetorical organization of expository text, which corresponds to the main ideas and the relationships among these main ideas, has different types. Some of these types are more organized than others because of the number of relationships that hold between the main ideas.

Fourth, the more highly organized types of rhetorical organization are found to facilitate the recall of native English-speaking students, as well as L2 students. However, only few studies examined the effects of different types of
rhetorical organizations on the recall scores of L2 students. Therefore, further studies are needed to examine such effects.

Fifth, according to the results of Carrell’s study (1984a), the effects of four types of rhetorical organization on the recall of L2 readers are different in different language groups. The possible explanation that Carrell gave for the results for L2 Arab students is the transfer of the preferred rhetorical patterns of the Arabic language, which has been described by Kaplan (1966) and Ostler (1981) as being one of “coordinate parallelism” in free composition. However, Carrell’s study (1984a) has two limitations. First, this study had relatively low mean scores for the number of idea units recalled by L2 students, which may indicate the difficulty of the task, specifically the difficulty of the vocabulary used in the passages. Second, the number of L2 Arab students who participated in this study was only 16 students. In addition, the possible explanation that Carrell (1984a) gave for the results for L2 Arab students is limited due to the fact that the description that was given for the preferred rhetorical patterns of the Arabic language by Kaplan (1966) and Ostler (1981) in free composition has been shown to be inconclusive by Sa’adeedden (1989), opposed by Jan (1993) and Scarcella (1984), and criticized by Hinds (1983) and Mohan and Lo (1985). Due to these facts, an examination of the effects of different discourse types on the recall of more L2 Arab students after reading modified texts versions of those used in Carrell’s study is needed.

Sixth, the native English-speaking students' awareness of different types of rhetorical organization was not the same in the results of some studies due to the use of different tasks, or different presentation modes, or the participation of students of different ages. In addition, by using a recall task, which is one of the awareness measurements, Carrell (1984a) found that most of L2 students did not use the rhetorical organizations of four types of discourse in their recall protocols. The hypothesized explanation is that most of L2 students may not possess the appropriate formal schemata, particularly if they come from a non-European background. Since few studies examined L2 students' use of different types of rhetorical organization in their recall protocols, this finding also needs further investigation.

Finally, using different variables, the effective role of using the organizational strategy in increasing the recall scores was shown in the results of studies of native English-speaking students and studies of L2 students. There is a need to examine the effect of using this strategy on the recall of L2 students in relation to other factors, such as the educational level of the students.
CHAPTER THREE
METODOLOGY

3.1. Introduction

This chapter gives details about the subjects of the study, the instruments used in the study, the content validity of the test, the procedure used to conduct the study, the procedures used to score the students’ recall protocols, and the reliability of scoring the students’ recall protocols.

3.2. Subjects

The subject pool of the study consists of 200 female students from level five and level three, majoring in English at Umm Al-Qura University (hereafter UQU) in Makkah Al-Mukarramah, during the first term of the academic year 1423 H. According to the curriculum presented at UQU, specially Composition Four, the fifth-level students have been exposed to more information about the four discourse types investigated in this study than the third-level students.

The selection of the third-level students is appropriate for the research purposes since these students can be introduced to reading and recalling a short passage after one reading, the prerequisite that cannot be pursued with a high school population or university L2 students at the first and second levels because of their limited control of English as a foreign language.

As for the fifth-level students, the selection of these students is also appropriate for the research purposes for two reasons. First, two of the main purposes of the present study are to examine the effect of having previous knowledge about the four discourse types on the effects of these types on the recall scores of L2 students and the effect of having this knowledge on the ability of these students to use the rhetorical organizations of these types in their recall protocols. The textbook for Composition Four contains expository texts and explanations about the rhetorical organizations of the four discourse types, and the textbook for Reading Four contains expository texts, some explanations about the rhetorical organizations of some of the four discourse types, and an explanation about the use of the organizational strategy. Therefore, the students who passed level four are presumed to have previous knowledge about the four discourse types.

Second, the curriculum of Reading Four is part of the curricula constructed to teach the basic rules of the English language to L2 students in the first two years. This curriculum contains expository texts with different types of rhetorical organization, some explanations about the rhetorical organizations of some of these types, and an explanation about the use of the
organizational strategy. Therefore, it is possible to modify this curriculum by having more expository texts with more organized types of rhetorical organization and/or having more explanations and activities for the use of the rhetorical organizations of the four discourse types. However, the curricula of the more developed levels of education are constrained in their content. They are mainly constructed to give more details about the English language, such as Phonology and Syntax, or to give theoretical and empirical information about learning this language, such as Reading in English as a Foreign Language and Writing in English as a Foreign Language. Due to these facts only the fifth-level students were selected from the more developed levels of education because the results for the fifth-level students are due to the curricula of level four more than the results for the students from more developed levels of education.

All the students, in the present study, had the same linguistic background, according to their responses to a demographic questionnaire (See Appendix A). They were all native speakers of Arabic and came from families in which both parents are native speakers of Arabic. They studied English language in the intermediate and secondary schools. Reading English is offered as a separate course for English Department students. It is obligatory for these students to study four reading courses throughout their major. The students’ ages were approximately between 20-21. From the subject pool of the study, 60 students were randomly selected from each of the two academic levels as the sample for the study.

3.3 Instrument

Four versions of a single text and a fill-in-the-blank instrument were used in the present study.

3.3.1. The Texts

The texts used in this study were modified versions of those used by Meyer and Freedle (1984), and Carrell (1984a) (See Appendix B). The modifications include syntactic simplification and substitution of lexical items, specifically those considered to be possible sources of difficulty for L2 readers. This step was necessary because Carrell’s study (1984a), in which L2 readers were from the highest three levels of the intensive English language program, had relatively low mean scores for the number of idea units recalled by L2 readers, which may indicate the difficulty of the task, specifically the difficulty of the vocabulary used in the passages. Four versions of a single passage were
used in order to control the structure and content of the information while investigating the effects of four discourse types, which are comparison, causation, problem/solution, and collection of descriptions. Each version contained identical information. The overall rhetorical organization differed, as did a minimal number of ideas necessary for altering this structure (See Appendix B). Each of the passages contained between 152 and 157 words.

The differences in the organization of the four discourse types can be seen graphically in Figure 2. Based on Carrell (1984a), "A" in figure 2 corresponds to the identical information in the first paragraph in each passage; "B" stands for different information in each passage; "C" represents the identical information in the last paragraph in each passage. The comparison, causation, and problem/solution organizations assign A and B to binary components and relate these two components to a general topic and to each other in specified ways, comparative, causative, or solutions matching problems. In assigning B and C, a specific relationship exists between B and C, that is, C explains B. Thus, for the comparison, causation, and problem/solution structure, A, B and C are interrelated in a number of specified ways. In contrast, in the collection of descriptions organization, there are no relationships among A, B, and C.

As Meyer and Freedle (1984) noted, the identical blocks of information tended to be higher in the text structure for the least organized type, which is the collection of descriptions type, simply because in that type everything is near the same level, at the top level. However, height of the identical blocks of information did not vary much. In addition, Miller and Kintsch’ study (1980) reported less difference in the recall of information high and low in the content structure from passages that fit the discourse type of a collection of descriptions (Meyer & Freedle, 1984)

3.3.2. Fill-in-the-Blank Instrument

The purpose of using the fill-in-the-blank instrument was to probe the students’ recall of 22 content units of the 63 content units common to all four versions of the text (See Appendix C). This instrument was used after the delayed recall task. The purpose of using further investigation after the delayed recall task is to know if the differences among the variables in the information recalled is due to the loss of information or due to the laws of retrieval (Meyer, 1975b). That is, if the delayed recall task had been administered without further investigation, one would not know if the difference among the discourse types
over time was due to the loss of information from memory or that the information of the four discourse types were equally stored but that the laws of retrieval are such that the more organized types are more likely to be recalled under free recall condition. If the information is still present in memory, it will be accessible in other ways. According to previous research (Meyer 1975b,
Meyer and Freedle 1984, Carrell 1984a), it was expected that the results of the fill-in-the-blank instrument would be similar to the results of the free recall task. That is, the information in the texts of the four discourse types would not be stored equally in long-term memory.

According to Heaton (1979: 122), “the deleted words in fill-in-the-blank instrument are selected subjectively consisting largely of structural words in certain tests and content units in other tests.” For the purpose of probing the students’ recall of some of the identical idea units in fill-in-the-blank instrument in the present study, the deleted words were content units.

3.3.3. Content Validity

Content validity means that the test is meaningful and appropriate for the purpose of the research (Harris, 1969). To establish the content validity of the test, four professors in linguistics were given the modified versions of the text and a summary of the research problem and methodology. The professors were asked to examine the texts and to indicate whether they were suitable for the research purposes and subjects. On the basis of the professors’ suggestions, some changes were carried out on both the text, as well as the methodology.

3.4. Data Collection

The study was conducted over the last 20 minutes of the regular students’ class time. It required two sessions. In the first session, each student received one version accompanied by written instruction and a closed envelope. The envelope was used so that the student would not know that she would be required to recall the text and thus follow the instruction in reading the text only once. The instructions were written in the Arabic language to avoid any misunderstanding (See Appendix A). The instruction was also read aloud to the students. The students were asked to read the text carefully and to understand it well, but once they finished reading it, not to read it again and to hand it to the researcher, then to open the envelop and to read the instructions in it.

The students then read the texts at their own reading rates, but were not given more than five minutes. The time limit for reading had not been mentioned to them. The five-minute time limit was based on the maximum time needed by a random sample of L2 students (See Appendix F). After handing in the text, the students opened the envelope in which there were a lined page and recall instructions (See Appendix A) in which the students were asked to recall as much information as they could in complete sentences, not in isolated words. It was stated that spelling mistakes would not be counted. The
students were asked to write their names on the text papers and the recall papers, in order to identify the version that each student had read. For the recall task fifteen minutes had been allotted to the students, based on the maximum time a random sample of L2 students needed to recall the text in the reading speed test.

In the second session, 48 hours later, a delayed recall task was administered. No indication had been given during the first session that there would be a second session. In this session, each student received a lined sheet of paper with recall instructions and an envelope which contained a fill-in-the-blank instrument and a demographic questionnaire. The envelopes and the lined sheets were distributed to the students by name so that each student had a fill-in-the-blank instrument for the same version of the text she had read. The students were asked not to open the envelopes until they handed in the recall sheets of paper. The recall instruction in this session was the same as the immediate recall instruction.

After handing in the recall sheet of paper, the students were asked to open the envelope and answer the fill-in-the-blank instrument and the demographic questionnaire. Fifteen minutes had been assigned for the delayed recall and five minutes for the fill-in-the-blank instrument and the demographic questionnaire.

From the subject pool, 15 students were randomly selected for each of the four text versions for each educational level.

3.5. Scoring

The recall protocols were scored for the presence of the identical idea units recalled with the aid of the content structure, following the procedure used by Meyer (1975a) and Meyer and Freidle (1984), except that in the present study the identical information had been analyzed to its full extent (See Appendix D). The recall protocols were also analyzed according to the discourse type used by the subjects to organize their writings following the procedure used by Meyer and Freedle (1984) and Carrell (1984a).

3.5.1. Procedure Used to Analyze the Four Versions

The identical information was analyzed into its content structure using Meyer’s discourse analysis (1975a). According to this system, the content structure of a passage shows how some ideas in a passage are subordinated to other ideas. In addition, it specifies the relationships among the ideas in a passage. Some ideas from a passage are located at the top level of the content
structure, others are found at the middle levels, and still other ideas are found at the bottom level of the structure. The ideas in the content structure are content words and phrases from the text (Meyer, 1975a).

Meyer views the text as a set of interrelated simple propositions that together form a complex proposition. The keys to understand Meyer’s analysis are, first, knowing what a simple proposition is, and, second, knowing how they may be pieced together. A proposition is a meaning unit that consists of a predicate, which means relation, and one or more arguments that are related to the predicate. The predicate in a simple proposition is called the lexical predicate, which is frequently expressed in the surface structure as a verb. Lexical predicates can also be as adjectives, adverbs, or nouns. The arguments of these lexical predicates are realized in the surface structure as nouns, noun phrases, and prepositional phrases (Conner, 1984). Lexical predicates are related to their arguments by specific semantic roles, which are called role relations. Role relations are labels. For example, Grace ‘agent’ moved the chair ‘patient’. Table 1 presents the role relations used in analyzing the identical information in the present study.

These simple propositions are related together by rhetorical predicates or relations. Rhetorical predicates are primarily responsible for giving prose its overall organization. They are often found at the top level. They relate together simple propositions, as well as other complex propositions. The simple proposition is also called the lexical proposition and the complex proposition is also called the rhetorical proposition.

There are three kinds of rhetorical predicates: paratactic, hypotactic, and neutral. Paratactic rhetorical predicates have at least two arguments of equal weight, such as the rhetorical predicate alternative that has two equally weighted alternative options and response that has two equally weighted arguments, problem and solution. Arguments of hypotactic rhetorical predicates are not of equal weight. One argument is superordinate to the other arguments that describe or give further information about it. For example, a passage that states a problem and then gives more information about this problem has the hypotactic rhetorical predicate specific. The third kind of rhetorical predicates, neutral rhetorical predicates, can take either a paratactic or a hypotactic form depending on the emphasis given to their arguments by the author. For example, collection is one of the neutral rhetorical predicates. It takes a paratactic form when all of its arguments are given equal weight. It
Table 1

Role Relations

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agent</td>
<td>instigator of an action</td>
</tr>
<tr>
<td>Patient</td>
<td>who or what is directly affected by an action</td>
</tr>
</tbody>
</table>

See Meyer 1975a for complete list.

takes a hypotactic form, on the other hand, when one argument of a collection is signaled out and the others are presented in relation to this prominent argument. In the present study, the overall organization types of the collection and causation versions are of paratactic forms. Table 2 presents the rhetorical predicates used in analyzing the identical information in the present study.  

When diagramming the content structure of the passage, the arguments of a paratactic rhetorical predicate are located at the same level in the hierarchical structure, while the superordinate argument of a hypotactic is placed at a level higher in the tree structure than its other arguments.  

Role relation and rhetorical predicates are labels for the relationship between content words in the text; they are not content words themselves (Meyer, 1975a). Rhetorical predicates can be content words, such as the rhetorical predicate so in *sports instructors ask players to lose body water, so they will have specified weights*, but more often they are not.  

The reason for using this procedure is to be as objective as possible in scoring the students’ recall protocols. Many other previous procedures (Cofer 1941, Levitt 1956, King 1966) scored the subjects’ recall protocols for the presence of the idea units or the substantive meaning of the words, phrases, or sentences only. They did not consider the correct relationships among the idea units. However, two aims of Meyer’s system are to objectify the procedures for scoring the subjects’ recall protocols, and to enable the scorer to know the correct understanding of the passage, in this case the identical information (Meyer, 1975a).

**3.5.2. Scoring of Idea Units**

The identical information in each recall protocol was scored for the presence of the content units and the relationship units of the content structure. There were 63 content units and 60 relationship units. Spelling errors were
Table 2
Rhetorical Predicates

<table>
<thead>
<tr>
<th>Hypotactic Rhetorical</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attribution</td>
<td>describe qualities of a proposition</td>
</tr>
<tr>
<td>Specific</td>
<td>gives more specific information about something that was stated in a general manner.</td>
</tr>
<tr>
<td>Explanation</td>
<td>previously stated information is explained in a more abstract manner (for example, relating the information to a general principle) or more concrete manner.</td>
</tr>
<tr>
<td>Manner</td>
<td>the way an event or event complex is performed (e.g. slowly, carefully).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Neutral Rhetorical</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collection</td>
<td>a list of elements related in some unspecified manner.</td>
</tr>
<tr>
<td>Covariance</td>
<td>relation often referred to as condition, result, or purpose with one argument serving as the antecedent and the other as the consequent or result of the antecedent.</td>
</tr>
</tbody>
</table>

See Meyer 1975a for complete list

ignored, and the content unit was scored as present if the same word from the passage or the substantive meaning of the word was present in the recall protocol. The subjects’ recall protocols were scored for the presence of content units regardless of whether or not they were recalled in the correct relationship to other information. In addition, relationship units were scored as present if they correctly related content units, or if their use of an incorrect content units in the proper relation to the other units in the content structure indicated that the subject knew that the relationship existed, but erroneously remembered the details of the content. For example, if the subject wrote *the administrators ask the football players* instead of writing *the sport instructors ask the football players*, the scorer gave a point for the role relation *agent*, but not for the content unit *administrators*.

The fill-in-the-blank instrument was also scored for the presence of the correct 22 content units of the 63 identical content units.
3.5.3. Classification of the Type of Rhetorical Organization of Writing

Each recall protocol was classified into the type of rhetorical organization used by the subject to organize the protocol. The rhetorical organization of the protocol was examined and classified as either meeting the definition of one of the four original text types, which are comparison, causation, problem/solution, and collection of descriptions, or not. If it were not one of these four types, Meyer and Freedle’s (1984) additional two categories, which are description and collection, were used.

For the protocol to be classified under the problem/solution type, the protocol had to state a problem and present a solution to the problem. The information in the problem/solution type did not have to be the same as that in the original text. The requirement for a collection of descriptions type was a group of descriptions about a topic, where the descriptions were collectively organized. Protocols were classified as causation if the structure consisted of an antecedent and consequent. In order to be classified as a comparison type, the rhetorical organization had to contrast opposing points of view, one which may have been the subject’s own point of view. If the rhetorical organization of a protocol was not the same as the original text, the type of the rhetorical organization used was recorded. Protocols were classified as description if there was a topic plus randomly associated comments on that topic. Finally, protocols were classified as collection if they exhibited a collection of isolated ideas not related to each other or to a specified topic (Carrell, 1984a, 455) (See Appendix E).

3.5.4. Reliability of Scoring Idea Units and Classification Procedure

Reliability refers to the accuracy and stability with which students’ recall protocols and answers in the fill-in-the-blank instrument were scored and with which the types of rhetorical organization of the students’ recall protocols were classified.

To measure reliability, a random sample of students’ recall protocols and answers on the fill-in-the-blank instrument were scored by a professor of Linguistics at UQU following the same procedure the researcher used in scoring the idea units and in classifying the types of rhetorical organization of the students’ recall protocols. The correlation coefficient was calculated to estimate the reliability coefficient between the two observers. The results of the Pearson product-moment correlation showed that there is a significant correlation between the two observers in the recall scores at \( p < .05 \) \( (r = .86, p = .006) \), in the answers of fill-in-the-blank instrument at \( p < .01 \) \( (r = .99, p = \)
.000), and in the classification of the types of rhetorical organization at p < .01 (r = 1, p = .000).
CHAPTER FOUR
RESULTS

4.1. Introduction
This chapter presents the results of the study. The results were analyzed using SPSS (1999) and the minimum level for significant difference was set at .05.

4.2. Results
4.2.1. Statistical Findings of the First Research Question: Do L2 students at each of the two educational levels recall more information from the more organized types of discourse—comparison/contrast, causation, and problem/solution—than from the less organized type, collection of descriptions, in each of the two recall tasks?

To answer the question, the recall scores of the students were analyzed by using a three-factor analysis of variance (4 discourse types x 2 educational levels x 2 recall tasks) with repeated measures on the last factor. The results showed that there was a significant difference between the two recall tasks, there was a significant difference between the two educational levels, there were significant differences among the four discourse types, and that none of the double or triple interactions was significant (See Table 3). The results showed that L2 students recalled more information in the immediate recall task than in the delayed recall task. In addition, the fifth-level L2 students recalled more information than the third-level L2 students. Finally, the results of a Least Significant Difference (hereafter LSD) post-hoc test showed that L2 students recalled more information from the comparison type than from the collection of descriptions type (p = .006). Moreover, they recalled more information from the problem/solution type than from the collection of descriptions type (p = .039) (See Table 4, Table 5, and Figure 3). The significant effects of the three main factors justified the use of further statistical analyses to determine where the significant effects were located.
Table 3

Analysis of Variance for the Two Recall Tasks, the Two Educational Levels, and the Four Discourse Types

<table>
<thead>
<tr>
<th></th>
<th>RT</th>
<th>EL</th>
<th>DT</th>
<th>EL X DT</th>
<th>RT X EL</th>
<th>RT X DT</th>
<th>RT X EL X DT</th>
</tr>
</thead>
<tbody>
<tr>
<td>DF</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>F</td>
<td>55.82</td>
<td>13.73</td>
<td>2.88</td>
<td>1.10</td>
<td>.001</td>
<td>1.12</td>
<td>2.03</td>
</tr>
<tr>
<td>P</td>
<td>.000</td>
<td>.000</td>
<td>.039</td>
<td>.349</td>
<td>.971</td>
<td>.342</td>
<td>.113</td>
</tr>
</tbody>
</table>

RT = Recall Task, EL = Educational Level, DT = Discourse Type.

Table 4

Means of the Recall Scores of the Students as a Whole in the Two Recall Tasks and Means of the Recall Scores of the Students at Each Educational Level

<table>
<thead>
<tr>
<th></th>
<th>Immediate Recall</th>
<th>Delayed Recall</th>
<th>Third-Level Students</th>
<th>Fifth-Level Students</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>42.93</td>
<td>36.13</td>
<td>33.950</td>
<td>45.117</td>
</tr>
</tbody>
</table>

Table 5

Means of the Recall Scores of the Four Discourse Types by the Students

<table>
<thead>
<tr>
<th>Discourse Type</th>
<th>Grand Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparison</td>
<td>44.900</td>
</tr>
<tr>
<td>Problem/Solution</td>
<td>41.850</td>
</tr>
<tr>
<td>Causation</td>
<td>38.417</td>
</tr>
<tr>
<td>Collection of Descriptions</td>
<td>32.967</td>
</tr>
</tbody>
</table>
Hypothesis 1: There is no significant difference in the amount of identical information recalled between the third-level students and the fifth-level students in each of the two recall tasks.

By using a one-way ANOVA with the two recall tasks as dependent variables and the educational level as the independent variable, it was found that there was a significant difference in the amount of identical information recalled between the third-level students and the fifth-level students in each of the two recall tasks. The fifth-level students recalled more information than the third-level students in each of the two recall tasks (See Table 6). Therefore, the null hypothesis is rejected.

Table 6

Means of the Recall Scores in the Two Recall Tasks by the Third- and Fifth-Level Students

<table>
<thead>
<tr>
<th>Educational Level</th>
<th>Immediate Recall</th>
<th>Delayed Recall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Third Level</td>
<td>37.37</td>
<td>30.53</td>
</tr>
<tr>
<td>Fifth Level</td>
<td>48.50</td>
<td>41.73</td>
</tr>
<tr>
<td>One-Way ANOVA Results</td>
<td>DF = 1, F = 11.533, P = .001</td>
<td>DF = 1, F = 12.499, P = .001</td>
</tr>
</tbody>
</table>
Hypothesis 2: There is no significant difference in the amount of identical information recalled between the immediate recall task and the delayed recall task for students from each of the two educational levels.

To test the hypothesis, a paired-samples t-test on the recall scores was conducted for each of the two educational levels. The results showed that there was a significant difference in the amount of identical information recalled between the immediate and delayed recall tasks for students from each of the two educational levels. The students at each of the two educational levels recalled more information in the immediate recall task than in the delayed recall task (See Table 7). Therefore, the null hypothesis is rejected.

Table 7

Means of the Recall Scores in the Two Recall Tasks by the Third- and Fifth-Level Students

<table>
<thead>
<tr>
<th></th>
<th>Third Level</th>
<th>Fifth Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediate Recall</td>
<td>37.37</td>
<td>48.50</td>
</tr>
<tr>
<td>Delayed Recall</td>
<td>30.53</td>
<td>41.73</td>
</tr>
<tr>
<td>Paired-Samples T-Tests Results</td>
<td>T = 6.207, DF = 59, P = .000</td>
<td>T = 4.562, DF = 59, P = .000</td>
</tr>
</tbody>
</table>

Hypothesis 3: There are no statistically significant differences among the four discourse types in the amount of identical information recalled by the third-level students in each of the two recall tasks.

By using a one-way ANOVA with the two recall tasks as dependent variables and the discourse type as the independent variable, it was found that there were significant differences among the four discourse types in the amount of identical information recalled by the third-level students in each of the two recall tasks (See Table 8). Therefore, the null hypothesis is rejected. The results of an LSD post-hoc test showed that there was a significant difference between the comparison and collection of descriptions types in the immediate recall task (p = .022) and in the delayed recall task (p = .044). In addition, there was a significant difference between the problem/solution and collection of descriptions types in the immediate recall task (p = .006) and in the delayed recall task (p = .019). Finally, there was a significant difference between the problem/solution and causation types in the delayed recall task (p = .032). The third-level students recalled the comparison and problem/solution types better than the collection of descriptions type in each of the two recall tasks, and the
problem/solution type better than the causation type in the delayed recall task (See Table 8 and Figure 4).

Table 8

Means of the Recall Scores in the Two Recall Tasks of the Four Discourse Types by the Third-Level Students

<table>
<thead>
<tr>
<th>Discourse Type</th>
<th>Immediate Recall</th>
<th></th>
<th>Delayed Recall</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D</td>
<td>Mean</td>
<td>S.D</td>
</tr>
<tr>
<td>Comparison</td>
<td>41.60</td>
<td>17.29</td>
<td>35.47</td>
<td>17.7</td>
</tr>
<tr>
<td>Problem/Solution</td>
<td>44.33</td>
<td>16.37</td>
<td>37.40</td>
<td>13.64</td>
</tr>
<tr>
<td>Causation</td>
<td>35.13</td>
<td>13.25</td>
<td>25</td>
<td>14.72</td>
</tr>
</tbody>
</table>

One-Way ANOVA Results

DF = 3, F = 3.225, P = .029  DF = 3, F = 3.086, P = .034

S.D = Standard Deviation

Figure 4. The Effects of the Four Discourse Types on the Recall of the Third-Level Students in Each of the Two Recall Tasks
Hypothesis 4: There are no statistically significant differences among the four discourse types in the amount of identical information recalled by the fifth-level students in each of the two recall tasks.

By using a one-way ANOVA with the two recall tasks as dependent variables and the discourse type as the independent variable, it was found that there were no significant differences among the four discourse types in the amount of identical information recalled by the fifth-level students in the immediate recall task or in the delayed recall task (See Table 9 and Figure 5). Therefore, the null hypothesis is accepted.

Table 9

Means of the Recall Scores in the Two Recall Tasks of the Four Discourse Types by the Fifth-Level Students

<table>
<thead>
<tr>
<th>Discourse Type</th>
<th>Immediate Recall</th>
<th>Delayed Recall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D</td>
</tr>
<tr>
<td>Comparison</td>
<td>55.73</td>
<td>19.70</td>
</tr>
<tr>
<td>Problem/Solution</td>
<td>43.40</td>
<td>18.92</td>
</tr>
<tr>
<td>Causation</td>
<td>50.20</td>
<td>21.58</td>
</tr>
<tr>
<td>Collection of Descriptions</td>
<td>44.67</td>
<td>17.29</td>
</tr>
<tr>
<td>One-Way ANOVA Results</td>
<td>DF = 3, F = 1.270, P = .294</td>
<td>DF = 3, F = 1.111, P = .352</td>
</tr>
</tbody>
</table>

S.D = Standard Deviation

Hypothesis 5: There are no significant differences among the four discourse types in the students’ scores on the fill-in-the-blank instrument for each of the student levels of education.

A separate univariate analysis of variance was used for each of the two educational levels to answer the hypothesis (See Table 10). The results showed that there were no significant differences among the four discourse types in the students’ scores on the fill-in-the-blank instrument for each of the student levels of education. Therefore, the null hypothesis is accepted.
Figure 5. The Effects of the Four Discourse Types on the Recall of the Fifth-Level Students in Each of the Two Recall Tasks

Table 10

Means of the Recall Scores on the Fill-in-the-Blank Instrument of the Four Discourse Types by the Third- and Fifth-Level Students

<table>
<thead>
<tr>
<th>Discourse Type</th>
<th>Educational Level</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Third Level</td>
<td>Fifth Level</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
</tr>
<tr>
<td>Comparison</td>
<td>7.80</td>
<td>3.88</td>
<td>10.80</td>
</tr>
<tr>
<td>Problem/solution</td>
<td>7.33</td>
<td>3.31</td>
<td>8.13</td>
</tr>
<tr>
<td>Causation</td>
<td>5.73</td>
<td>3.43</td>
<td>9.53</td>
</tr>
<tr>
<td>Collection of descriptions</td>
<td>5.13</td>
<td>4.10</td>
<td>8.53</td>
</tr>
</tbody>
</table>

Results of Analysis of Variance

DF = 3, F = 1.773, P = .163
DF = 3, F = .964, P = .425
4.2.2 Statistical Findings of the Second Research Question: Do L2 students at each of the two educational levels use the rhetorical organization of the original text differently according to the discourse type of the original text in each of the two recall tasks?

Hypothesis 6: There are no significant differences in the third-level students’ use of rhetorical organization of the original text among the four discourse types in each of the two recall tasks.

To investigate the above hypothesis, a chi-square analysis was used for each of the two recall tasks (See Table 11). The results showed that there were no significant differences in the third-level students’ use of rhetorical organization of the original text among the four discourse types in each of the two recall tasks. Therefore, the null hypothesis is accepted.

Table 11

<table>
<thead>
<tr>
<th>Discourse type</th>
<th>Immediate recall</th>
<th>Delayed recall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Same RO</td>
<td>Different RO</td>
</tr>
<tr>
<td>Comparison</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>Causation</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>Problem/solution</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Collection of descriptions</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Results of Chi-square</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analysis</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RO = Rhetorical Organization

Hypothesis 7: There are no significant differences in the fifth-level students’ use of rhetorical organization of the original text among the four discourse types in each of the two recall tasks.

The result of the chi-square analysis showed that there were significant differences in the fifth-level students’ use of rhetorical organization of the original text among the four discourse types in each of the two recall tasks. Therefore, the null hypothesis is rejected.

To determine the types that were different, a series of chi-square tests were used to analyze the students’ use of rhetorical organization of the original text for every two types. The results showed that the fifth-level students used the comparison and causation types significantly more than the
problem/solution type in the immediate recall task \( (p = .003) \) and in the delayed recall task \( (p = .001) \). In addition, they used the comparison and causation types significantly more than the collection of descriptions type in the immediate recall task \( (p = .025) \) and in the delayed recall task \( (p = .011) \) (See Table 12).

Table 12

Differences in the Fifth-Level Students’ Use of Rhetorical Organization of the Original Text Among the Four Discourse Types in Each of the Two Recall Tasks.

<table>
<thead>
<tr>
<th>Discourse type</th>
<th>Immediate recall</th>
<th></th>
<th>Delayed recall</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Same RO</td>
<td>Different RO</td>
<td>Same RO</td>
<td>Different RO</td>
</tr>
<tr>
<td>Comparison</td>
<td>12</td>
<td>3</td>
<td>11</td>
<td>4</td>
</tr>
<tr>
<td>Causation</td>
<td>12</td>
<td>3</td>
<td>11</td>
<td>4</td>
</tr>
<tr>
<td>Problem/solution</td>
<td>4</td>
<td>11</td>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td>Collection of descriptions</td>
<td>6</td>
<td>9</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>Results of Chi-square Analysis</td>
<td>DF = 3, ( X = 13.846, ) P = .003</td>
<td>DF = 3, ( X = 17.679, ) P = .001</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RO = Rhetorical Organization

4.2.3. Statistical Findings of the Third Research Question: Do the fifth-level L2 students use the rhetorical organization of the original text for each of the four discourse types more than the third-level L2 students do in each of the two recall tasks?

Hypothesis 8: There is no significant difference between the third-level students and the fifth-level students with regard to the use of rhetorical organization of the original text for each of the four discourse types in each of the two recall tasks.

The results of chi-square analyses showed that there was no significant difference between the third-level students and the fifth-level students with regard to the use of rhetorical organization of the original text for each of the four discourse types in each of the two recall tasks (See Table 13). Therefore, the null hypothesis is accepted.
Table 13

The Difference Between the Third-Level Students and the Fifth-Level Students in the Use of Rhetorical Organization of the Original Text for Each of the Four Discourse Types in Each of the Two Recall Tasks

<table>
<thead>
<tr>
<th>Recall Task</th>
<th>Level</th>
<th>Comparison</th>
<th>Causation</th>
<th>Problem/Solution</th>
<th>Collection Of descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>SRO  DRO</td>
<td>SRO  DRO</td>
<td>SRO  DRO</td>
<td>SRO  DRO</td>
</tr>
<tr>
<td>Immediate Recall</td>
<td>Third Level</td>
<td>8   7</td>
<td>8   7</td>
<td>6   9</td>
<td>5   10</td>
</tr>
<tr>
<td></td>
<td>Fifth Level</td>
<td>12  3</td>
<td>12  3</td>
<td>4   11</td>
<td>6   9</td>
</tr>
<tr>
<td>Results of Chi-square analysis</td>
<td></td>
<td>1   1</td>
<td>1   1</td>
<td>1   1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.400</td>
<td>2.400</td>
<td>.600</td>
<td>.144</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.121</td>
<td>.121</td>
<td>.439</td>
<td>.705</td>
</tr>
<tr>
<td>Delayed Recall</td>
<td>Third Level</td>
<td>7   8</td>
<td>6   9</td>
<td>6   9</td>
<td>4   11</td>
</tr>
<tr>
<td></td>
<td>Fifth Level</td>
<td>11  4</td>
<td>11  4</td>
<td>2   13</td>
<td>4   11</td>
</tr>
<tr>
<td>Results of Chi-square analysis</td>
<td></td>
<td>1   1</td>
<td>1   1</td>
<td>1   1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.22</td>
<td>3.394</td>
<td>2.727</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.136</td>
<td>.065</td>
<td>.099</td>
<td>1.000</td>
</tr>
</tbody>
</table>

SRO = Same Rhetorical Organization. DRO = Different Rhetorical Organization.

4.2.4. Statistical Findings of the Fourth Research Question: Do L2 students at each of the two educational levels who use the rhetorical organization of the original text recall more information than those who do not in each of the two recall tasks?

Hypothesis 9: There is no significant difference in the amount of identical information recalled by the third-level students between those who used the rhetorical organization of the original text and those who did not in each of the two recall tasks.

A one-way analysis of variance for each of the two recall tasks showed that there was no significant difference in the amount of identical information recalled by the third-level students between the students who used the rhetorical organization of the original text and those who did not in each of the two recall tasks (See Table 14). Therefore, the null hypothesis is accepted.
Table 14

Means of the Recall Scores of the Third-Level Students with Regard to the Use of Rhetorical Organization of the Original Text in Each of the Two Recall Tasks

<table>
<thead>
<tr>
<th>Use of Rhetorical organization of the Original text</th>
<th>Recall Task</th>
<th>Immediate Recall</th>
<th>Delayed Recall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>Same RO</td>
<td>27</td>
<td>41.33</td>
<td>15.03</td>
</tr>
<tr>
<td>Different RO</td>
<td>33</td>
<td>34.12</td>
<td>16.60</td>
</tr>
</tbody>
</table>

Results of Analysis of Variance:

<table>
<thead>
<tr>
<th>Use of Rhetorical organization of the Original text</th>
<th>Recall Task</th>
<th>Immediate Recall</th>
<th>Delayed Recall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DF = 1, F = 3.050,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P = .080</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>DF = 1, F = 1.930,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P = .170</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RO = Rhetorical Organization

Hypothesis 10: There is no significant difference in the amount of identical information recalled by the fifth-level students between those who used the rhetorical organization of the original text and those who did not in each of the two recall tasks.

A one-way analysis of variance for each of the two recall tasks showed that there was a significant difference in the amount of identical information recalled by the fifth-level students between the students who used the rhetorical organization of the original text and those who did not in each of the two recall tasks. The students who used the rhetorical organization of the original text recalled more information than those who did not (See Table 15). Therefore, the null hypothesis is rejected.

Table 15

Means of the Recall Scores of the Fifth-Level Students with Regard to the Use of Rhetorical Organization of the Original Text in Each of the Two Recall Tasks

<table>
<thead>
<tr>
<th>Use of Rhetorical organization of the Original text</th>
<th>Recall Task</th>
<th>Immediate Recall</th>
<th>Delayed Recall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>Same RO</td>
<td>34</td>
<td>55.79</td>
<td>17.94</td>
</tr>
<tr>
<td>Different RO</td>
<td>26</td>
<td>38.96</td>
<td>17.66</td>
</tr>
</tbody>
</table>

Results of Analysis of Variance:

<table>
<thead>
<tr>
<th>Use of Rhetorical organization of the Original text</th>
<th>Recall Task</th>
<th>Immediate Recall</th>
<th>Delayed Recall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DF = 1, F = 13.151,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P = .001</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>DF = 1, F = 11.041,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P = .002</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RO = Rhetorical Organization
CHAPTER FIVE
DISCUSSION AND CONCLUSION

5.1. Summary of the Study

The present study investigates the following points: the effects of four discourse types on the recall of L2 students of reading from two educational levels; the differences among the four discourse types in the students' use of rhetorical organization of the original text at each educational level; the difference between the two educational levels in the students' use of rhetorical organization of the original text for each of the four discourse types; the effect of using the rhetorical organization of the original text, that is the organizational strategy, on recall at each educational level.

The subjects of the study were L2 female students in the English department of UQU from level five and level three. The texts used were four versions of a single text. These versions contained identical information and different rhetorical organizations. The study was administered in two sessions. In the first session an immediate recall task was administered. In the second one a delayed recall task was administered and a fill-in-the-blank instrument was used. The recall protocols were scored for the presence of the identical information, and the types of rhetorical organization used by the students were defined.

5.2. Discussion of the Results

5.2.1. Analysis of the Statistical Findings of the First question: Do L2 students at each of the two educational levels recall more information from the more organized types of discourse—comparison/contrast, causation, and problem/solution—than from the less organized type, collection of descriptions, in each of the two recall tasks?

To examine whether the effects of the four discourse types on the recall of L2 students are different at different educational levels, it was necessary to examine the effects of the educational levels on the recall scores first. According to the results, the fifth-level students recalled significantly more information than the third-level students in both the immediate recall task and the delayed recall task. This finding is not surprising and must certainly reflect the developmental effect. Carrell (1983) had similar results. Her study investigated three components of background knowledge in the content area of the text, which are familiar vs. novel, context vs. no context, and with regard to the lexical items in the text transparent vs. opaque, and found that in reading
the same texts, the native group recalled more than the advanced L2 group, who in turn recalled more than the prematriculated L2 group. This finding, as Carrell (1983) mentions, reflects a developmental pattern. The results of Taylor's study (1980) of child native speakers of English also showed a developmental difference in comprehension. Although in Taylor's study (1980) adjustments were made in the reading tasks with the sixth-grade good readers reading a sixth-grade level version of the test passage and the fourth-grade good readers reading a fourth-grade level version of the same passage, the sixth-grade children were able to recall more of this passage than the fourth-grade children immediately and after a two-day delay.

In addition, a part of the statistical results for this question showed that the students at each educational level recalled significantly more information immediately than after a two-day delay. The existence of a difference between the two times of recall indicates that the delay of two days is enough to investigate whether the remaining effects of the discourse types are durable over the time.

One of the main purposes of this study is to examine the effects of the four discourse types on the recall of L2 readers in the two recall tasks for two educational levels. According to Anderson (1976), the probability of retrieval from memory is increased by links among propositions (Meyer, 1979). The causation, problem/solution, and comparison structures are considered more highly organized types of rhetorical organization than the collection of descriptions structure because of the relationships that hold between the top-level propositions, which correspond to the main ideas, in the former types. Therefore, the more highly organized types were expected to facilitate encoding, economy of storage in long-term memory, and subsequent retrieval processes (Meyer and Freedle, 1984, Carrell 1984a) (See Section 2.5.3). However, according to Meyer and Freedle (1984), the facilitative effects of the more organized types of rhetorical organization would not be expected for subjects with deficits in using these rhetorical organizations and their organizational components.

In Meyer and Freedle's study (1984), the students were native English-speaking graduate students. These students were expected to be able to use the rhetorical organizations of the four discourse types. The results showed that the students used the rhetorical organization of the original text for each of the comparison, causation, and collection of descriptions types more than the rhetorical organization of the original text for the problem/solution type. The results also showed that the students recalled two of the more organized types
of discourse—comparison and causation—better than the less organized one, collection of descriptions, after listening to the text. Meyer and Freedle (1984) assumed that the reason for not recalling the problem/solution type better than the collection of descriptions type by these students may have been due to the fact that most of the students did not use the rhetorical organization of the original text for the problem/solution type that may have been due to the departure from convention in the construction of the original text for the problem/solution type (See Section 5.2.2).

The results of Carrell's study (1984a) of L2 students showed that only 26% of the students used the rhetorical organization of the original text in the immediate recall task, and 38% of the students who did were Spanish speakers. The results also showed that L2 students as a whole recalled the more organized types of discourse better than the less organized type after reading the text. Carrell (1984a 464) speculated that "if readers of whatever native language background possess the formal schemata against which to process the more highly structured types of discourse, these more highly structured types may generally facilitate encoding, retention, and retrieval of information". In addition, the results showed that the effects of the discourse types on the recall of L2 readers were not the same for each of four different language groups. For example, the 32 Spanish-speaking students recalled the three more organized types better than the less organized type, collection of descriptions. In addition, the type recalled best by the 16 Arab students was the comparison type, secondly, the problem/solution and collection of descriptions types. Causation was the least recalled passage. As Carrell (1984a: 464) noted "this may be due to the transfer of the preferred rhetorical pattern of the first language. For example, the reason the Arabic-speaking students found the collection of descriptions type, the loosely organized type, equal to the problem/solution type, and better than the causation type may be due to the preferred rhetorical patterns of the Arabic language, which has been described as being one of 'coordinate parallelism'". Furthermore, the results for L2 students as a whole showed that the students who used the rhetorical organization of the original text recalled more information than those who did not (See Section 2.5.4).

By using modified text versions of those used in Meyer and Freedle's study (1984) and in Carrell’s study (1984a) and by having more L2 Arab students than those who participated in Carrell's study (1984a), the results for the third-level L2 Arab students in the present study showed that the percentage of the students who used the rhetorical organization of the original text in the immediate recall task was 45%. This percentage was double the percentage of
L2 Spanish-speaking students and the percentage of L2 students as a whole who used the rhetorical organization of the original text in Carrell's study (1984a). In Carrell's study (1984a), 25% of L2 Spanish-speaking students and 26% of L2 students as a whole used the rhetorical organization of the original text in the immediate recall task. In addition, the results for the third-level students in the present study showed that the students recalled the comparison and problem/solution types significantly better than the collection of descriptions type in each of the two recall tasks. Moreover, they recalled the problem/solution type significantly better than the causation type in the delayed recall task. That is, in the present study, the results for the third-level students were similar to the results for the native English-speaking graduate students in Meyer and Freedle's study (1984) and to the results for L2 students as a whole and for the Spanish group in Carrell's study (1984a) except in two results. In the present study, the third-level students did not recall the causation type, which is one of the more organized types of discourse, better than the less organized type of discourse, collection of descriptions, in each of the two recall tasks and recalled the problem/solution type better than the causation type in the delayed recall task.

The results of the present study also showed that the third-level students who used the rhetorical organization of the original text did not recall more information than those who did not use the rhetorical organization of the original text (See Section 5.2.4). Therefore, the differences among the four discourse types were examined further with respect to the use of rhetorical organization of the original text in an attempt to find a possible explanation for not finding the causation type more facilitative of recall than the collection of descriptions type and finding the problem/solution type more facilitative of recall than the causation type by these students. According to Meyer and Freedle (1984), the facilitative effects of the more organized types of rhetorical organization would not be expected for subjects with deficits in using these rhetorical organizations and their organizational components. In addition, Carrell (1984a: 464) hypothesized that "if readers of whatever native language background possess the formal schemata against which to process the more highly structured types of discourse, these more highly structured types may generally facilitate encoding, retention, and retrieval of information." Therefore, it was assumed that the third-level students who used the rhetorical organization of the original text may have found the three more organized types more facilitative of recall than the less organized one. However, due to the fact that there was no difference between the students who used the rhetorical
organization of the original text and those who did not in the amount of information recalled, there may have been differences among the four discourse types in the results for the students who did not use the rhetorical organization of the original text which may have affected the differences among the four discourse types in the results for the third-level students as a whole.

The results of a one-way ANOVA showed that there were significant differences among the four discourse types in the results for the students who used the rhetorical organization of the original text in the immediate recall task ($p = .012$) and in the delayed recall task ($p = .021$). The results of an LSD post-hoc test showed that these students recalled significantly more information from each of the three more organized types of discourse—comparison, problem/solution, and causation—than from the less organized type, collection of descriptions, in each of the two recall tasks. In the immediate recall task, the means of the recall scores were 48.63, 44.83, 42.88, and 23 for the comparison, problem/solution, causation, and collection of descriptions types, respectively. In addition, the P values were .002, .009, and .011 for the difference between the comparison and collection of descriptions types, the problem/solution and collection of descriptions types, and the causation and collection of descriptions types, respectively. In the delayed recall task, the means of the recall scores were 42.43, 34.33, 34.67, and 18.50 for the comparison, problem/solution, causation, and collection of descriptions types, respectively. In addition, the P values were .002, .036, and .033 for the difference between the comparison and collection of descriptions types, the problem/solution and collection of descriptions types, and the causation and collection of descriptions types, respectively. These results confirmed Carrell's hypothesis (1984a: 464) "if readers of whatever native language background possess the formal schemata against which to process the more highly structured types of discourse, these more highly structured types of organization may generally facilitate encoding, retention, and retrieval of information". These results were also similar to the results for the native English-speaking graduate students who were able to use the rhetorical organizations of the original texts in Meyer and Freedle's study (1984) (See Section 2.5.4).

In addition, the analysis of a one-way ANOVA showed that there were no significant differences among the four discourse types in each of the two recall tasks in the results for the students who did not use the rhetorical organization of the original text. However, the analysis of an LSD post-hoc test showed that these students recalled significantly more information from the problem/solution type than from the causation type in each of the two recall
tasks. In the immediate recall task, the means of the recall scores were 33.57, 44, 26.29, and 31.10 for the comparison, problem/solution, causation, and collection of descriptions types, respectively. In the delayed recall task, the means of the recall scores were 29.38, 39.44, 18.89, and 26.09 for the comparison, problem/solution, causation, and collection of descriptions types, respectively. The P value for the difference between the problem/solution and causation types was .036 in the immediate recall task and it was .012 in the delayed recall task. For information about the number of the students who used rhetorical organization of the original text for each of the four discourse types and those who did not see Table 11 (See Section 4.2.2). These results indicate that the reasons for finding two of the more organized types, comparison and problem/solution, more facilitative of recall than the less organized type in the results for the students as a whole were the effects of the results for the students who used the rhetorical organization of the original text. That is, the three more organized types of discourse could have been found to be more facilitative of recall than the less organized type in the results for the students as a whole as was also found in Carrell's (1984a) results for L2 students as a whole and for the Spanish group. However, due to the fact that the students who used the rhetorical organization of the original text in the present study did not recall more information than those who did not use the rhetorical organization of the original text, the results for the students who did not use the rhetorical organization of the original text prevented the facilitative effect of the causation type that is found in the results for the students who used the rhetorical organization of the original text to appear in the results for the students as a whole in each of the two recall tasks. In addition, the existence of a difference between the problem/solution and causation types in the results for the students as a whole in the delayed recall task was due to the difference between these two types in the results for the students who did not use the rhetorical organization of the original text.

As for the difference between the problem/solution and causation types in the amount of information recalled in the results for the third-level students who did not use the rhetorical organization of the original text, the fact that the students did not use the rhetorical organization of the original text in their recall protocols means that they did not utilize the formal schema that represents the rhetorical organization of the original text to retrieve information in stored memory about the text. Therefore, the students who did not use the rhetorical organization of the original text did not benefit from the relationships among the main ideas in the more organized types of discourse. They did not recall
more information from the three more organized types of discourse—comparison, problem/solution, and causation—than from the less organized one, collection of descriptions. According to Meyer and Freedle (1984), the facilitative effects of the more organized types of rhetorical organization would not be expected for subjects with deficits in using these rhetorical organizations and their organizational components. Therefore, we can not claim that the reason for finding the problem/solution type more facilitative of recall than the causation type by the students who did not use the rhetorical organization of the original text may have been due to the fact that the problem/solution schema has one more organizational component and thus one more relationship among the main ideas. Both the problem/solution type and the causation type are organized on the basis of time and causality. However, the problem/solution type has one more organizational component. In the problem/solution type, one of the propositional elements of the solution can block an antecedent of the problem (See Figure 1 in Section 2.5.2).

A possible explanation for the difference between the problem/solution and causation types is that the students who did not use the rhetorical organization of the original text in their recall protocols and were able to consciously recognize the rhetorical organization of the original text may have been able to recall more information than those who did not use the rhetorical organization of the original text and were not able to consciously recognize the rhetorical organization of the original text for each of the four discourse types. In addition, the students who did not use the rhetorical organization of the problem/solution passage and were able to consciously recognize the rhetorical organization of this passage were more than the students who did not use the rhetorical organization of the causation passage and were also able to consciously recognize the rhetorical organization of this passage. A possible reason for this possible explanation is that the students at this level may have been exposed to the problem/solution type more than the causation type but may not have had enough practice to be able to use the rhetorical organization of the problem/solution type more than the rhetorical organization of the causation type (See Section 5.2.2).

However, this explanation needs further examination because of two reasons. The first reason is that the results of Carrell's study (1992) showed that the students who consciously recognized the rhetorical organization of the original text did not recall more information than those who did not. Furthermore, the students who did not use the rhetorical organization of the original text did not consciously recognize the rhetorical organization of the
original text. Only two of 38 students consciously recognized the rhetorical organization of the original text and did not use this rhetorical organization in their recall protocols (See Section 2.5.4).

The second reason is that, in Meyer and Freedle's study (1984), the native English-speaking graduate students recalled two of the more organized types of discourse—comparison and causation—better than the collection of descriptions type after listening to the text. Moreover, the rhetorical organization of the original text for the problem/solution type was used significantly less than the rhetorical organization of the original text for each of the other three discourse types. That is, the significantly less use of rhetorical organization of the original text for the problem/solution type did not cause a significant difference between this type and each of the comparison and causation types in the recall scores. The significantly less use of the problem/solution type was presumed only to be the reason for the absence of a significant difference between the more organized type, problem/solution, and the less organized one, collection of descriptions (See Section 2.5.4). That is, even if the third-level L2 students who do not use the rhetorical organization of the original text in their recall protocols and are able to consciously recognize the rhetorical organization of the original text are able to recall more information than those who do not use the rhetorical organization of the original text and are not able to consciously recognize the rhetorical organization of the original text for each of the four discourse types, and there is a difference between the problem/solution and causation types in the number of the students who do not use the rhetorical organization of the original text and are able to consciously recognize the rhetorical organization of the original text in their recall protocols, then there may not be a difference in the recall scores between these two types of discourse.

In the present study, the percentage of the third-level students who used the rhetorical organization of the original text was double the percentage of L2 Spanish-speaking students and the percentage of L2 students as a whole who used the rhetorical organization of the original text in Carrell's study (1984a). However, the results for L2 Spanish-speaking students and L2 students as a whole, in Carrell's study (1984a), showed that the three more organized types of discourse were more facilitative of recall than the less organized one. This may have been due to the fact that, in Carrell's study (1984a), the students who used the rhetorical organization of the original text, that is the organizational strategy, recalled significantly more information than those who did not. Therefore, in Carrell's study (1984a), the possible differences among the four
discourse types in the results for the students who used the organizational strategy may have appeared in the results for the students as a whole and the Spanish group and may not have been affected by possible differences among the four discourse types in the results for the students who did not use the organizational strategy.

A possible explanation for the existence of a difference between those who used the organizational strategy and those who did not in Carrell's study (1984a) and the absence of this difference in the results for the third-level students in the present study is that many of the students who used the organizational strategy in Carrell's study (1984a) may have been able to consciously recognize the rhetorical organizations of the four discourse types, whereas many of the third-level student in the present study may not (See Section 5.2.4). This possible explanation is based on the fact that the students who participated in Carrell's study (1984a) were from levels three, four, and five, which are the highest three levels of the intensive English language program for the prematriculated students. Mainly half of these students were from level four, and four students were from level five.

The results for the third-level students in the present study and the possible explanations that are provided indicate that the third-level students are able to benefit from the three more organized types like L2 students as a whole and the Spanish group in Carrell's study (1984a). These results indicate an apparent lack of transfer of the preferred rhetorical organizations in the Arabic language, which has been described as being one of "coordinate parallelism", in an elicited recall task, as opposed to the type of transfer found by contrastive rhetoric researchers, such as Kaplan (1966) and Ostler (1981, 1987), in free compositions.

As regards the fill-in-the-blank instrument, that is the probed recall task, the results for the third-level students showed that there were no significant differences among the four discourse types. Since the aim of using the probed recall task is to know if the results of the delayed free recall task are the same by using the probed recall task, it is unexpected not to have similar significant results. However, by using correlation tests, it was found that there were significant correlations between the students’ results in the two free recall tasks (p = .000), and in the free recall and probed recall tasks (p = .000, and p = .000 immediate and delayed respectively). This means that the students who scored higher on one measure tended to score higher on the other measure as well.

As for the fifth-level students, the results for the fifth-level students showed that there were no significant differences in the amount of information
recalled among the four discourse types in each of the two recall tasks. The results for the fifth-level students also showed that the students used the rhetorical organization of the original text for each of the comparison and causation types significantly more than the rhetorical organization of the original text for each of the problem/solution and collection of descriptions types in each of the two recall tasks. In addition, most of the students who read each of the comparison and causation texts used the rhetorical organization of the original text in each of the two recall tasks. That is, the students were skilled in using the rhetorical organization of each of the comparison and causation types in each of the two recall tasks (See Section 5.2). According to Carrell's hypothesis (1984a: 464) "if readers of whatever native language background possess the formal schemata against which to process the more highly structured types of discourse, these more highly structured types may generally facilitate encoding, retention, and retrieval of information." However, the fifth-level students in the present study did not recall more information from the comparison and causation types than from the collection of descriptions type.

It might be argued that the text may have been easy for the students. Therefore, there were no differences among the four discourse types in the amount of information recalled. However, the range of the recall scores of the fifth-level students was between 28% and 45%. These percentages were not over 90% and thus there was no ceiling effect masking the differences among the four discourse types. Furthermore, the results for the fifth-level students as a whole showed that the students who used the rhetorical organization of the original text recalled more information than those who did not (See Section 5.2.4). If the text was easy for the students, there may not have been a difference between those who used the rhetorical organization of the original text and those who did not. These facts indicate that the reason for the absence of significant differences among the four discourse types in the recall scores of the fifth-level students was not the easiness of the text. That is, the fifth-level students do not benefit as significantly from the more organized types of discourse after reading texts as the third-level students who use the rhetorical organization of the original text do.

A possible explanation for the existence of the facilitative effects of the more organized types of discourse on recall in comparison with the less organized one in the results for the third-level students who used the rhetorical organization of the original text and the absence of these effects in the results for the fifth-level students is that the third-level students have not mastered the
language yet. Therefore, reading may have been still effortful for these students. According to LaBerge and Samuels (1974), the human mind has limited capacity to process information. The limitation comes from the limited amount of internal attention available for information processing. Getting meaning from printed words involves a two-step process. The first one is decoding the printed words by translating them into spoken words without the need to utter them out loud. The second one is comprehending the decoded words. In comprehending a sentence one must be able to interrelate and combine the separate meanings of each of its words. Because the attention demands of decoding and comprehension exceed the attention capacity of beginning readers, these readers put their attention on the decoding task and then switch attention to comprehension to understand what they have decoded. This puts considerable strain on attention and memory systems. Although these readers are able to comprehend by switching attention back and forth in this way, the process is slow, laborious, and frustrating (Samuels, 2000). That is, because of the difficulty the third-level students may have experienced in their reading, the three more organized types of discourse helped these students in their reading comprehension of the text and facilitated encoding, retention, and retrieval of information.

In Meyer and Freedle’s study (1984), the students were native English-speaking graduate students. However, the results for these students showed that two of the more organized types of discourse—comparison and causation—facilitated the recall of the students more than the less organized type, collection of descriptions. That may have been due to the fact that the students in Meyer and Freedle’s study (1984) were listening to the text. That is, the presentation mode may have been the reason for the difference in the results between the native English-speaking graduate students in Meyer and Freedle's study (1984) and the fifth-level students in the present study. According to Meyer and Freedle (1984: 140) "learning through listening requires hard efforts in limited time." It could be that the speed of the speaker may have put more burden on the native English-speaking graduate students' attention and memory system during their attempt to interrelate and combine the information of the text to comprehend it. Therefore, two of the more organized types of discourse—comparison and causation—helped these students in their listening comprehension of the text and the facilitative effects of these two types of discourse on recall appeared in the results for these students.
5.2.2. Analysis of the Statistical Findings of the Second Question: Do L2 students at each of the two educational levels use the rhetorical organization of the original text differently according to the discourse type of the original text in each of the two recall tasks?

The most efficient strategy for the students, according to Meyer (1977a, 1979, Meyer et al. 1980), is to identify and use the rhetorical organization of the passage representing the author’s schema for organizing the prose, which is called the organizational strategy. According to this strategy, the student calls into working memory a schema that corresponds to the rhetorical organization of the passage and instantiates this schema with the passage information. With this strategy, the learner does not have to search his/her memory for an alternative and appropriate schema nor does he/she have to reorganize the ideas in the passage to fit this different schema while listening or reading. The recall of any text is facilitated by the use of the organizational strategy. Because the rhetorical organization and types of relations associated with this organization vary from one discourse type to another in this study, an important question is whether the students’ use of the organizational strategy also varies depending on which discourse types they know best. To answer this question, the rhetorical organization the student used to write the recall protocol was analyzed. The recall protocol was analyzed not for number of idea units, but for the reader’s use of rhetorical organization of the original passage.

In addition, because the use of rhetorical organization of the original text, that is the organizational strategy, was expected to affect the recall scores of the students and the present study examines the differences among the four discourse types in the recall scores of the students, it was necessary to examine the differences among the four discourse types in the students' use of rhetorical organization of the original text. If the students use the rhetorical organization of the original text for the more organized type of discourse less than the rhetorical organization of the original text for the less organized type of discourse, the students may not recall more information from the more organized type of discourse than from the less organized type. Meyer and Freedle (1984) assumed that the reason for not finding the problem/solution type more facilitative of recall than the collection of descriptions type by the native English-speaking graduate students is the significantly less use of rhetorical organization of the original text for the problem/solution type.

In the present study, the results for the fifth-level students showed that the students who read the comparison and causation texts used the rhetorical organization of the original text significantly more than the students who read
the problem/solution and collection of descriptions texts in each of the two recall tasks. That is, more students demonstrated awareness of the comparison and causation structures than of the problem/solution and collection of descriptions structures in each of the two recall tasks. In addition, most of the students who read each of the comparison and causation texts used the rhetorical organization of the original text in each of the two recall tasks. Eighty percent of the fifth-level students used the rhetorical organization of the original text for each of the comparison and causation types in the immediate recall task and 73% of the students still did so in the delayed recall task. That is, the fifth-level students were skilled in using the rhetorical organization of each of the comparison and causation types in each of the two recall tasks.

The fifth-level students’ high awareness of the comparison/contrast and causation structures and their low awareness of the problem/solution structure are similar to the results for native English-speaking graduate students in Meyer and Freedle’s (1984) study. Since the text in the present study is the text that was used by Meyer and Freedle (1984), the explanation for poor student performance on the problem/solution passage, as Meyer and Freedle (1984) mentioned, may have been due to the construction of the original passage. In the first paragraph of the passage, dehydration in athletes is labeled as a problem but the consequences are not alluded to until after the solution has been posited. Because components of a problem are discussed usually before the presentation of the solution, this departure from convention may have confused the learners and lowered their performance. Specifically, the cause of the problem, sport instructors, is discussed in the first paragraph followed by the solution, which blocks the cause of the problem. However, the problem, the consequence of the sport instructors’ requirement, is not explained until the last paragraph (See Appendix B). This strange construction, resulting from trying to match the order of presentation in all versions, may have resulted in confusion. Most of the students who read the problem/solution version of the text tended to organize their protocols with a completely different rhetorical organization from that which was used in the original problem/solution version. Twenty percent of these students used a problem/solution rhetorical structure; 56% used a causation structure; 3% used a comparison; and the remaining 24% used a collection or description type for organizing their protocols. Like Meyer and Freedle’s study (1984), converting the discourse to a cause in the first paragraph and an effect in the second paragraph with deletion of the solution, appears to have been the strategy of half of the students in the present study who used the causation organization.
It is worth noting that the use of a list-like text structure, which is considered the default strategy, in which the reader has no focus and simply tries to remember something from the text, was expected for students who did not follow the rhetorical organization of the original text. However, according to the percentages, many of the fifth-level students who did not use the rhetorical organization of the original text for the problem/solution type used another type of rhetorical organization, which is considered the alternative strategy. The alternative strategy was rarely exhibited by native English-speaking college students in Meyer and Freedle’s study (1984) (Meyer 1979, Meyer et al. 1980). That is, the fifth-level students in the present study were able to provide the alternative strategy like the native English-speaking college students.

As for the collection of descriptions type, most of the fifth-level students did not use the rhetorical organization of this type. Thirty-three percent of the students used a collection of descriptions type; 40% used a causation type; 11% used a comparison type; and the remaining 16% used a collection or description type. The low frequency of using the collection of descriptions type in this study is an unexpected finding for several reasons. First, it is different from the result found in Meyer and Freedle’s study (1984) in which the use of the collection of descriptions type was similar to the use of the comparison and causation types. Second, the students at the fifth level are presumed to have previous knowledge about the four discourse types. Third, the performance of L2 students at the fifth level resembled the performance of the native English-speaking students at the college level in Meyer and Freedle’s study (1984) in the use of the problem/solution type and in their ability to use the alternative strategy, which was rarely exhibited by native English-speaking college students (Meyer, 1979), instead of the default strategy. Fourth, the fifth-level students were skilled in using the rhetorical organization of the original text for each of the comparison and causation types. Freedle and Hale (1979) and Freedle (1980) suggest that the use of the organizational strategy may progress in the following sequence of discourse types: stories, description, antecedent/consequent, problem/solution, and comparison (Meyer et al., 1980). Thus, it is surprising that the fifth-level L2 students were not able to use the rhetorical organization of the original text for the collection of descriptions type.

A possible explanation is that the nature of the content of the text in this study allowed the students to use a more organized rhetorical organization instead of the loosely organized rhetorical organization of the original text. As
can be seen in Appendix B, identical information in the four versions discuss
the sport instructors’ requirement of the loss of body water in the first
paragraph and the consequences of the loss of body water in the last paragraph.
It may be that most of the students, who read the collection of descriptions
type, tried to relate the information in the first paragraph to the information in
the last paragraph, ignoring the second paragraph in which an information is
given about the amount of body water that is lost by a 70 kilo individual each
day. That is, because the text allowed the use of a causation structure, the fifth-
level L2 students may have preferred to use an alternative strategy of a more
organized type more, rather than using the collection of descriptions type. Since
the textbook for Reading Four explains the importance of using different
strategies, that resemble the organizational strategy, to organize materials for
study, the presumed explanation for not using the collection of descriptions
type indicates that the students at the fifth level do not have an adequate
knowledge about the importance of using the organizational strategy for recall.

In the present study, the fifth-level L2 students’ high awareness of the
comparison/contrast and causation types was similar to what was found in
Meyer and Freedle’s study (1984) of native English-speaking graduate
students. Since the present study is similar to Meyer and Freedle’s (1984) study
in the text and task, and since the fifth-level students in the present study were
from a more developed level of students, the reasons given by Richgels et al.
(1987), Hiebert et al. (1983), and Englert and Hiebert (1984) for the differences
between their results and Meyer and Freedle’s (1984) results may also be
applicable to the differences found in the present study.

Thus, the reason for the difference between low awareness of the
causation structure by sixth-grade students in Richgels et al.’s study (1987) and
high awareness of the causation type in the present study is that the fifth-level
L2 students in the present study may have had more experience with texts cast
in a causation structure and so have developed greater awareness of that
structure than the sixth-grade students in Richgels et al.’s study (1987) (See
Section 2.5.4).

Also, the reason for the difference between high awareness of the
comparison/contrast type in the present study and low awareness of the
comparison type in Hiebert et al.’s study (1983) may have been due to the use
of different measuring tasks. The recognition and production tasks are different
from the recall task in the processing loads and the cognitive demands they
require. The reason may also have been due, as Hiebert et al. (1983) mentioned,
to the fact that the specific structure of the comparison/contrast structure in
Meyer and Freedle’s (1984) study and, therefore, also in the present study is simpler than the specific structure of the comparison/contrast in Hiebert et al.’s study (1983). In Meyer and Freedle’s study, it required only the contrast of two opposing points. However, in Hiebert et al.’s study (1983), it required a delineation of parallel features (See Section 2.5.4).

Furthermore, the use of a recognition task in Englert and Hiebert's study (1984) may have been the reason for the difference between low awareness of the comparison/contrast type in Englert and Hiebert’s study (1984) and high awareness of this type in the present study. Another possible reason for the different results is the students’ age. Like the English adults in Meyer and Freedle’s (1984) study, the fifth-level L2 students in the present study may have had more cognitive development and memory capabilities for recalling parallel features and attributes than the young English children in Englert and Hiebert's study (1984) (See Section 2.5.4). Ellis (1994) noted that older English children are similar in their acquisition of the English language to L2 adults. However, the students in Englert and Hiebert's study (1984) were young English children not older children.

As regards the students at the third level, the data showed that there were no significant differences in the students’ use of rhetorical organization of the original text among the four discourse types in the immediate and delayed recall tasks. However, the number of the students who used the rhetorical organization of the original text for each of the four discourse types was mainly either equal to, or less than the number of those who did not use the rhetorical organization of the original text for each of the four discourse types. In the immediate recall task, the percentages of the students who used the rhetorical organization of the original text were 53%, 53%, 40%, and 33% for the comparison, causation, problem/solution, and collection of descriptions types, respectively. In the delayed recall task, the percentages of the students who used the rhetorical organization of the original text were 47%, 40%, 40%, and 27% for the comparison, causation, problem/solution, and collection of descriptions types, respectively. These percentages indicate that the students at the third level are not skilled in using the rhetorical organization of any of the four discourse types.

In conclusion, the results for the third-level students indicate that the students at this level are not skilled in using the rhetorical organization of the original text for any of the four discourse types. As regards the fifth-level students, the results indicate that the students at this level are able to use the rhetorical organization of the original text for each of the four discourse types.
However, they do not have an adequate knowledge about the importance of using the rhetorical organization of the original text, that is the organizational strategy, for recall.

5.2.3. Analysis of the Statistical Findings of the Third Question: Do the fifth-level L2 students use the rhetorical organization of the original text for each of the four discourse types more than the third-level students do in each of the two recall tasks?

The results of previous research with native speakers of English have shown that more developed students and more proficient readers used the rhetorical organization of the original text more than their peers. In Taylor’s study (1980), sixth-grade good readers used the rhetorical organization of the original text more than sixth-grade poor readers and fourth-grade good readers. In addition, in Meyer et al.’s study (1980), ninth-grade good readers used the rhetorical organization of the original text more than ninth-grade poor readers.

In the present study, the fifth-level students are more developed students. In addition, according to the curriculum presented at UQU, they have been exposed to more information about discourse types than the third-level students. Furthermore, the results for the fifth-level students showed that the students used the rhetorical organization of the original text for each of the comparison and causation types more than the rhetorical organization of the original text for each of the problem/solution and collection of descriptions types in each of the two recall tasks. In addition, most of the fifth-level students who read each of the comparison and causation texts used the rhetorical organization of the original text in each of the two recall tasks. That is, the fifth-level students were skilled in using the rhetorical organization of each of the comparison and causation types in each of the two recall tasks (See Section 5.2.2). Moreover, the results for the third-level students showed that the students were not skilled in using the rhetorical organization of the original text for any of the four discourse types in each of the two recall tasks (See Section 5.2.2). Therefore, the fifth-level students were expected to use the rhetorical organization of each of the comparison and causation types more than the third-level students.

The results showed that the fifth-level students did not use the rhetorical organization of each of the comparison and causation types significantly more than the third-level students in each of the two recall tasks (See Table 11 and Table 12 in Section 4.2.2). Because the results for the fifth-level students showed that the students were skilled in using the rhetorical organization of
each of the comparison and causation types (See Section 5.2.2), the absence of a difference between the third- and fifth-level students in using the rhetorical organization of each of the comparison and causation types indicates that the third-level students have some knowledge about the rhetorical organization of each of these two types.

A possible explanation for the difference in the results between the present study and Taylor's study (1980) is that the third-level university L2 students in present study may have been exposed to more information about discourse types than the native English-speaking fourth-grade students in Taylor's study.

Interestingly, it should be noted that in Carrell’s study (1984a) only 26% of L2 students used the rhetorical organization of the original text in the immediate recall task and only 20% of the students still did so in the delayed recall task. In addition, 38% of the students who used the rhetorical organization of the original text in the immediate recall task were Spanish speakers. In contrast, Meyer's studies of native speakers of English, from ninth-graders through graduate students (Meyer et al. 1980, Meyer 1982, Meyer and Freedle 1984) have shown that native speakers of English utilized the rhetorical organization of the original text to higher degrees. The results for the native English-speaking students in Meyer's studies showed that, in the immediate recall task, 46% of the ninth-grade students used the rhetorical organization of the original text in Meyer et al.'s study (1980), 50% of the junior college students used the rhetorical organization of the original text in Meyer's study (1982), and 68% of the graduate students used the rhetorical organization of the original text in Meyer and Freedle's study (1984). On the basis of these results Carrell (1984a, 465) concluded that “that may suggest that most of L2 students may have failed to successfully identify the rhetorical organization of the text they read; they may not possess the appropriate formal schema, particularly if they come from a non-European background.”

By using modified text versions of those used in Carrell’s study (1984) and by having more L2 Arab students than those who participated in Carrell's study (1984a), the results of the present study suggest a different conclusion. In the present study, 57% of the fifth-level L2 students as a whole used the rhetorical organization of the original text in the immediate recall task and 47% of these students still did so in the delayed recall task. In addition, 45% of the third-level L2 students as a whole used the rhetorical organization of the original text in the immediate recall task. These percentages are similar to the percentages of the native English-speaking students who used the rhetorical
organization of the original text in the immediate recall task in Meyer et al.'s study (1980) and Meyer's study (1982). Therefore, the results of the present study, specially the result for the third-level L2 students, who have been exposed to less information about discourse types than the fifth-level students, according to the curriculum presented at UQU, indicate that the ability to use the rhetorical organization of the original text in elicited recalls is not restricted to students who have European background (See Section 5, 2, 3).

5.2.4. Analysis of the Statistical Findings of the Fourth Question: Do L2 students at each of the two educational levels who use the rhetorical organization of the original text recall more information than those who do not in each of the two recall tasks?

According to the models of Kintsch and van Dijk (1978) and of Meyer (1975a), and to the results of many studies of native speakers of English (Meyer and Rice 1982, Meyer et al. 1980, Meyer & Freedle 1984, Taylor 1980), and of L2 students (Carrell 1984a, Carrell 1992), if the students possess the appropriate formal schema with which to process the discourse type of the text, and if they utilize that formal schema to organize their recall protocols, they retrieve more information. In other words, the use of rhetorical organization of the original text in organizing one’s recall of a text is highly correlated with the amount of information recalled, and its effect appears durable over the time. This fact has been shown in previous research with different variables. For example, the use of the organizational strategy enhanced the recall of good, as well as poor readers (Meyer et al. 1980, Taylor 1980). It has also been shown to increase the recall of the main ideas, as well as the details in Meyer et al.’s study (1980) and the recall of the top-level ideas, as well as the high-level ideas in Carrell’s study (1992). Thus, even in a short passage, such as those used in the present study, the use of the organizational strategy was expected to have some effect. In addition, by using two types of awareness measurements: the use of rhetorical organization of the original text in the students’ recall protocols, and a question about the plan the writer used to organize the passage which demands more conscious awareness, the results of Carrell's study (1992) showed that it was the use, not the conscious recognition, that helped L2 students to recall more information. That is, L2 students who used the organizational strategy recalled more information than those who did not, and that no such difference was found between L2 students who consciously recognized the rhetorical organization of the text and those who did not. Furthermore, the results showed that there was no significant
interaction between these two variables. On the basis of these results the third-level students, who have been exposed to less information about discourse types than the fifth-level students, according to the curriculum presented at UQU, were expected to benefit from using the organizational strategy.

In the present study, the effect of using the organizational strategy in increasing the recall scores is found only in the results for the fifth-level students in each of the two recall tasks. A possible explanation for the ability of only the fifth-level students to benefit from using the organizational strategy is that the fifth-level students, according to the curriculum presented at UQU, have been exposed to more information about discourse types than the third-level students. That is, most of the fifth-level students who used the organizational strategy may have been able to consciously recognize the rhetorical organization of the original text, whereas many of the third-level students who used the organizational strategy may not. It could be that for the third-level students to benefit from using the organizational strategy, most of them may need to be able to consciously recognize the rhetorical organization of the original text.

5.3. Implications of the Study
5.3.1. Theoretical Implications

By using modified text versions of those used in Meyer and Freedle's study (1984) and in Carrell's study (1984a) and by having more L2 Arab students than those who participated in Carrell's study (1984a), three theoretical implications were noted.

The first theoretical implication is that there is an apparent lack of transfer of the preferred rhetorical organizations of the Arabic language, which has been described as being one of "coordinate parallelism" in an elicited recall task, as opposed to the type of transfer found by contrastive rhetoric researchers, such as Kaplan (1966) and Ostler (1981, 1987), in free compositions.

According to Anderson (1976), the probability of retrieval from memory is increased by links among propositions (Meyer, 1979). The causation, problem/solution, and comparison structures are considered more highly organized types of rhetorical organization than the collection of descriptions structure because of the relationships that hold between the top-level propositions, which correspond to the main ideas, in the former types. Therefore, the more highly organized types were expected to facilitate encoding, economy of storage in long-term memory, and subsequent retrieval
processes (Meyer and Freedle, 1984, Carrell 1984a) (See Section 2.5.3). However, according to Meyer and Freedle (1984), the facilitative effects of the more organized types of rhetorical organization would not be expected for subjects with deficits in using these rhetorical organizations and their organizational components.

The results of Carrell's study (1984a) of L2 students showed that only 26% of the students used the rhetorical organization of the original text in the immediate recall task, and 38% of the students who did were Spanish speakers. The results also showed that L2 students as a whole recalled the more organized types of discourse better than the less organized one after reading the text. Carrell (1984a: 464) speculated that "if readers of whatever native language background possess the formal schemata against which to process the more highly structured types of discourse, these more highly structured types may generally facilitate encoding, retention, and retrieval of information". In addition, the results showed that the effects of the discourse types on the recall of L2 readers were not the same for each of four different language groups. For example, the 32 Spanish-speaking students recalled the more organized types of discourse better than the less organized one. Moreover, the type recalled best by the 16 Arab students was the comparison type, secondly, the problem/solution and collection of descriptions types. Causation was the least recalled passage. As Carrell (1984a: 464) noted "this may be due to the transfer of the preferred rhetorical pattern of the first language. For example, the reason the Arabic-speaking subjects found the collection of descriptions type, the loosely organized type, equal to the problem/solution type, and better than the causation type may be due to the preferred rhetorical patterns of the Arabic language, which has been described as being one of 'coordinate parallelism'".

Furthermore, the results for L2 students as a whole showed that the students who used the rhetorical organization of the original text recalled more information than those who did not (See Section 2.5.4).

In the present study, the results for the third-level L2 Arab students showed that the percentage of the students who used the rhetorical organization of the original text in the immediate recall task was 45%. This percentage was double the percentage of L2 Spanish-speaking students and the percentage of L2 students as a whole who used the rhetorical organization of the original text in Carrell's study (1984a). In Carrell's study (1984a), 25% of L2 Spanish-speaking students and 26% of L2 students as a whole used the rhetorical organization of the original text in the immediate recall task. In addition, the results for the third-level students in the present study showed that the students
recalled the comparison and problem/solution types significantly better than the collection of descriptions type in each of the two recall tasks. Moreover, they recalled the problem/solution type significantly better than the causation type in the delayed recall task. Furthermore, the results for the third-level students as a whole showed that the students who used the rhetorical organization of the original text did not recall more information than those who did not use the rhetorical organization of the original text (See Section 5.2.4).

In analyzing the data further with respect to the use of rhetorical organization of the original text, the results showed that the students who used the rhetorical organization of the original text found the three more organized types of discourse more facilitative of recall than the less organized one in each of the two recall tasks, and the students who did not use the rhetorical organization of the original text found the problem/solution type more facilitative of recall than the causation type in each of the two recall tasks. These results indicate that the reasons for finding two of the more organized types, comparison and problem/solution, more facilitative of recall than the less organized type in the results for the students as a whole were the effects of the results for the students who used the rhetorical organization of the original text. That is, the three more organized types of discourse could have been found to be more facilitative of recall than the less organized type in the results for the third-level students as a whole as was also found in Carrell's results for L2 students as a whole and for the Spanish group. However, due to the fact that the students who used the rhetorical organization of the original text in the present study did not recall more information than those who did not use the rhetorical organization of the original text, the results for the students who did not use the rhetorical organization of the original text prevented the facilitative effect of the causation type that is found in the results for the students who used the rhetorical organization of the original text to appear in the results for the third-level students as a whole in each of the two recall tasks. In addition, the existence of a difference between the problem/solution and causation types in the results for the students as a whole in the delayed recall task was due to the difference between these two types in the results for the students who did not use the rhetorical organization of the original text.

As for the difference between the problem/solution and causation types in the amount of information recalled in the results for the third-level students who did not use the rhetorical organization of the original text, since the facilitative effects of the more organized types of rhetorical organization would not be expected for subjects with deficits in using these rhetorical organizations
and their organizational components (Meyer and Freedle, 1984), and since the third-level students who did not use the rhetorical organization of the original text did not recall more information from the three more organized types of discourse—comparison, problem/solution, and causation—than from the less organized one, collection of descriptions, we can not claim that the reason for finding the problem/solution type more facilitative of recall than the causation type by these students may have been due to the fact that the problem/solution schema has one more organizational component and thus one more relationship among the main ideas. Both the problem/solution type and the causation type are organized on the basis of time and causality. However, in the problem/solution type, one of the propositional elements of the solution can block an antecedent of the problem (See Figure 1). A possible explanation for the difference between these two types is that there may have been a difference between these two types of discourse in the number of the students who were able to consciously recognize the rhetorical organization of the original text and did not use this rhetorical organization in their recall protocols and who may have been able to recall more information than those who were not able to consciously recognize the rhetorical organization of the original text and did not use this rhetorical organization in their recall protocols. This possible explanation is based on the possibility that the students at this level may have been exposed to the problem/solution type more than the causation type but may not have had enough practice to be able to use the rhetorical organization of the problem/solution type more than the rhetorical organization of the causation type (See Section 5.2.2).

The second theoretical implication is that the three more organized types of discourse do not facilitate the recall of the fifth-level students more than the less organized one after reading texts. The results for the fifth-level students showed that there were no differences among the four discourse types in the amount of information recalled in each of the two recall tasks. The results for the fifth-level students also showed that the students used the rhetorical organization of the original text for each of the comparison and causation types significantly more than the rhetorical organization of the original text for each of the problem/solution and collection of descriptions types in each of the two recall tasks (See Section 5.2.2). In addition, most of the students who read each of the comparison and causation texts used the rhetorical organization of the original text in each of the two recall tasks. That is, the students were skilled in using the rhetorical organization of each of the comparison and causation types in each of the two recall tasks. According to Carrell's hypothesis (1984a: 464)
"if readers of whatever native language background possess the formal schemata against which to process the more highly structured types of discourse, these more highly structured types may generally facilitate encoding, retention, and retrieval of information." However, the fifth-level students in the present study did not recall more information from the comparison and causation types than from the collection of descriptions type.

It might be argued that the text may have been easy for the students. Therefore, there were no differences among the four discourse types in the amount of information recalled. However, the range of the recall scores of the fifth-level students was between 28% and 45%. These percentages were not over 90% and thus there was no ceiling effect masking the differences among the four discourse types. Furthermore, the results for the fifth-level students as a whole showed that the students who used the rhetorical organization of the original text recalled more information than those who did not (See Section 5.2.4). If the text was easy for the students, there may not have been a difference between those who used the rhetorical organization of the original text and those who did not. These facts indicate that the reason for the absence of significant differences among the four discourse types in the recall scores of the fifth-level students was not the easiness of the text. That is, the fifth-level students do not benefit as significantly from the more organized types of discourse after reading texts as the third-level students who use the rhetorical organization of the original text do.

A possible explanation for the existence of the facilitative effects of the more organized types on recall in comparison with the less organized one in the results for the third-level students who used the rhetorical organization of the original text and the absence of these effects in the results for the fifth-level students is that the third-level students have not mastered the language yet. Therefore, reading may have been still effortful for these students. That is, because of the difficulty the third-level students may have experienced in their reading, the three more organized types of discourse helped these students in their reading comprehension of the text and facilitated encoding, retention, and retrieval of information (See Section 5.2.1).

In Meyer and Freedle’s study (1984), the students were native English-speaking graduate students. However, the results for these students showed that two of the more organized types of discourse—comparison and causation—facilitated the recall of the students more than the less organized type, collection of descriptions. That may have been due to the fact that the students in Meyer and Freedle’s study (1984) were listening to the text. That is, the
presentation mode may have been the reason for the difference in the results between the native English-speaking graduate students in Meyer and Freedle's study (1984) and the fifth-level students in the present study. It could be that the speed of the speaker may have put more burden on the native English-speaking graduate students' attention and memory system during their attempt to interrelate and combine the information of the text to comprehend it. Therefore, two of the more organized types of discourse helped these students in their listening comprehension of the text and the facilitative effects of these two types of discourse on recall appeared in the results for these students.

The final theoretical implication raises a question about Carrell's conclusion (1984a) that the language background of L2 students may affect their use of rhetorical organization of the original text, i.e., if L2 students come from a non-European background, they may not possess the appropriate formal schema and thus fail to identify the rhetorical organization of the text they read. Carrell's conclusion is based on two facts. First, the percentages of native speakers of English from ninth-graders through graduate students who used the rhetorical organization of the original text in Meyer's research (Meyer et al. 1980, Meyer 1982, Meyer and Freedle 1984) were higher than the percentage of L2 students who used the rhetorical organization of the original text in Carrell's study (1984a). The results for the native English-speaking students in Meyer's studies showed that, in the immediate recall task, 46% of the ninth-grade students used the rhetorical organization of the original text in Meyer et al.'s study (1980), 50% of the junior college students used the rhetorical organization of the original text in Meyer's study (1982), and 68% of the graduate students used the rhetorical organization of the original text in Meyer and Freedle's study (1984). In contrast, the percentage of L2 students who used the rhetorical organization of the original text in the immediate recall task in Carrell's study (1984a) was 26%. Second, 38% of those who used the rhetorical organization of the original text in Carrell's study (1984a) were L2 Spanish-speaking students.

In the present study, 57% of the fifth-level L2 students as a whole used the rhetorical organization of the original text in the immediate recall task and 47% of these students still did so in the delayed recall task. In addition, 45% of the third-level L2 students as a whole used the rhetorical organization of the original text in the immediate recall task. These percentages are similar to the percentages of the native English-speaking students who used the rhetorical organization of the original text in the immediate recall task in Meyer et al.'s study (1980) and Meyer's study (1982). Therefore, the results of the present
study, specially the result for the third-level L2 students, who have been exposed to less information about discourse types than the fifth-level students, according to the curriculum presented at UQU, indicate that the ability to use the rhetorical organization of the original text in elicited recalls is not restricted to students who have European background (See Section 5, 2, 3).

5.3.2. Pedagogical Implications

The findings of this study suggest two ways to improve reading comprehension of L2 female students at the third and fifth levels at UQU. First, the results indicate that the problem/solution and comparison types facilitate the recall of the third-level students more than the collection of descriptions type, and the problem/solution type facilitates the recall of these students more than the causation type in the delayed recall task. In addition, the results indicate that the facilitative effects of the problem/solution and comparison types remain over time. However, in analyzing the data further with respect to the use of rhetorical organization of the original text, that is the organizational strategy, the results indicate that the three more organized types of discourse—comparison, problem/solution, and causation—facilitate the recall of the students who use the organizational strategy more than the less organized type, collection of descriptions, and the problem/solution type facilitates the recall of the students who do not use the organizational strategy more than the causation type. In addition, the facilitative effects of these discourse types remain over time. These findings imply that the curriculum of Reading Three should contain passages that have the problem/solution and comparison types of rhetorical organization more than passages that have the causation and collection of descriptions types of rhetorical organization to enable more students to benefit from the discourse types that are more facilitative of recall.

Second, the results for the fifth-level students showed that the students who used the organizational strategy recalled more information than those who did not. In addition, the facilitative effect of using the organizational strategy on recall remains over time. These results indicate that using the organizational strategy by the fifth-level students is important for their recall of information.

Moreover, the results indicate that the students are able to use the rhetorical organization of each of the four discourse types. However, most of these students who read the problem/solution and collection of descriptions passages did not use the rhetorical organizations of these passages. A possible reason for not using the problem/solution type is the departure from convention in the construction of the original text for this type. As for the collection of
descriptions type, a possible explanation is that because the nature of the content of the text allowed the use of a more organized type, the students may have preferred to use a more organized type instead of the collection of descriptions type. Since the textbook for Reading Four explains the importance of using different strategies, that resemble the organizational strategy, to organize materials for study, the presumed explanation for not using the collection of descriptions type indicates that the fifth-level students do not have an adequate knowledge about the importance of using the rhetorical organization of the original text, that is the organizational strategy, for recall. These results imply the need to provide the fifth-level students with adequate instruction about the importance of using the organizational strategy for recall.

The textbook for Reading Four, which is written by Wegmann, Knezevic and Bernstein (2002), contains some explanations of how to define main and specific ideas and the overall organization of different discourse types. In addition, in this textbook, the importance of using different strategies to organize materials for study is stated three times. Furthermore, the advice of using different strategies to organize materials for study is related to studying for exams and the evidence stated to support this advice is that they are strategies used by good students. It could be that for the fifth-level students to use the organizational strategy always, the importance of using the organizational strategy to organize materials for study should be emphasized more, and the fact that many studies have shown that using the organizational strategy increase the recall scores of L1/L2 students after one reading of the texts should be stated in the curriculum or noted by the teacher.

5.4. Suggestions for Further Research

Some suggestions for future research are made. First, versions of only one text were used in the present study. Other studies can use versions of more texts to verify the results of the present study.

Second, the text versions used in the present study were short, unnatural passages in order to have only the four discourse types with the same content. More studies are recommended to examine the effect of discourse types with more natural, longer passages.

Third, the present study examined the facilitative effects of three more organized types of discourse—comparison, problem/solution, and causation—on recall in comparison with a less organized one, collection of descriptions. The comparison type was organized on the basis of adversative views clearly favoring one side. Further studies can choose other types of comparison
structure, such as the type that is organized on the basis of alternative views giving equal weights to two sides. Another type of discourse that can also be chosen is a sequence type, that is organized on the basis of a chronological order.

Fourth, from the students of the first three levels of education at UQU only third-level students were selected as subjects of the present study. Further studies can include students from other lower levels of education. However, in these studies, researchers should use tasks suitable for the educational level of the students, such as a recognition task that is described by Englert and Hiebert (1984) as a less cognitive demanding task in comparison to a recall task.

Fifth, the subjects of the present study were female students. Further studies can include the factor of gender. Other factors that can also be included in subsequent studies are the proficiency level of the students in the reading skill, and the familiarity of the content of the texts.

Sixth, a recall task was used in the present study. Follow-up studies using awareness measurements other than written recalls, such as the use of organization in compositions, or response to interviews, are recommended to measure the students' awareness of different rhetorical organizations. The use of rhetorical organization in written recalls is the least cognitive demanding measurement. In the recall task, the elements of good structure are available to the reader to respond to, embodied in well written passages. However, the use of rhetorical organization in compositions requires initiative in applying that awareness, and recognition and labeling of rhetorical organizations in interviews requires self analysis and metacognitive awareness.

Finally, the results for the third-level students showed that some of the four discourse types facilitated the recall of the students more than others. In addition, the students were not skilled in using the rhetorical organization of any of these four types. Moreover, the results of the present study showed that the fifth-level students did not use the rhetorical organization of the original text for each of the comparison and causation types more than the third-level students, which indicate that the third-level students have some knowledge about the rhetorical organization of each of these two types and thus imply that the third-level students may be good candidates for instruction in how to use the rhetorical organization of the original text, that is the organizational strategy, in their reading and recall of expository texts. Furthermore, the results for the third-level students as a whole showed that the students who used the organizational strategy did not recall more information than those who did not. A possible reason for the last result is that many of these students may not have
been able to consciously recognize the rhetorical organization of the original text. Therefore, studies are recommended to see whether training third-level students to use the rhetorical organization of the original text, that is the organizational strategy, in their reading and recall of expository texts will enhance their comprehension and recall, and whether the differences among the four discourse types in the recall scores will disappear due to the training.

5.5. Conclusion

The results for the third-level students indicate that the three more organized types of discourse—comparison, problem/solution, and causation—facilitate the recall of the students who use the rhetorical organization of the original text, that is the organizational strategy, more than the less organized type, collection of descriptions. In addition, the problem/solution type facilitates the recall of the students who do not use the organizational strategy more than the causation type. Moreover, the facilitative effects of these types remain over time. A possible explanation for finding the problem/solution type more facilitative of recall than the causation type by the students who did not use the rhetorical organization of the original text is that there may have been a difference between these two types of discourse in the number of the students who were able to consciously recognize the rhetorical organization of the original text and did not use this rhetorical organization in their recall protocols and who may have been able to recall more information than those who were not able to consciously recognize the rhetorical organization of the original text and did not use this rhetorical organization in their recall protocols. This possible explanation is based on the possibility that the students at this level may have been exposed to the problem/solution type more than the causation type but may not have had enough practice to be able to use the rhetorical organization of one type of discourse more than another type. As for the fifth-level students, the results indicate that the four discourse types do not affect the recall of the students.

As regards the use of rhetorical organization of the original text for each of the four discourse types, the results indicate that the third-level students are not skilled in using the rhetorical organization of the original text for any of the four discourse types. However, they have some knowledge about the rhetorical organization of each of the comparison and causation types. With respect to the fifth-level students, the results indicate that the students are able to use the rhetorical organization of the original text for each of the four discourse types. However, they do not have an adequate knowledge about the importance of
using the rhetorical organization of the original text, that is the organizational strategy, for recall.

As for the effect of using the organizational strategy on recall, the results indicate that the third-level students who use this strategy do not recall more information than those who do not. Most of these students may need to be able to consciously recognize the rhetorical organization of the original text to benefit from using this strategy. As regards the fifth-level students, the results indicate that the students who use this strategy recall more information than those who do not. In addition, the facilitative effect of using the organizational strategy on recall remains over time. These results indicate the importance of using this strategy for recall.
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Appendices
Appendix A

The demographic questionnaire:

Dear female participant,

This is the only survey by which you answer, and you should use only one of these questions, and only answer all its questions.

Gender /
Name /
Age /
Year of study /
Level /

Please enter a mark in the appropriate box in the appropriate box:

If you have started learning English:

( ) Preparatory
( ) Beginning
( ) Intermediate
( ) Advanced

If your first language is small:

( ) Arabic
( ) English

What language is used in your country?

( ) Yes
( ) No

If you have one or more other languages, what is the other language?

If you have answered one or more, what is this language?

Reading instructions:

Dear female participant,

Always be sure that the purpose of this survey is to answer questions about your study, and answer all the questions of the survey only.

This is the right path, and when you finish it, I will send you the questions again.

I wish you have a good evening and thank you for your help.

Best regards,

Hassan al-Sawaf.
Recalling instructions:

عزيزتي الطالبة:

أكتب كل شيء تستطيعين أن تتذكرونه من القطعة و أكثر ما تستطيعين تتذكرونه باستخدام كلمات من عندك أو من كلمات القطعة. حاولي أن تكتب جملًا كاملة وليس كلمات متنفرة وحسب. إذا كنت تستطيعين تذكر الكلمة فقط ولكن ليس كما كانت ترتبط بالمعلومات الأخرى في القطعة فاذكرني ذلك. إنك غير مُوَاحِدة على أخطائك الإملائية.
Appendix B

The text versions used in the study:
1. The lower case letters signal the identical information.
2. The capitalized and underlined words identify different ideas in the four passages.
3. The capitalized words without the underlining signal the discourse type of each passage.

Collection of descriptions:
The Loss of Body Water

SEVERAL KINDS OF LOSS OF BODY WATER WILL BE DISCUSSED.

FIRST, sports instructors always ask boxers, judo players, karate players, and football players to lose body water so that they will have specified body weights. These specified weights are much below the usual weight of the players.

SECOND, THE LOSS OF BODY WATER THAT IS LOST BY A 70 KILO INDIVIDUAL EACH DAY IS ONE AND A HALF LITERS OF WATER.

THIRD, the loss of body water negatively affects the work of the heart, which in turn lowers the persons’ ability to work. More specifically, a loss of three percent of body water lowers physical activity and a loss of five percent makes the body's temperature high, which gives the feeling of extreme tiredness. Moreover, a loss of seven percent of body water causes mental problems. Losses of ten percent or more of body water result in heat stroke and deep unconscious state. If not treated, death will result.

Causation:

The Loss of Body Water

IT IS TRUE THAT sports instructors always ask boxers, judo players, karate players, and football players to lose body water so that they will have specified body weights. These specified weights are much below the usual weight of the players.

AS A RESULT TRAGEDIES SOMETIMES HAPPEN BECAUSE OF THE INSTRUCTORS WHO ASK THIS LOSS OF BODY WEIGHT IN THESE SITUATIONS. THESE TRAGEDIES HAPPEN AS A RESULT OF THE FACT THAT THE loss of body water negatively affects the work of the heart, which in turn lowers the persons’ ability to work. More specifically, a loss of three percent of body water lowers physical activity and a loss of five percent makes the body's temperature high, which gives the feeling of extreme tiredness. Moreover, a loss of seven percent of body water causes mental problems. Losses of ten percent or more of body water result in heat stroke and deep unconscious state. If not treated, death will result.
Problem/solution:

The Loss of Body Water

A REAL PROBLEM is that sports instructors always ask boxers, judo players, karate players, and football players to lose body water so that they will have specified body weights. These specified weights are much below the usual weight of the players.

A SOLUTION TO THIS PROBLEM IS FOR THE ADMINISTRATORS OF THE SPORT SCHOOLS TO STOP THE INSTRUCTORS WHO ASK PLAYERS TO LOSE BODY WATER. THIS STEP MUST BE TAKEN BECAUSE OF THE FACT THAT THE loss of body water negatively affects the work of the heart, which in turn lowers the persons’ ability to work. More specifically, a loss of three percent of body water lowers physical activity and a loss of five percent makes the body’s temperature high, which gives the feeling of extreme tiredness. Moreover, a loss of seven percent of body water causes mental problems. Losses of ten percent or more of body water result in heat stroke and deep unconscious state. If not treated, death will result.

Comparison:

The Loss of Body Water

Sports instructors always ask boxers, judo players, karate players, and football players to lose body water so that they will have specified body weights. These specified weights are much below the usual weight of the players.

IN CONTRAST TO THE ACTION TAKEN BY SPORTS INSTRUCTORS, AMERICAN MEDICAL CENTERS ARE VERY MUCH AGAINST ASKING PLAYERS TO LOSE BODY WATER. THEY ARE AGAINST THE LOSS OF BODY WATER BECAUSE OF THE FACT THAT THE loss of body water negatively affects the work of the heart, which in turn lowers the persons’ ability to work. More specifically, a loss of three percent of body water lowers physical activity and a loss of five percent makes the body's temperature high, which gives the feeling of extreme tiredness. Moreover, a loss of seven percent of body water causes mental problems. Losses of ten percent or more of body water result in heat stroke and deep unconscious state. If not treated, death will result.
Appendix C

Fill-in-the-blank question:

Collection of descriptions:

Several kinds of loss of body water will be discussed. First, sports instructors always ask .............................................................. and ...............................................to lose ...................................... so that they will have specified body weights. These specified weights are much below the usual .......................... of the players.

Second, the ................................body water that is lost by a 70 kilo individual each day is one and a half liters of water.

Third, the loss of body water negatively affects the work of the .........................., which in turn lowers the persons’ ................................. to work. More specifically, a loss of ............................. percent of body water lowers physical .......................... and a loss of ............................. percent makes the body’s .........................., which gives the feeling of extreme ..............................

Moreover, a loss of ............................. percent of body water causes .............................problems. Losses of ............................. percent or more of body water result in .......................... and deep ............................. state. If not treated, ............................. will result.

Causation:

It is true that sports instructors always ask .............................................................. and ...............................................to lose ...................................... so that they will have specified body weights. These specified weights are much below the usual .......................... of the players.

As a result tragedies sometimes happen because of the instructors who ask this loss of body .......................... in these situations. These tragedies happen as a result of the fact that the loss of body water negatively affects the work of the .........................., which in turn lowers the persons’ ................................. to work. More specifically, a loss of ............................. percent of body water lowers physical .......................... and a loss of ............................. percent makes the body’s .........................., which gives the feeling of extreme ..............................

Moreover, a loss of ............................. percent of body water causes .............................problems. Losses of ............................. percent or more of body water result in .......................... and deep ............................. state. If not treated, ............................. will result.
Problem/solution:

A real problem is that sports instructors always ask .................., .................., and .................. to lose .................. so that they will have specified body weights. These specified weights are much below the usual .................. of the players.

A solution to this problem is for the administrators of the sport schools to stop the instructors who ask players to lose .................. This step must be taken because of the fact that the loss of body water negatively affects the work of the .................., which in turn lowers the persons’ .................. to work. More specifically, a loss of .................. percent of body water lowers physical .................. and a loss of .................. percent makes the body’s .................., which gives the feeling of extreme ..................

Moreover, a loss of .................. percent of body water causes .................. problems. Losses of .................. percent or more of body water result in .................. and deep .................. state. If not treated, .................. will result.

Comparison:

Sports instructors always ask .................., .................., .................., and .................. to lose .................. so that they will have specified body weights. These specified weights are much below the usual .................. of the players.

In contrast to the action taken by sports instructors, American medical centers are very much against asking players to lose .................. They are against the loss of .................. because of the fact that the loss of body water negatively affects the work of the .................., which in turn lowers the persons’ .................. to work. More specifically, a loss of .................. percent of body water lowers physical .................. and a loss of .................. percent makes the body’s .................., which gives the feeling of extreme ..................

Moreover, a loss of .................. percent of body water causes .................. problems. Losses of .................. percent or more of body water result in .................. and deep .................. state. If not treated, .................. will result.
Appendix D

Text structure analysis:
1. The bold letters identify content units.
2. The other letters identify the relationship units.
3. The parentheses determine the identical information in the four versions.

Collection of descriptions

First

(ask
Agent
**Instructors**
   Attribution
   **Sports**
   Patient
collection
   Boxers
   Jodu players
   Karate players
   Football players
   Patient
   To lose antecedent
   Patient
   **Body water**
   So consequent

Have
Agent
They
Patient
**Body Weight**
   Attribution
   Specified
   Attribution
   **Below**
   Patient
   Weight
   Attribution
   **Usual**
   Attribution
   Of player)

Second

lose
Agent
**Individual**
   specific
   70 kilo
   patient
   **body water**
   specific
   1 and a half liters
time
each day
result in mental loss of body water

result in

agent

stroke

heat

state

unconscious

deep

if antecedent

not treat

result consequent

patient

death)
Appendix E

Sample of recall protocols:

In this Appendix, six examples of recall protocols are given to clarify the scoring procedure of protocol organization. The first recall protocol was written by a subject who read the comparison passage and used the same discourse organization in his protocol:

Sports instructor make the boxer, karata, Jude player loss amount of their bodies water but the doctors said this was unhealth or danger because when he loss 3% of the water of a body we decr ease our activity to do work, 5% when we loss it we will sick with high temperture. 7% of water of body, It cause mental problem. 10%

The second protocol was written by a subject after she read the comparison passage. The protocol’s organization was classified as different form that of the original. It was identified as a causation type:

The passage talks about how the coach of the boxers, football players and other sports ask them to loose some body water. This loosing of body water has some bad results in the human being health it has a bad effect in the heart.

The third example came from a subject who read the problem/solution passage. Her protocol matches the discourse type of the original passage:

There are many problem that cause the loss of water. The football players and Judo player and Karat player they loss water. The solution of this problem to stop the sports and drink a lot of water. If the person loss three persent it cause loss of phiysical activity. And five persent it cause high of tempiture.

Another example of a protocol matches the type of the original passage is written by a subject who read a collection of descriptions type:
There are three kinds of losing water from the body. First kind is when the sport player loses water to reach to a specific weight. Because these players have to have a specific weight to play football, Joso and many other games.

The other kind is the normal person whose over 70 kilo and how much dose he loose.

Third kind is the negative loss of water body which affects the body, for example, if we lost from 3 to 5 percent that will affect the heart. If 2% that will affect the temperature of the body, if more than 7%

The next protocol’s organization was also written by a subject after she read the collection of descriptions passage. However, her protocol was identified as a comparison type:

The essay talks about the advantages and the disadvantages of losing water from the human body. Losing water from the body one and a half percent affects the people, who play sports positively, because they lose some of their usual weights. On the other hand, losing water about 3 percent affects the people negatively, and when the percentage becomes higher for example 7 percent it affects the human mind. Moreover, when the percentage becomes higher about 10 percent it affects persons seriously and it causes death.

Another example of a different protocol’s organization from the original organization of the collection of descriptions passage is a protocol’s organization which was identified as a descriptions type:

The paragraph talks about the important of water and what happen when we lose the body of water like we can’t ability to work and can’t do any think prifely Also this looseness effect our health like our hearts and I think all this paragraph talk about the body water and the important of water.
Appendix F
Pilot Test

The reading speed test:

Eight students from level three and level five in the English Department at UQU were randomly selected to read the four versions of the text. Each student was given the text alone and was asked to read it once. Then, each student was given lined sheet of paper with recall instructions. The aim of the pilot test was to assess the reading and the recalling times needed as a result of being subject controlled.

Using a timer, the students reading time ranged from two to four minutes while the recalling time ranged from seven to 11 minutes. In an attempt to assess the students’ comprehension of the text, the students’ recall protocols were scored using Meyer’s system (1970). The range of the recall scores of the third-level students was between 20% and 36% and the range of the recall scores of the fifth-level students was between 28% and 45%. These ranges were similar to those reported in Meyer, Brandt and Bluth’s study (1980), in which the recall scores of native English-speaking ninth-grade students ranged from 17% to 41%. In addition, they were more than the range of the recall scores of L2 students in Carrell’s study (1984a), which was from 7% to 25%. Thus, the results for the third-level students and the fifth-level students indicate that the students at each of the two educational levels were able to comprehend the text. In addition, the results indicate that by simplifying the text versions we successfully passed the caution that was mentioned in Carrell’s study (1984a) due to the relatively low mean scores for the number of idea units recalled, which may indicate the difficulty of the task, specifically the difficulty of the vocabulary used in the passages.