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READING GUIDE TECHNIQUES AND CONTENT AREA
READING IN THREE MULTI-ETHNIC CLASSROOMS

by

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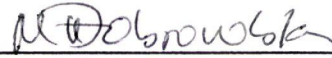
The undersigned certify that they have read, and recommended to the Faculty of Graduate Studies for acceptance, a thesis entitled, "Reading Guide Techniques and Content Area Reading in Three Multi-ethnic Classrooms" submitted by Sarah B. Schmuck in partial fulfillment of the requirements for the degree of Master of Arts.



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ABSTRACT

The Purpose

The purpose of this study was to determine if three different teaching strategies would facilitate the reading comprehension of students who speak English as a second language.

The Study

Reading research based on a schema-theoretic framework has focused on the presence and nature of schemata in second language learners. Many researchers and educators have suggested a variety of teaching strategies that should activate and develop the reader's background knowledge, which would, presumably, enhance reading comprehension. Yet very few studies have been undertaken to determine the effectiveness of these teaching strategies with students who speak English as a second language.

In this study, three passages, reflecting different rhetorical structures, were selected from materials used in Alberta high schools. Three treatments--structured overviews, pattern guides and vocabulary--were developed for each of the passages. Because the study was exploratory in nature, null hypotheses, predicting no main effects for passages, treatments or interaction effects between passages and treatments, were established. Three intact high school English as a

second language classes in Calgary, Alberta participated in the experiment. Each class read each of the three passages after receiving one of the treatments and then answered nine comprehension questions. The students' reading comprehension was determined by the total number of correct answers for each passage.

The Findings

There were no main effects for passage type or treatment type. There was a main effect for groups which, due to the nature of the design, were treated as a variable. The interaction of treatment and passage was also significant. These results indicate that there may be an optimal fit between texts and teaching strategies, i.e., certain teaching strategies may be more sensitive to the characteristics of the texts than other teaching strategies. These results suggest that educators should carefully consider the characteristics of the texts and the characteristics of the teaching strategies to ensure that they compliment each other, thereby enhancing reading comprehension.

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CHAPTER ONE

Introduction

Each year thousands of immigrants come to Canada to live. One of the many responsibilities of the Canadian government is to provide adequate educational programs for immigrants of all ages. In particular, schools in the Canadian educational system must provide reasonable programming for the children of immigrant minority language families; children whose first language is not the language of instruction and the dominant language spoken in society. This is no easy task as these children come from various cultural and linguistic backgrounds, have varying psychological and social needs, diverse educational backgrounds, and often have only minimal proficiency in the target or second language, that is the dominant language of society.

Ashworth (1975), as a result of her national survey, categorized the types of programs available to the minority language student, hereafter referred to as English as a second language or ESL students, into three broad types: reception classes, total integration classes, and withdrawal classes. All three types of programs recognize to varying degrees the importance of linguistic and social factors as keys to integration into

mainstream school life, but are based on different assumptions about the role of those factors.

The reception class, composed exclusively of minority language students, is designed to give intensive target language instruction. From these classes students are rapidly integrated into regular classes, often before they are fluent in the target language, so that minority language students are not completely isolated from majority language students. The assumption underlying the reception class is that the focus on the target language in turn facilitates communication with native majority language speakers. It is believed that integration into mainstream school life will then naturally follow. In contrast, the total integration approach involves placing the minority language student in a regular classroom at or below his or her grade level without special target language instruction. This reflects the belief that immersion in the target culture will generate the necessary language learning without socially isolating the minority language student. In the withdrawal class minority language students are placed in a regular classroom and withdrawn for varying amounts of time for intensive target language instruction, reflecting the equal need for target language instruction and integration as factors in successful adaptation to school life.

While the reception class may start at a slower pace, all three programs require the immediate functioning of the minority language student in a foreign language environment. As a result, minority language students are forced to read, discuss, listen to lectures, and write about content material in a language in which they are neither fluent nor confident. This process has often had a negative effect on the academic performance and mental health of many minority language students. Though elementary school age minority language students may survive the effects of premature mainstreaming due to the greater flexibility and lesser inhibitions of young children, as Piper (1985a) points out, senior high age minority language students often do not.

Results of surveys indicate these student often fall behind academically and are disproportionately represented in the vocational stream in secondary schools (Ashworth, 1975; Bhatnagar, 1981). In turn these results have helped foster and perpetuate educators' negative perceptions of minority language students' intellectual and linguistic ability. Why then is this type of programming so common?

Immersion vs Submersion

Piper (1985a) suggests the continued implementation of minority language programming appears to be the result of an erroneous comparison between minority language programming and Canadian French immersion programming.

Typically in French immersion programs English speaking students enter a primary classroom where French is the language of instruction. At some point in grades two through four English is introduced as the medium of instruction, often in Language Arts. In successive years the number of subjects taught in English increases until instruction in English and French reaches equal proportions (Cohen and Swain, 1976). Evaluation of French immersion programming has, in general, been positive (Swain, 1978). Students have learned a foreign language without hindering their first language and cognitive development, demonstrating that one can learn a second language and subject matter simultaneously. Swain (1978) has suggested that these results have led educators: 1) to believe that foreign language immersion type programming was appropriate for minority language students, as both groups were learning a second language, and 2) to argue against the need for instruction in the minority language students' mother tongue--a line of

reasoning she suggests is tenuous at best, as it ignores crucial differences between the two groups.

Cohen and Swain (1976) outlined seventeen characteristics that typify successful immersion programs, nine of which are not found in minority language programming. The primary characteristics unique to immersion programming are first, that "all kindergarten pupils are unilingual in L1", that is, they all begin at the same place. Second, although the target language, in this case French, is the language of instruction, students are allowed to speak their first language (English). Third, immersion programming follows the regular curriculum and participation is optional.

In ESL programming, however, students never start on an equal footing academically or linguistically. Minority language students from different countries are grouped together, use of the students first language (the student's mother tongue) is generally not permitted or encouraged in the classroom, and the minority language students' first languages are never introduced as the language of instruction. Nor are they encouraged to use their first language in the classroom. Because they are not proficient in English, ESL students are often socially stigmatized, perceived as having a language handicap, or as being cognitively deficient. As a result, Cohen and Swain (1976) have proposed that the

term submersion more appropriately describes minority language programming. As Swain (1978) puts it:

Typical of this situation are the children of migrant workers, first and second generation immigrants as well as the children of our indigenous populations for whom low academic achievement, low target language proficiency, low self-esteem, and first language loss have been reported (p.241).

In addition, Piper (1985a) notes that the immersion student receives first language support outside of the classroom--support, that is, "not merely linguistic, but involves all those aspects of status and security attached to English as the other established official language, in addition to the prestige and reinforcement which comes with bilingual fluency" (p. 103). This is not true for the immigrant minority language student whose home-school language switch typically involves the denial of his or her first language in the classroom and whose first language has no "official" status in the community (Swain, 1978).

Educators, in trying to explain the obvious discrepancy between the performance of students in French immersion and minority language submersion programs have often turned to the immigrant minority language student as the source of the problem. Cultural and linguistic differences have been blamed, not the methods, materials,

or instruction. Saville-Troike (1977) believes this has led to the perception of the minority language student as "deficient" in language ability and sometimes, by association, in conceptual development.

Traditionally, the main focus of ESL programming has been to develop target language proficiency in the belief that, if the language problem was eliminated so to would other problems the minority language student might experience. Not only is the target language the goal but it is also the subject matter of the program.

Recently, program planning for ESL instruction has begun to change. Emphasis has shifted from language as the topic of instruction, and language learning through routine drills, to a more communicative approach where language is taught through content, and where language learning is encouraged by way of more realistic communicative acts. In addition, the needs of the learner have taken on a new importance. Developing oral fluency is no longer perceived as the primary goal. Learning to read, write, and discuss academic material is of critical importance for success across the curriculum for the high school ESL student.

The Role of Reading in Second Language Instruction

Historically, the underlying assumption of second language (hereafter referred to as L2) programming, to contrast with first language or L1 programming, was that

learning the target language was the major hurdle the ESL student faced. It was assumed that being a proficient speaker was a guarantee of success across the curriculum. The skills of reading and writing were treated as adjuncts to language learning, not as skills taught in their own right.

In the Direct and Audiolingual methods written text was deliberately excluded from the initial stages of instruction. In the Direct method the more advanced students read literature by the writers of the particular language they were studying. In the Audiolingual approach, which dominated second and foreign language instruction in the fifties and sixties and which has only recently been challenged by alternate methods, language skills were presented in their perceived order of importance--listening, speaking, reading, and writing (Prator, 1979). Lado (1977) believes this practice was based on the belief that seeing the written form when first learning the language would cause distortions in the learner's pronunciation. The underlying assumption was that "the written form is not language, it is an imperfect representation of it". The assumption was that "children learn the language first--meaning speech--and then reading becomes only a matter of decoding the written representation in to sound" (p. 9). Difficulties in reading comprehension were attributed to an 'imperfect

knowledge of English. As a result students encountering difficulties often received further language, rather than reading instruction.

This approach to the role of reading and writing in second language instruction has changed with the development of the Cognitive approach, and subsequently the Communicative Competence approach, where all four Language Arts skills are now accorded equal status. In the current approach, reading and writing are viewed as skills to be taught that have their own demands which are different from speaking. Consequently, ESL professionals have had to study the reading process itself and to broaden their understanding of the differences between L1 and L2 readers. In coming to this general understanding, ESL reading researchers have drawn heavily on L1 psycholinguistic and schema-theory based reading research.

Reading Research and L2 Readers

Schema theory focusses on how background knowledge affects the understanding of any oral or written text or event (Rumelhart, 1977). Bartlett (1932), who pioneered the research, demonstrated that remembering does not always lead to complete and accurate recall but that it involves the active processes of condensation, elaboration and invention. Bartlett hypothesized that not only were the processes of remembering influenced and

bound by cognitive constraints but also by social or cultural experiences. While not the first to use the term, Bartlett (1932) called these memory structures schemata, which he defined as "active organization[s] of past reactions, or of past experiences, which must always be supposed to be operating" when remembering any given thing (p. 201). Bartlett was, however, vague about how schemata were organized and exactly how they worked in the process of remembering.

In their model of a schema-theoretic view of reading, Adams and Collins (1979) suggest that reading is an interactive process where data from the text and data from the reader come together to create meaning and comprehension. Research has demonstrated the effect knowledge brought by readers to texts has had on reading recall and comprehension. Carrell and Eisterhold (1983) divide the knowledge the reader brings to the text into two main types: content and formal schemata. Content schemata comprise the culmination of all experiences, direct and vicarious, that the reader has encountered throughout his or her life. Formal schemata comprise the knowledge the reader has of the various rhetorical structures of the texts themselves.

Over the past fifty years researchers have sought to determine if content schemata affect reading comprehension. In general, these studies have shown that

background knowledge affects the reader's interpretation of a text and, as a result, comprehension. In particular, they have found that culturally familiar material is recalled more coherently than culturally unfamiliar material (Bartlett, 1932; Kintsch & Greene, 1978; Steffensen, Joag-Dev, & Anderson, 1979).

Research indicates that readers do have formal schemata for narratives and expository prose, and that these schemata are used to structure incoming data and for retrieving data when recalling information (Mandler and Johnson, 1977; Meyer, 1977a and 1977b). When analyzing the written recall of narratives and expository text, researchers have found that cultural factors play an important role in the recall of certain aspects of the text (Bartlett, 1932; Kintsch & Greene, 1978; Connor, 1984; Piper, 1985b).

Most research in L2 reading has been at a theoretical, rather than an applied, level. While numerous researchers have hypothesized implications for instruction based on these findings, only a few studies have evaluated teaching strategies to help improve L2 reading comprehension (Carrell, 1985; Hudson, 1982). The purpose of the present study is to continue the line of investigation into exploring teaching strategies which help ESL students' reading comprehension.

CHAPTER TWO

Literature Review

Language and Schooling

For the ESL student to succeed in the school system it is necessary for him or her to learn the language of the school, written and oral. For this to happen it is necessary for educators to understand the language demands within the classroom in order to mediate between what the student knows and what he or she needs to know. Further, classroom teachers clearly need to understand the cognitive demands of different linguistic situations and differentiate between oral and written discourse. Cummins (1984) has developed a model (see Figure 1) to help clarify the linguistic demands of classroom discourse (written and oral), thereby offering a framework for program-planning and task analysis.

Cummins' model of language proficiency has two continua. The first continuum relates "to the range of contextual support available for expressing or receiving meaning" (p. 138). At one end of the continuum is context-embedded communication; that is, the speaker(s) can negotiate meaning and the interaction is supported by a variety of contextual clues. At the other end of the continuum is context-reduced communication; that is, the speaker "relies primarily...on linguistic cues to meaning

and thus successful interpretation of the message depends heavily on knowledge of the language itself" (ibid).

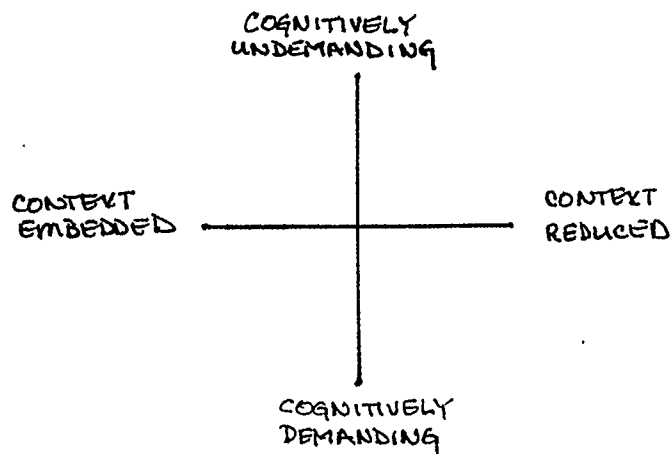


Figure 1. Range of Contextual Support and Degree of Cognitive Involvement in Communicative Activities. Note. from Bilingualism and Special Education: Issues and Assessment and Pedagogy (p. 139) by Jim Cummins, (1984), San Diego, College-Hill Press.

The second continuum relates to the "degree of cognitive involvement in communicative activities" (p. 138). At one end of the continuum are cognitively undemanding tasks; that is, those activities that are essentially automatic and require little or no thinking to perform. At the other end of the continuum are the cognitively demanding tasks; that is, those activities that are unfamiliar and require active involvement to complete. He states:

In general, context-embedded communication [conversational fluency] is more typical of the

everyday world outside the classroom, whereas many of the linguistic demands of the classroom (e.g. manipulating text) reflect communicative activities which are closer to the context-reduced end of the continuum [academic language fluency]" (1984, p. 138-139).

Conversational fluency is different from academic language fluency. Many students achieve conversational fluency, and this is often misinterpreted as being equal in sophistication to academic language fluency. When the student has difficulty with academic discourse, therefore, it is often assumed the problem is nonlinguistic. When the ESL student is in the content area classroom, he or she must deal with unfamiliar material and content in addition to contending with academic discourse. The classroom tasks are then not only context reduced but also cognitively demanding. In effect the student is struggling not only with academic language but also the course content.

Cummins suggests that one of the applications of his model is as an aid to developing a logical approach to language instruction:

The more context-embedded the initial L2 input, the more comprehensible it is likely to be, and paradoxically, the more successful in ultimately developing L2 skills in context-reduced situations.

A central reason why minority students have often failed to develop high levels of L2 academic skills is because their initial instruction has emphasized context-reduced communication insofar as instruction has been through English and unrelated to their prior out-of-school experience" (p.141).

Written materials are an important source of information for ESL students. It is important, therefore, for content area teachers to utilize teaching strategies that will help ESL students meet the demands of the academic language in their content area reading so that they fulfill their academic potential. For this reason, not only do teachers need to understand the cognitive and linguistic demands of classroom language, they also need to understand the reading process and factors that can affect ESL students' reading comprehension.

Approaches to the Reading Process

In 1973, Frank Smith, when writing about the reading process, stated that it has been commonly asserted that there are no interesting questions to be asked about reading, that surely reading is simply a matter of decoding from written symbols into sound, and that since the code itself is relatively straightforward (the argument goes),

all the interesting questions lie in a spoken language. (p.5)

Smith questioned any analysis of the reading process that viewed text as speech written down and which viewed the reading act as a matter of learning the letters of the alphabet with their associated sounds and of using them to decode the words on the page to spoken language. His own observations and research in the field of psycholinguistics caused him to question these assumptions and led to three insights: "1) Only a small part of the information necessary for reading comprehension comes from the printed page. 2) Comprehension must precede the identification of individual words. (not primarily visual) 3) Reading is not decoding to spoken language." (1973, p.v). He felt that research from the field of psycholinguistics, influenced by Chomsky's generative-transformational approach to language analysis, which sought to explain "the abstract `rules' that individuals `hypothesize' and `test' as a consequence of their `biological disposition' to learn language" (p. 3), had revolutionized the perception of the reading process.

Gibson and Levin (1975) concurred with Smith and, in their book The Psychology of Reading, they state that "reading is not simply the decoding of written symbols to

sound" (p. 5). Instead, they suggest that one reads to extract information. They view reading, therefore, as "an active process, self-directed by the reader in many ways and for many purposes." (p. 5). Further, they state that analysis of the reading process must be "guided by theories which apply not only to reading but more generally to perceptual learning and to cognitive and linguistic development" (p. 4). In the area of perceptual learning a theory of reading must explain the process of

learning to extract the relevant information from the manifold available stimulation, that is, the invariant information that specifies the permanent layout of the environment, the distinctive features of things that populate and furnish the environment, and invariants of events that enable us to predict outcomes and detect causes. (p. 13)

They claim that perceptual learning, therefore, is an active, selective, adaptive process which becomes progressively better at differentiating and categorizing stimuli. While there is a wide variety of models that have been developed to represent this reading process, Gibson and Levin (1975) and Samuels and Kamil (1984) suggest that no one model is completely explanatory.

Gibson and Levin (1975) suggest that there are two important classes of models that have been developed to

represent the reading process: information processing and constructionist models. The information processing models are "typically stage models, with a succession of events or encoding processes progressing from stimulus input at the beginning to a response output at the end." (p.481). Samuels and Kamil (1984) further subdivide stage models on the one hand into unidirectional or linear information processing models and, on the other, into interactive models, with information feedback loops. The constructionist, or "analysis by synthesis" model is one in which

the reader constructs the meaning for himself as his eyes move over the page, forms hypotheses about what is to follow, and pauses for a fixation occasionally to confirm what he has been predicting...The emphasis here is on meaning. (p. 481)

On the surface this approach appears less complex than the information processing approach and seems to be less concerned with word recognition.

Two models--Goodman's which is a constructionist model and Adams and Collins; which is more of an interactive information processing model--will be briefly described as they both represent approaches that have influenced the direction of reading in a second language research. Goodman's approach and related research, which will be described first, has been used with L2 readers to

describe the reading process. Adams and Collins' and related research, which will follow, has been used to help explain reading comprehension.

A Psycholinguistic Explanation of Reading

While Smith (1973, 1978) believes there is no "psycholinguistic method" of reading he stated, as previously noted, that there are certain basic facts about the reading process which must be accounted for when developing any theory or model of reading. First, there are two components of reading: visual information and nonvisual information and that these two components have a reciprocal relationship. Visual information is that which the eye absorbs from the page, whereas nonvisual information is the knowledge of the language and the world which the reader carries around in his/her head. Second, Smith distinguishes between meaning identification which is mediated (recoding print to sound to meaning) and immediate (print to meaning). Third, the reading process is an active, hypothesis-testing process in which the concept of redundancy plays a key role. Redundancy "exists whenever information is available from more than one source" (1978, p.17). Those sources of information are visual (that which the eye takes in), orthographic (spelling), syntactic (grammar) and semantic (knowledge of the world).

Goodman has put forward an explanation of the reading process which attempts to include the key issues raised by Smith. Goodman (1969, 1970) has also hypothesized that meaning does not reside in the text but, instead, is generated by the reader. All readers are users of language, and as such the reader

interacts with the graphic input as he seeks to reconstruct a message encoded by the writer. He concentrates his total prior experiences and the concepts he has attained as well as the language competence he has achieved (1969, p. 15).

Based on his research of readers' oral miscues, defined "as an actual observed response in oral reading which does not match the expected response...", Goodman hypothesized that in the reading process the reader utilizes grapho-phonetic, syntactic, and semantic, information (1969, p.5). Grapho-phonetic information includes knowledge about letters and spelling patterns and their corresponding phonological representations. Syntactic information is knowledge of the permissible grammatical sequences and rules governing those sequences. Semantic information refers to the prior experiences, conceptual knowledge, and vocabulary knowledge the reader uses to assign meaning to the text.

Goodman suggests that reading is not a precise process of decoding each letter and word sequence in the

text but that it is a cyclical process of sampling, inferencing, predicting, and confirming, or disconfirming. All readers at all levels of proficiency use all three cue systems. For efficient readers graphic cues are of minimal importance except as a trigger to activate semantic and syntactic information. Samuels and Kamil (1984) state

this is not to say that this model does not allow for a reader to go from symbol to sound to meaning-- such mediation will not occur in predictable situations (as a function of familiarity and, perhaps, instructional history). It is more accurate to assert that his model always prefers the cognitive economy of reliance on well-developed linguistic (syntactic and semantic) rather than graphic information. (p. 186-187)

To determine the veracity of Goodman's model, researchers have examined the reading process of readers in languages other than English. Barerra (1981) and Hudelson (1981) analyzed the oral miscues of Spanish speakers, Hodes (1981) analyzed the oral miscues of Yiddish speakers, and Mott (1981) analyzed the oral miscues of German speakers. All these researchers have found that readers utilize all three cue systems to varying degrees, depending on their level of reading proficiency. Further, readers appear to reconstruct

meaning through a process of sampling, predicting, confirming and correcting. Results from all the studies support the notion that, while the reader may experience varying levels of comprehension, the reading process is similar across different languages.

Psycholinguistics and L2 Reading Comprehension

Yorio (1971) has suggested that problems in L2 reading are a result of the reader's imperfect knowledge of the second language (grapho-phonetic and syntactic) and interference from his or her first language. He argues that this knowledge is critical since L2 readers, guided by their knowledge of the language, sample graphic cues and relate them to phonological, syntactic, and semantic knowledge. Cowan (1976), in a descriptive study investigating reading errors of Japanese speakers reading English, Persian speakers reading English, and English speakers reading Hindi, found that these readers applied L1 syntactic perceptual strategies (strategies used to process text) to their L2 texts causing comprehension problems. Perceptual strategies are defined as "cognitive principles used in mapping external representations onto internal sequences to achieve comprehension"...such as... "presuppositions about language specific phenomena such as word groupings which constitute potential external units corresponding to noun phrases, verb phrases, clauses, etc." (p. 105). Cowan

supported Yorio's hypothesis when he suggested perceptual strategies the reader uses must, to some extent, be language specific.

Clarke (1979) investigated the reading behavior of twenty-one adult ESL students reading in Spanish--their first language and in English--their second language. All students were high-school graduates in their native country, having come to the United States to continue their academic careers. The experiment consisted of two parts; a cloze test and miscue analysis of an oral reading passage. All subjects took a Spanish and an English cloze test. Responses were analyzed, and the eight best and six worst scores were selected to form two groups called good and poor readers respectively. In the first study, Clarke analyzed the cloze responses of these fourteen students in detail. Overall, results indicated that the good L1 readers were good L2 readers and better L2 readers than the poor readers.

Clarke analyzed their miscues for syntactic and semantic acceptability to determine how readers' abilities were constrained when dealing with unknown difficult items. In Spanish, good readers produced more semantically well-formed responses than poor readers, who on the other hand, were more sensitive to syntactic constraints than semantic constraints. When the unacceptable cloze responses for the English cloze

passage were analyzed the difference between the two groups was reduced. Both groups had the same syntactic acceptability percentages and the good readers only produced 6% more semantically acceptable responses. In the second language, the good reader's edge over the poor reader was greatly reduced. Clarke states that

when reading in English, the good readers were superior to the poor readers in that they were able to produce more acceptable cloze responses. Yet when confronted with difficult blanks, the good readers appear to be a little better than the poor readers in producing high quality guesses (1979, p. 130).

In the second part of the study, Clarke selected a good and poor L1 reader with similar levels of English proficiency. He then analyzed their oral miscues on a Spanish and English reading passage. The research results were similar to the first study. Overall, the good reader made fewer miscues than the poor reader. In Spanish, both readers produced a similar amount of syntactically acceptable miscues, although in English, the good reader produced slightly more syntactically acceptable miscues than the poor reader. In Spanish, the good reader made significantly more semantically acceptable miscues than the poor reader. In English, the good reader produced only slightly more semantically

acceptable miscues than the poor reader. Clarke suggests that language proficiency plays a greater role than previously assumed in L2 reading.

Cloze test performance and oral reading behavior suggest the presence of a 'language competence ceiling' which hampers the good L1 reader in his attempts to use effective reading behaviors in the target language; apparently, limited control over the language 'short circuits' the good reader's system, causing him to revert to poor reader strategies when confronted with a difficult or confusing task in the second language (p. 138).

The implication of this research is that the better the reader's knowledge of the second language the better his or her reading ability. Once the ESL learner becomes competent in the second language, passing through the language competence ceiling, he or she will be better able to apply the reading skills learned in the first language.

To address the issue of language proficiency, Coady (1979) suggests that a psycholinguistic approach to reading can be used to gain insights into why this discrepancy exists. He defines reading comprehension as a result of the interaction of three factors: conceptual ability, background knowledge, and process strategies. Coady defines conceptual ability as a person's basic

intellectual capacity, and background knowledge as that culturally embedded information the reader brings to the task. Processing strategies are the "subcomponents of reading ability"; that is, the "knowledge of phonology, phoneme-grapheme correspondences, grapheme-morphophoneme correspondences, syllable-morpheme information, syntactic information (deep and surface), lexical meaning and contextual meaning, cognitive strategies, and affective mobilizers" (p. 7).

Coady (1979) claims that the ESL reader, as he or she becomes more skilled, moves from concrete to more abstract processing strategies. A beginning ESL reader, for example, would rely more heavily on grapho-phonemic information, gradually shifting to lexical and contextual information as he or she becomes more proficient. He states that

the relative combinations can vary according to the type of material being read, the degree of comprehension desired, the time available, etc. The mature reader will shift and change the process strategies as the occasion warrants. The best combination for any given reading event should be decided on the basis of whatever delivers the most accurate reconstruction. (ibid, p.8).

Although Rigg concurs that L2 language proficiency is an important factor, she suggested, supporting Coady, that

background knowledge plays an important role in reading comprehension.

Rigg (1977) analyzed the oral miscues and retellings of one hundred and twenty elementary age ESL students from Arabic, Navajo, Samoan and Spanish backgrounds. Rigg found that the ESL students were better readers than they were given credit for being. On the average, they read 80% of the passage as written, making oral miscues on 20% of the text. A third of the oral miscues were rated as semantically acceptable before correction: that is, the miscue did not change the meaning of the text, as in, for example, substitution of I'm for I am. The mean "Comprehending Score", those miscues which were evaluated as being semantically acceptable plus those miscues which were corrected, ranged from 47% to 60%. Analysis of the syntactic miscues, before correction, revealed that 55% or higher of the miscues made sense. "These results do show that, on the average, these ESL-speakers read accurately: they produce meaningful miscues; they can correct when their miscues lose meaning; they are handling English syntax" (p. 109). Rigg stated these ESL readers are similar to the L1 readers in Goodman and Burke's 1973 study of native English speakers, except that the L2 readers' Comprehending Score was lower than the L1 readers' Comprehending Score.

In attempting to determine what the study revealed about ESL speakers, Rigg compared the oral miscues of Spanish students, whose Comprehending Score was 58% and Navajo students, whose Comprehending Score was 40%. Analysis of oral miscues revealed their mean scores for semantically acceptable miscues were identical at 35%. The mean scores for syntactically acceptable miscues was nearly identical at 58% for Spanish and 57% for Navajo students. The differences between the two groups were not in type of miscues made but in the quantity and the willingness to regress and correct. Spanish students corrected 30% of their miscues. Navajo students corrected 7%.

Rigg suggests underlying differences between the two groups may have had something to do with the story itself, general ESL proficiency, and status and use of the student's L1 in the school and community (ibid). Rigg suggested that the stories used were "foreign" to the Navajo students, who grew up on a reservation. While some syntactic features appeared to interfere with comprehension, more significantly, the setting and plot of the story were unfamiliar, as were some of the lexical items that embodied unfamiliar concepts. Rigg hypothesized that if the reader cannot determine the meaning of unfamiliar words from the content they cannot judge whether or not their guess makes sense. They are

forced, therefore, to make judgments based on graphophonic information, which hinders the prediction process even further:

The basis for prediction is partly what's in the text, but much more what's in the head of the reader, what s/he knows about the language and the world that the author is presenting. When the reader knows little about the world being presented, and when the author's language differs greatly from the reader's, the reader is going to have a difficult time and probably will make many miscues, and be unable to correct them (1977, p. 114).

While Rigg does not ignore the importance of second language proficiency, she does suggest that background knowledge is an important factor in facilitating the reading process and in reading comprehension.

Summary

This research establishes that all readers appear to use grapho-phonetic, syntactic and semantic cues to reconstruct meaning from text. When trying to explain why L2 readers experience difficulty with text written in the second language, different explanations have been discussed. One opinion is that ability to use good reader strategies is tied to L2 proficiency. It is difficult to argue against the position that proficiency in the L2 is going to affect the students' ability to

handle the text. It is, however, arguable that the pedagogical implication of the research is that if the L2 reader has a problem he or she merely needs instruction in language skills. Rigg (1977) and Coady (1979) have suggested that background knowledge is an important factor in the reading process and reading comprehension. It is in developing further understanding of such factors that recent work in the application of schema theory to reading has proven useful.

The Schema-theoretic Explanation of Reading Comprehension

A schema theory seeks to describe how information is stored in, and retrieved from memory, and how that knowledge affects understanding of any verbal or written text, event or situation (Rumelhart and Ortony, 1977). Bartlett's (1932) pioneering research on remembering demonstrated that remembering was not a static but an active process of which condensation, elaboration and invention were common features. Bartlett hypothesized the process of remembering was influenced by schema which was personally and culturally bound. He believed the process of remembering to be personal "because the mechanism of adult human memory demands an organization of 'schemata' depending upon an interplay of appetites, instincts, interests and ideals peculiar to any given subject" (p.213), and cultural because "recall which is directed and dominated by social conditions takes a

colouring which is characteristic of the special social organization concerned, owing to the play of preferred tendencies in the group" (p. 308). In a series of studies, Bartlett demonstrated the effects of personal and cultural factors on remembering; however, he was vague on how schemata were organized and utilized in the process of remembering.

Rumelhart and Ortony (1977) in their article "The Representation of Knowledge in Memory" extended the work begun by Bartlett. They hypothesized schemata are the "data structures for representing generic concepts stored in memory" (p. 101). These schemata exist for all objects, situations, actions and events. Internally, "a schema contains, as part of its specification, the network of interrelations that is believed to generally hold among the constituents of the concept in question" (ibid). Rumelhart and Ortony (1977) and Rumelhart (1980) stated there were four characteristics of schemata. First, schemata have variables which are filled by information from the text or by default assumptions if the information is not in the text and once all variables are filled the schema is instantiated. Second, schemata are embedded within other schemata. Third, schemata are represented by generic concepts which function at all levels of abstraction. Last, schemata represent conceptual knowledge rather than the simple definitions

of words. Schemata play a primary role in the act of comprehension, the development of memory, the making of inferences and the structure of actions. It is the role of schemata in the act of comprehension that is of primary concern.

A schema-theoretic view of reading highlights the role of the reader in the reading act. Fundamental to this view is the assumption that text does not in itself carry meaning. Instead the text provides directions to the listener or reader for retrieval and construction of meaning from his or her background knowledge (Adams and Collins, 1979).

Adams and Collins (1979) have developed a model of the reading act within the framework of a schema theory. For the sake of discussion, they identified four successive hierarchical levels of knowledge in reading. These levels, from general or abstract to specific are; knowledge and processing at the interpretive level, knowledge and processing at the semantic level, knowledge and processing at the syntactic level, and knowledge and processing at the letter and word level.

Adams and Collins (1979), as did Rumelhart and Ortony (1977), hypothesized that the structural organization of knowledge is a hierarchical composition of schemata embedded within higher-order schemata. At the top of the hierarchy the schemata are abstract in

nature and provide the framework for all the sub-schemata which 'fall within its domain'. Moving down the hierarchy the number of embedded related schemata increases as their scope becomes more specific in nature. The interrelationships between and within levels are specified, so that once one element is identified so to is the surrounding related schemata, thus instantiation occurs.

The researchers have not only hypothesized about how knowledge is structured but how information is processed. The processing of new information is based on the principle that all information must be accounted for, i.e. input must be mapped against some schema at various levels, and all schemata and input must be compatible for 'instantiation'. Collins and Adams (1979) hypothesized there are two modes of processing data: bottom-up or data driven and top-down or concept driven. Bottom-up processing, activated by incoming data, moves data up through successive levels of schemata. Top-down processing, activated by high order schema, searches down through the hierarchy for data. Both processes occur simultaneously, supporting and constraining each other. Bottom-up processes are sensitive to information which might not fit hypotheses generated by high order schema about the meaning of text, and top-down processes help

resolve ambiguity and select alternative hypotheses, if necessary.

Comprehension, then, is the coordinated activity of all schemata, at all levels, to instantiate slots through simultaneous bottom-up and top-down processing. Anderson and Pearson (1984) suggested that comprehension refers to the "process of interpreting new information and allowing it to enter and become a part of the knowledge store...interaction of new information with old knowledge" (p. 255).

Within this schema-theoretic model of reading any number of problems can arise for the reader. Adams and Collins (1979) suggested the reader may be resource or data limited. A reader is resource limited when two activities needed for comprehension compete for attention and both demands can not be met. This processing problem typically occurs when too much attention is directed at the letter or word level at the expense of semantic or interpretive processing. A reader is data limited when there is a problem mapping the incoming information on to the memory structure or schemata. Data processing limits can be caused by either poor quality text (signal data limits), that is, where the reader has the appropriated schemata but there are insufficient clues in the text to activate it. Data processing limits may also be caused by the reader not having sufficient schemata for mapping

input (memory data limits), that is, where there are gaps in the reader's background knowledge. Rumelhart (1980) suggested that reading comprehension breakdown may also be a result of developing a consistent interpretation of the story but not the one intended by the author. They "understand the story but misunderstand the author" (p. 48).

Cultural Differences between L1 and L2 Readers

It is the semantic and interpretive level that has been of interest to L2 reading educators and researchers using a schema-theoretic framework. Piper (1985, p. 187) states

The second language learner brings with him to the task of reading in a foreign language sets of expectations that are founded in his own cultural, educational, and literary experiences--expectations which may affect his comprehension of second language texts as well as his confidence and motivation throughout the sequence of L2 reading acquisition.

This suggests that, beyond language differences, sources for some of the L1/L2 reading differences may be found in culturally different experiences of the individual or culturally different rhetorical patterns found in texts.

To facilitate discussion background knowledge will be divided into content and formal schemata. Content

schemata (Adams and Collins' semantic knowledge) refer to the sum total of individual experiences, direct and vicarious. Formal schemata (Adams and Collins' interpretive knowledge) refer to the reader's knowledge and expectations of a given text's rhetorical structure-- for example, whether it has a predictable 'narrative' or 'expository' structure.

Reading comprehension research for L2 speakers has its foundations in first language reading research. Although some selected first language reading comprehension research will be presented as the foundation for the research that has been carried out in L2 reading research, the focus will be on cross-cultural and L2 research. The effects of content and formal schemata on L2 reading comprehension will be discussed separately.

Effects of Content Schema

Many studies have demonstrated the effects of background knowledge on the recall and interpretation of reading passages. This research can be divided into those studies which used ambiguous texts (i.e. texts which deliberately lead to multiple interpretations) and those which used unambiguous text (i.e. texts which are intended to have a single interpretation). First, studies using ambiguous text will be presented, then studies using unambiguous text will be presented.

Carrell (1983) investigated familiarity, i.e., prior general knowledge of content area; context, i.e. prior knowledge that the text is about a particular topic; and transparency, i.e., where lexical items clearly reveal text content. Carrell and Wallace (1983) studied the effects of familiarity and context only. In each experiment, both individual and interactive effects of these variables on reading comprehension of native English speakers, advanced ESL speakers, and high intermediate ESL speakers were studied.

In Carrell's (1983) study context, familiarity, and transparency played a significant role in reading and the amount of text recalled for native English speakers. For advanced ESL students familiarity was the only variable that significantly affected the amount of text recalled. For the high intermediate ESL students no variable significantly affected the amount of text recalled. In addition, Carrell found that ESL students consistently overrated their comprehension of the text based on the amount of the text they actually recalled.

In Carrell and Wallace's (1983) study of the two variables, context and familiarity, neither context nor familiarity affected the amount of text recalled for either ESL group. For the native English speakers only context affected the amount of text recalled. Carrell and Wallace suggested that familiarity was not a

significant factor because the passages were opaque. For both studies the researchers suggested that results indicated that ESL readers do not process text like native English speakers, as they do not utilize context or contextual clues nor in the long run are they able to judge how easy or difficult a text is for them to comprehend. They suggested even advanced ESL readers appear to be linguistically bound by (to) the text.

Lee (1986) contradicts Carrell's interpretation of her 1983 experimental results. He replicated her study but instead the subjects were allowed to write their recalls in their native language. Results demonstrated that "all three components of background knowledge play some role in the way learners of Spanish read, comprehend, and recall passages" (p. 352). In addition, he found, the interaction between the reader and the three components to be complex. Lee suggested that these results demonstrate that L2 readers (in this case foreign language learners) may comprehend the text but are unable to express their comprehension in the target language.

In Carrell's (1983) and Carrell and Wallace's (1983) studies it is difficult to isolate the results from the text. The use of ambiguous text may be confounding the results, making a difficult task for the ESL reader impossible. Pearson, Hansen, and Gordon (1979) suggested that "while ambiguous text can be used to establish the

power of a variable, validation in natural text is necessary prior to wide-scale acceptance of a conclusion" (p. 202). Lipson (1983) suggested that ambiguous text may cause 'spurious differences' in comprehension that might not occur when reading unambiguous text. In addition studies using unambiguous or natural passages have more ecological validity for the classroom teacher. Several studies using unambiguous texts establish the effect of content schema on subjects' reading comprehension.

Steffensen, Joag-Dev, and Anderson (1979) expanded Bartlett's (1932) experiments into a cross-cultural comparison of the effects of content schemata on reading comprehension. Two groups--from India and the United States--read each of two letters. One letter described an Asian Indian wedding, the other described an American wedding. Dependent variables were reading time, amount of text elements recalled, amount of important and unimportant text elements recalled and modification of text in written protocols. In general, results indicated reading time was faster for culturally familiar material. Subjects recalled more total elements, and more elements rated as important in culturally familiar material than unfamiliar material. Of particular interest and supporting Bartlett's findings, the interaction between nationality and passage recall was significant. Both

groups elaborated text during written recall of culturally familiar material and distorted written recall of culturally unfamiliar material. Elaborations were defined as "culturally appropriate extensions of the text" and distortions as "culturally inappropriate modifications of the text" (Steffensen, Joag-Dev, and Anderson, 1979, p. 15). The distortions demonstrated the reader's effort to bring unfamiliar content in line with their own cultural background.

In the same vein and with similar results, Johnson (1981) explored the effects of language complexity and cultural origin of the text on the reading comprehension of Iranian intermediate/advanced ESL students and native English speaking students. Half of the ESL and native English speakers were randomly assigned to two groups. One group read the simplified versions of an Iranian and American folktale, the other group read the unadapted versions of the same folktales. Both tales had "similar motifs which were culturally distinct yet were equivalent in plot construction" (p. 170). For ESL students, syntactic and semantic complexity had less effect on recall than cultural origin of the material. For native English speakers language complexity and cultural origin affected recall. Both groups recalled culturally familiar stories better than culturally unfamiliar

stories. Both groups elaborated culturally familiar material and distorted culturally unfamiliar material.

Lipson (1983) explored the effect of religious affiliation on the reading comprehension of unambiguous expository text of upper elementary Catholic and Jewish native English-speaking students. All students read three different passages describing a Bar Mitzvah, a first Communion and a culturally neutral passage. Students read culturally familiar passages more quickly, although results were only significant for the Jewish students. In free recall subjects remembered more textually explicit propositions and generated more culturally consistent inferences (elaborations) for culturally familiar than culturally unfamiliar material. When reading culturally unfamiliar texts, accuracy of explicit information was reduced and distortions increased. Children experienced greater success in probed recall on culturally familiar than unfamiliar text. Overall recall of the culturally neutral passage was excellent.

In Aron's (1986) experiment, intermediate and advanced ESL and native English speaking students read two expository passages taken from a standard reading test. An anthropology passage about humans as toolmakers was considered universal. The other passage, dealing with the historic problem of native Indian and white

relations in the United States, was considered cultural specific. In recall of the universal theme there was no significant difference between first and second language speakers of English. Native English speaking students remembered significantly more of the culture specific passage than ESL students.

Results from these studies clearly indicate that content schemata affect reading recall and comprehension. In recall protocols subjects elaborated culturally familiar material or material of which they were knowledgeable, and distorted culturally unfamiliar material or material for which they had little background knowledge. Within a schema-theoretic framework these findings suggest that subjects' content schemata aided inferencing. It is not unreasonable to suggest that, in general, reading culturally unfamiliar material inhibits comprehension.

Common sense dictates that developing the reader's content schemata prior to reading should improve comprehension. The critical question is how one goes about doing that for ESL students. Two studies have explored the possibilities of teaching content schemata to ESL students to improve reading comprehension.

Johnson (1982) explored the effects of building background knowledge on reading comprehension. Four groups of advanced ESL students read a five paragraph

passage on Halloween after participating in activities connected with the holiday. Three of the paragraphs contained information about familiar experiences they had had, the remaining two paragraphs were about obscure, previously unknown information about Halloween. The first group read the passage without a vocabulary list. The second group read the passage after prestudying selected vocabulary. The third group read the passage in which the vocabulary had been glossed, i.e., the vocabulary is highlighted and defined in the text. The last group read the glossed passage after prestudying selected vocabulary.

Overall written recall was best for the three paragraphs from the passage based on their previous experiences; more propositions and their relationships were correctly recalled. Exposure to difficult vocabulary in any form did not seem to affect comprehension, as there was no significant difference between the results of these groups and the control group which received no vocabulary instruction. Interestingly, pre-studying without being able to refer to vocabulary when reading was found to be more successful than prestudying with glossing. Johnson suggests that glossing may have lead to word by word reading thereby interfering with general comprehension. Familiarity with the topic seemed to be the most effective way to improve

reading comprehension in this particular situation. In addition, it seems reasonable to suggest this study indirectly supports the idea that it is not the isolated word but the connection between the words and what the reader knows that is important.

Hudson (1982) designed an experiment to determine if introducing background information would compensate for low language proficiency and improve comprehension. In this experiment three groups--beginning, intermediate, and advanced ESL speaking students--read three passages at their appropriate reading level. For each passage each group experienced each of the three types of preteaching strategies--preread, vocabulary, and read-test. In the preread technique students looked at and discussed a set of pictures. They then silently wrote self-generated predictions about the passage content, read the passage, and then took the comprehension test. In the vocabulary technique, students received a vocabulary list which they read and for which they received oral definitions. Subjects then silently generated written predictions, read the passage and took the comprehension test. In the read-test condition, students silently read the passage, took the comprehension test and then were allowed to repeat the process, the second test being identical to the first.

All groups experienced improved reading comprehension; however, the most interesting result was that different types of intervention were effective at different levels of proficiency. For beginning and intermediate students the prereading strategy was most successful. For advanced ESL students the read-test was more successful than the preread or vocabulary techniques, though not significantly. Hudson suggested advanced ESL students have more robust schemata, are better able to form and alter schemata, and bring more background information to the reading process than lower level readers. In direct response to Clarke's short circuit hypothesis (low language proficiency inhibits the transfer of reading skills from L1 to L2) Hudson stated, that his study demonstrated that linguistic ability is only one factor in L2 reading comprehension.

All of the above experiments, directly and indirectly, support developing background knowledge to improve reading comprehension which is consistent within a schema-theoretic approach to reading. Other researchers have focused on the effects of rhetorical structure on cross-cultural or L2 reading comprehension.

Effects of Formal Schemata

Kaplan (1980, p. 400) argued that rhetorical structure was not universal, but "varies from culture to culture, and even from time to time within a given

culture". After analyzing six hundred essays of L2 writers from three language groups, Kaplan (1980) found that each group wrote essays that shared rhetorical patterns that were different from English. To cite two examples, those students with a Semitic language background used "a complex series of parallel constructions, both positive and negative" (p.403). Students with an Oriental language background approached writing by "indirection".

In this kind of writing, the development of the paragraph may be said to be 'turning and turning in a widening gyre'...[which] turn around the subject and show it from a variety of tangential views, but the subject is never looked at directly (p. 406).

He states "that there are a number of different paragraph orders available in any language, but there is a clear preference of one particular order, at least as far as expository prose is concerned" (p. 416).

Results of research by Hinds (1983) supports Kaplan's assertion that rhetorical organization may be culturally specific. In his study on contrastive rhetoric, he found the discourse patterns of text in Japanese, Arabic and English were different.

The property of text affecting reading recall and comprehension is text structure which Meyer and Rice (1984) define as "how ideas in a text are interrelated to

convey a message to a reader" further, the text structure "specifies the logical connections among ideas as well as subordination of some ideas to others" (p.319).

Typically research in text structure is divided between narratives and exposition. Pearson and Camperell (1985) note both types of text are broken down into propositions which are arranged into a hierarchical order. The most important or abstract ideas at the top, the least important at the bottom. In expository text, ideas are arranged hierarchically according to how superordinated the idea is. In narratives, importance is judged on the centrality of the ideas to the story, therefore, characters and goals are high in the hierarchy (ibid). In general, researchers have sought to determine the effect of text structure on reading recall. In the following sections a discussion of research in narratives will be followed by a discussion of research in expository text.

Narratives.

Rumelhart (1977), Thorndyke (1977) and Mandler and Johnson (1977) were among the first to develop grammars of simple stories based on work conducted with native English-speaking students. Though different, they share many assumptions and characteristics. Thorndyke (1977) defines narrative structure as the "syntax of plot

organized in a narrative, that is the grammar for describing the legal combinations of abstract narrative elements" (p. 78). Relationships among component parts are described independently of content. A story schema is the expectations we have about that story structure (Thorndyke, 1977; Mandler & Johnson, 1977). Mandler and Johnson (1977) suggest this schemata is developed by listening to stories and developing notions of sequence and well-formedness; and experiences help develop knowledge of causal relations and action sequences. As mentioned, propositions in a story are related by their position in the hierarchy. Major constituents (main ideas) are at higher levels and peripheral information (details) are lower in the hierarchy (Rumelhart, 1977).

Kintsch and Greene (1978) conducted two experiments to determine if narrative rhetorical structure affected recall of native English-speaking students reading culturally familiar and unfamiliar passages. In the first experiment subjects read a passage from Decameron, considered rhetorically familiar and an Alaskan myth which followed a culturally unfamiliar rhetorical pattern. The students' summaries of the Decameron passage were better than the Alaskan myth. Students tended to remember the 'odd' details in the Alaskan myth and the 'gist' of the Decameron passage. In the second experiment two groups of native English-speaking students

read each of two passages: one a well-structured fairytale, the other an American Indian tale with neutral and accuracy instructions. Written recalls were analyzed for accuracy and gist. More propositions were recalled for passages in which the students received accuracy rather than neutral instructions. When evaluating the 'gist' of the recall, all students recalled the fairytale under both instructional conditions; all students did not succeed in recalling the gist of the Indian folktale.

In Rice's (1980) experiments, native English-speaking subjects read and recalled familiar and foreign passages. In the first experiment sixty subjects read and recalled passages where the content was culturally familiar but deliberately miss-structured. In the second experiment seventy subjects read and recalled, immediately and one week later, two versions of each of three Eskimo stories. One version was a duplication of the original Eskimo stories the other was an "Americanized" version making the rhetorical structure culturally familiar even though the content was unfamiliar. In both experiments subjects recalled miss-structured or culturally different rhetorical patterned stories in a way that conformed to a culturally familiar story structure. In both experiments passages that violated the readers' expected rhetorical format fostered a significantly higher proportion of structurally

important additions. Where expected story components were missing, subjects imported material, deleted the incomplete episode or collapsed two or more episodes. Story components were also improperly recalled so as to fit the culturally familiar story schema criteria. In addition there were also content importations. Results indicate that subjects recalled stories in a manner that conformed to their cultural expectations. Rice (1980, p.168) states, "the study has demonstrated that a theory of comprehension based on assimilation to, or by, cultural schemata can account for the stereotypical or characteristic form of cultural interpretations of meaningful materials".

Carrell (1984a) designed an empirical study, after Mandler's work, to determine if story structure affected ESL students' recall. Intermediate ESL students of various cultural origins read two variations of each of three simple stories. One version was well structured, following Mandler's story grammar. The other version was interleaved which deliberately violated the ideal order. Results showed that there was no significant difference between the two versions in the number, in whole or part, of stories recalled. In addition, there was no significant difference in the total number of episodes recalled between the two versions. The interleaved versions were recalled according to ideal order and more

nodes were recalled for the well-formed than interleaved story. These studies demonstrate ESL students seem to follow a story schema.

In many studies the effects of content and formal schemata have been confounded. Piper (1985b) designed an experiment to address this issue. A Vietnamese fable and an Aesop fable were selected. Both were considered "typical of other parallel stories in each culture" (p. 190). A Vietnamese version of an Aesop fable and a western version of a Vietnamese fable were written following key western and Vietnamese formal features. Adult Vietnamese immigrant students in an intermediate and advanced TOEFL preparation class read one of each of the four story versions. They then wrote an immediate and a one week delayed recall. Results indicate that the Vietnamese version of the Vietnamese fable was remembered best while recall was poorest for the unaltered Aesop fable. The crossed stories were remembered equally well and fell between the Vietnamese fable and the Aesop fable, demonstrating that cultural background knowledge of content and form was equally important.

Carrell (1987) also undertook to separate the effects of formal and content schema on ESL reading comprehension. High intermediate ESL subjects were divided into two groups: Muslim and Roman Catholic. Two fictionalized historical biographies of religious figures

selected from each religion were written. For each historical narrative an altered version was created by interleaving events from episodes one and two. Both groups read the two versions of the Roman Catholic historical narrative the first day and the Muslim historical narrative the second day. Within each group half read the interleaved version and half read the unaltered version. After reading, the subjects answered multiple-choice questions and then wrote a recall protocol.

As with Piper's (1985b) findings, results of both exercises showed that narratives containing familiar content and form were easiest to remember and narratives containing unfamiliar content and form were the most difficult to remember. Unlike Piper's (1985b) findings, Carrell found narratives containing familiar content and unfamiliar form easier to remember than unfamiliar content and familiar form--unfamiliar content seemed to cause more trouble than unfamiliar form. Carrell noted, however, that content and form affected comprehension differently. Familiarity with content significantly affected the recording of the main event within each episode and was the source for culturally appropriate elaborations and culturally inappropriate distortions. Rhetorical form, however, significantly affected the recall of the two top ideas of each text. In the

interleaved versions subjects failed to differentiate the two episodes. Rhetorical form also affected sequence of events and temporal relations among events.

Research in the effects of narrative rhetorical structure on reading comprehension suggests that rhetorical structure does effect comprehension. More research is needed, following the lines of Piper's (1985b) and Carrell's (1987) work, in attempting to separate the affects of content and formal schema on reading comprehension.

Exposition.

Cross-cultural and/or L2 research on the effects of expository text on reading comprehension is far leaner than research in the area of narratives. There are many forms of expository text analysis. Meyer's has been selected because her analysis has been frequently used in educational research, it corresponds to forms used in the traditional school of rhetoric, and it corresponds to forms teachers already use in the classroom. Meyer (1977a) states that much of what is learned in school is learned from text or lectures; therefore, it is important to establish how we learn from listening or reading prose, not just how much is learned. Meyer (1977a, 1977b) sought to identify what type of information was recalled and if the rhetorical structure of text affected how well information was remembered. Meyer (1977a,

1977b) suggested that expository text content can be represented in a hierarchically arranged tree structure. Nodes in the tree structure are filled by content words from text, and lines between the nodes establish how the content is organized. In addition, labels in the tree structure explicitly state and classify relationships among content (1977, p.13). Meyer refers to these diagrams as content structure. In order to minimize confusion and maintain a distinction between content and formal schemata these diagrams will be referred to as text structure. The text structure can be 'read' from top left, highlighting the the supraordinate ideas, to bottom right, highlighting subordinate ideas.

Meyer and Rice (1984) outline five types of expository text structures. First is the antecedent/consequent text structure which shows the causal relationships between ideas. Second, the response text structure is found in passages where problems and subsequent solutions, remarks and replies, and questions and answers are stated. Comparison, the third type of textual organization, establishes similarities and differences among stated ideas. Collection establishes the relationship among a group of ideas on the basis of some common factor. The final text structure description involves the expansion of some general idea by listing

attributes, settings, explanations or some other specifics.

Meyer (1977a, 1977b) developed many experiments to determine the relationship between text structure and the quantity and type of information recalled. She analyzed the structure of two 500 word passages, identifying high, middle and low information. Three groups of college students listened to the two different passages. One group heard the passages once, one group heard the passages twice, and one group heard each passage three times and then each group completed a free recall task. For both passages, under all conditions, information high in the structure was recalled better than information low in the structure. There was no consistent difference for recall between information in the middle and low position. When examining the recall of grade six students, Meyer (1977b) found that the three groups--high, middle and low ability--of students remembered more information located high in the text structure than low in the text structure. High ability students remembered more overall than middle ability students, who remembered more than low ability students.

In another experiment, college-age students read two versions of three different passages. For each passage a target paragraph was written. In one version of the passage the target paragraph was located high in the text

structure. In the other version the target paragraph was located low in the text structure. Each of the two groups read three of the six passages and wrote an immediate recall, a delayed recall one week later, and a third cued-recall. Results indicated that recall of information in the target paragraph was significantly higher when the paragraph was in the high position. In addition, subjects forgot significantly more when the target paragraph was in the low position rather than the high position. Meyer's experiments have consistently demonstrated that text structure affects what type of information is remembered. Ideas located at the top of the passages' text structure are remembered better than information located at the bottom of the text structure.

Connor (1984) examined differences in recall of text between English first and second language learners. Adult students from three language backgrounds--English, Spanish and Japanese--read an expository passage that followed a problem/solution top level structure and then wrote immediate recalls. When comparing recalls, native English speakers remembered more in terms of total recall than ESL students. Significantly, there was no difference between the three groups in the recall of high-level ideas in the text. The difference in overall recall was due to the difference between L1 and L2 speakers recall of subordinate ideas. L1 speakers

remembered more than L2 speakers and emphasized different aspects of the text.

In following up Meyer's (1977a, 1977b) work, Carrell (1984c) studied the effects of text structure on the reading recall of advanced ESL students from various linguistic backgrounds. Four versions of a single passage were written. Identical content was written to follow the four top level structures: collection of description, cause/effect, problem/solution, and comparison. Students were randomly assigned to one of four groups. Each group read one version of the passage and wrote an immediate recall and 48 hours later a delayed recall. Results indicated that the more tightly organized the text--causation, problem/solution, and comparison versus collection of description--the better the recall. Looking at linguistic background by discourse type it appears that discourse types have a different effect on quantity of ideas remembered in written recall. In addition, as with previous research those who recognized text structure in the text and utilized it to organize their written recall remembered more than those who did not. Again, only about twenty-five percent of readers utilized the structure strategy.

Carrell (1985) designed a study to determine if explicitly teaching text structure can facilitate ESL reading comprehension. Intermediate proficiency ESL

students of various linguistic backgrounds were assigned to either the experimental group receiving text structure instruction or the control group, who performed various linguistic operations on the same passages. Students received training in five successive one-hour sessions on four major expository types--collection of description, causation, problem/solution and comparison. Passages were taken from naturally occurring texts. As time progressed, passage length increased and top-level structure became more subtle.

Both experimental and control groups received a pre- and post-test to determine the effects of text structure instruction. The experimental group took a second post-test to determine a persistence of training effect. Only comparison and collection of description were tested. Testing procedures consisted of students reading a passage after the instructional period, writing an immediate recall and identifying the overall structure of the text.

Results indicated training enabled students to recognize and utilize text structure in recall between the control and experimental group. In addition, results indicated the persistence of the training after three weeks. Finally, the experimental group remembered more of the middle and low level ideas than the control group in the immediate written recall. Perhaps most

significantly student reaction to training was very positive. Many students felt more confident in their ESL reading ability after training.

Summary

This research demonstrates that reading in a second language is a complicated process that involves more than L2 language proficiency. While the L1 and L2 reading process may be similar the result, i.e. comprehension, is very different. Cross-cultural and L2 reading research within a schema-theoretic framework has shown that content and formal schema affect reading comprehension. These results have important implications for teaching in the ESL classroom, ESL curriculum planning, and instruction for the ESL student streamed in the regular classroom.

The Current L2 Teaching Paradigm

During the seventies second language methodology shifted from audiolingualism to communicative language teaching. Audiolingual teaching methodology, based on the tenets of behavioural psychology and structural linguistics, focused on developing oral language proficiency. Instruction began with listening and speaking. Reading and writing were of secondary importance and were introduced only after the learner was a proficient speaker of the second language. Classroom activities were teacher-centered; and curriculum content

was developed out of the demonstrated differences between the learner's first language and the learner's second language to be learned. Audiolingualism was challenged in the seventies as a result of research by cognitive psychologists, generative linguists, and the dissatisfaction of many educators with their students' apparent inability to use the L2 in informal, communicative situations (Savignon, 1983).

A new concern with the students' ability to communicate in a variety of settings became of primary importance--the notion of communicative competence evolved. Communicative competence includes

knowledge of sociolinguistic rules, or the appropriateness of an utterance, in addition to knowledge of grammar rules, the term has come to be used in language teaching contexts to refer to the ability to convey meaning, to successfully combine a knowledge of linguistic and sociolinguistic rules in communicative interactions (Savignon, 1983, p. v).

The basic tenets of communicative competence have provided the framework for many of the new ideas in second language teaching.

Nattinger (1984) has suggested that current second language teaching practices have evolved into a method of instruction which he calls Communicative Language Teaching (CLT). This approach incorporates various

methods currently being used in the ESL classroom. It is, he states, "less vague than former 'communicative competence' methods, less limited than notional-functional ones, less ethnocentric than many humanistic methods, and less psycholinguistically objectionable than audiolingual ones" (p. 391). For all its diversity, CLT practice shares three basic principals:

1) Communicative competence is the goal at each level of instruction, 2) interaction between language users and their environment is a primary objective of all exercises, and 3) the processes involved in using language, that is the strategies for making sense of something and for negotiating meaning, are the center of attention. (p.391)

Mohan (1986) suggests that educators need to move "from language in isolation to language as a medium of learning" (p.2), which he classifies as interactive language teaching. This approach is defined as

language teaching for and through the normal activities of the school and the English-speaking community; language teaching through content and for content...interactive language teaching is an educational policy which recognizes the importance of language as a medium of learning. (p. 4)

All of these approaches to L2 learning place reading as a major language system to be learned in its own right and

not as an adjunct to oral proficiency. Reading is considered as a symbolic system to be learned, interpreted and negotiated. For students enrolled in high school the classroom is the communicative environment: reading to extract information from texts is clearly an activity that falls in the realm of the students' communication needs for the successful completion of content area course work, a fact of which the students themselves are aware. Ostler (1980) found that undergraduate ESL students at a university in the United States felt learning to read and comprehend academic material was their greatest need. It is reasonable to assume secondary students feel that same need. It is important, therefore, that ESL and content area teachers develop teaching strategies that help students utilize texts. It is in this context that the current study was undertaken.

Rationale for the Study

Many studies have demonstrated the effects of accessing or building content schemata on facilitating reading comprehension. Other studies have demonstrated that formal schemata is possibly culture specific and that it can significantly affect comprehension. Overall the findings demonstrate that these are powerful variables in the reading comprehension of ESL students.

Various factors make it difficult to deal with these factors (especially rhetorical structure) from an educational perspective, in particular, that, typically, various cultures are represented in any one ESL classroom. From an educational point of view, therefore, it is necessary to teach from an English rhetorical structure perspective as opposed to a contrastive rhetoric perspective.

Many textbooks and researchers have suggested, in general, that specific teaching techniques should help bridge the gap for ESL readers. Yet very few studies have been undertaken in ESL reading research that specifically assess how useful or how appropriate these strategies might be if they were used by ESL or content area teachers. The purpose of this study is to look at three teacher intervention strategies.

CHAPTER THREE

Design, Procedures and Hypotheses

Overview

Reading instruction has become an important component of second language instruction. To develop a better understanding of what is involved in L2 reading comprehension researchers have adopted and expanded work undertaken by researchers exploring first language reading comprehension, in particular, research completed within a schema-theoretic framework.

Most of the research on L2 schemata and reading has focussed on determining the presence and nature of schemata in L2 language learners, and speculating on the effects of the student's content and formal schemata on their reading comprehension. From this various researchers have offered suggestions about issues teachers should be sensitive to and reading instructional practices that should enhance reading instruction.

Very few studies have been undertaken that explore whether or not teaching strategies that are compatible with the schema-theoretic framework successfully improve ESL students' reading comprehension. Johnson (1982) studied the effect of building background knowledge on reading comprehension and found that familiarity with the topic read was better than prestudying or glossing

vocabulary. Hudson (1982) found that building background knowledge by having ESL students look at and discuss pictures and then generate predictions about passage content a successful technique. This despite the low English ability of many of the students--leading him to hypothesize that it is possible to circumvent to some extent linguistic ability as a factor. Carrell (1985) found that explicitly teaching text structure to ESL students helped improve the quantity and type of information recalled over those who did not receive the training. The purpose of this study was to specifically examine whether teaching techniques compatible within a schema-theoretic framework would enhance ESL students' reading comprehension regardless of language ability.

In this study three passages were selected from texts that are used in Alberta high schools. Three treatments--vocabulary, structured overviews and pattern guides-- compatible with a schema-theoretic framework were selected and developed for each of the passages. Three groups of ESL students participated in the experiment.

Subjects

Three intact ESL classes, each located in different schools in Calgary, were selected as subjects for this experiment. All three classes were designated by the school as ESL 10C classes. This designation is used in

compliance with the Alberta ESL High School Curriculum (1986), which states:

ESL 10C is a five-credit course (125 hours of instruction) designed to meet the communication needs of ESL students who are at the intermediate to advanced level of English language proficiency and who wish to further their education in a senior high school program. (p. 4)

It is the last ESL class that students take for credit before being fully integrated in regular classes.

All of the students participating in this study had already taken several ESL courses and, in particular, some form of what the Alberta Board of Education now calls ESL 10B. The ESL 10B Curriculum Guide (1986) states:

the goal of ESL 10B is to provide students with the opportunity to develop and coordinate particular skills while reading, listening and viewing materials related to content areas. The language of these materials should approximate that used in content area materials. (p. 4)

It was presumed, therefore, all of the students had had some experience with reading content area materials, recognizing rhetorical structure and answering comprehension questions. In addition, all of the students

were partially mainstreamed into regular academic and nonacademic courses.

The ESL students who participated in this study represented diverse ethnic backgrounds. In this case the three ESL 10C classes, hereafter referred to as classes A, B, and C consisted of 8, 11 and 16 subjects respectively.

Of the eight subjects in class A, four were male and four were female. The class was ethnically mixed. Two students were from Vietnam, one was from Thailand, one was from Sri Lanka, three were from Hong Kong, and one student was from Portugal. Their ages ranged from 16 to 19 with the median and mode at 17.

Of the eleven subjects in class B, four were male and seven were female. All of the students were Vietnamese. Their ages ranged from 16 to 19. The median age was 17 and the mode was 17/18.

Of the sixteen subjects in class C, five were male and eleven were female. The class was ethnically mixed. Two students were from Hong Kong, one was from Tanzania, eleven were from Vietnam, one was from Macau, and one student was from Laos. Their ages ranged from 16 to 20 with the median and mode at 18.

Materials

The materials used in this experiment consisted of three reading passages, nine comprehension questions for

each passage, and three treatments administered at the beginning of each class.

Passages

Three expository passages of approximately 300 words in length were taken from instructional materials that are used in Alberta high school classrooms (see Appendix A). The use of authentic text was considered important because it is the text that ESL students must learn to manage in the ESL classroom. They must make the transition from material written to teach the ESL student to read or to develop language proficiency, to authentic text written to impart important information. In addition, ESL students are often taught to identify and use rhetorical structure with well-formed passages. Unfortunately, as Vacca and Vacca (1986) point out, classroom texts are complex and reflect a variety of intermingled patterns, so students must learn how to deal with the complexities of authentic text.

Rhetorical structure identification as outlined by Vacca and Vacca (1986) in "Content Area Reading", a text used at the University level in teacher preparation programs, was used as the guiding principle for passage structure identification. To determine the rhetorical structure of each passage, the important ideas in the passage and the predominant relationship between those

ideas, as reflected in common connectives and other support words, were identified.

All three passages were balanced for length and readability. Parsons (1981) notes that there are many limitations of the Fry Readability Measure in determining text complexity. He states, however, that the formula can be used to "give a gross estimation of readability" (P.54). With this understanding, the Fry Readability Formula was used to ensure that the passages were at the same grade level. The reading level of each passage was grade seven.

Passage One is on the topic of aggression and was excerpted from the magazine *Canada and the World* (Sept. 1982, p.12-13), which is designed for use in high school social studies classes. The passage is 309 words in length. The passage reflects an enumeration pattern. Niles (1965) in her research found that enumeration was the most common rhetorical structure used in textbooks, so the inclusion of this structure was considered important. In this passage the author defines aggression, and then goes on to list three different theories of the causes of aggressive behaviour. The connectives first, second, and third are used to introduce each of the theories. Each of the theories is related to the main idea, but they are not related to

each other, so it is not necessary to understand theories one or two to understand theory three.

Passages Two and Three were taken from the science textbook Modern Biology. This textbook is a recommended alternative text, in Alberta, for Biology 10/20. Both passages required a minimal amount of editing to conform to length while retaining meaning.

Passage Two is 308 words in length and deals with the problems of wind erosion. This passage reflects a problem solution pattern in a question-answer format. The problem of wind erosion within a historical context is discussed. The question--How can dust storms be prevented?--is asked and several solutions are offered.

Passage Three is 316 words in length and deals with the problems of water erosion. It is an ill-defined passage which incorporates cause-effect, problem/solution, and enumeration, therefore, it was identified as combination passage. In the passage, the concept of erosion is discussed and then the problems caused by several types of water erosion and appropriate solutions are outlined.

Questions

Nine comprehension questions were constructed for each of the passages (see Appendix A). There are various taxonomies used to construct questions for any reading assignment. While based on different theories of

cognitive operations, all seem to incorporate the notion of three levels of comprehension: literal, interpretive and applied. Herber (1978) refers to the literal level as reading the lines to determine what is being said, the interpretive level as determining the relationships between the lines, and the applied as identifying relationships between ideas "which extend beyond those immediately identifiable in the reading selection (p. 40).

Pearson and Johnson's (1978) comprehension question taxonomy was selected for two reasons. First, Pearson and Johnson's taxonomy is based on the current schema-theoretic approach to reading comprehension which is being explored in this study. Second, the criteria for their taxonomy are clearly outlined, making classification of comprehension questions relatively straight-forward.

Pearson and Johnson (1978) have developed three categories for the question-answer relationship which, they state, "capture the relationship between information presented in a text and information that has to come from a reader's store of prior knowledge (scripts and schema)" (p. 157). These three question types are textually-explicit, textually implicit, and scriptally-implicit. Textually-explicit question types are those in which the

question-answer relation <in this case anticipated answer> is classified as textually explicit if both question and answer are derivable from the text and if the relationship between question and answer was explicitly cued by the language of the text (p. 163).

A textually implicit question-answer relation is one in which "both question and answer are derivable from the text *but* there is no logical or grammatical cue tying the question to the answer *and* the answer given is plausible in light of the question" (p. 163). The scriptally implicit question-answer relation is one in which "a plausible nontextual response is given to a question derivable from the text" (p. 164).

Nine comprehension questions were constructed for each of the passages. For each set of nine questions, three were textually explicit, three were textually implicit, and three were scriptally implicit. An independent rater was used to establish the reliability of question classification for all three passages. First, the rater was given an explanation of Pearson and Johnson's classification scheme. Then the rater read one of the passages. After reading the passage the rater read through the nine questions and identified to which of the three question-answer categories they belonged. Inter-rater reliability for question classification of

all three passages was 85%. The discrepancies in classification were discussed and relevant questions were altered.

Treatments

Three different experimental treatments--vocabulary, structured overviews, and pattern guides--were utilized to help students "unpack" information in content area reading materials to aid comprehension (see Appendix B, C, and D respectively). Within a schema-theoretic framework, enhancing the student's ability to unpack content can be approached in two ways. First, the student's knowledge structure or content schemata can be developed. Second, the student's formal schemata, i.e. knowledge about the text's rhetorical structure can be developed. Vocabulary and structured overview treatments enhance the reader's content schemata. The pattern guide enhances the reader's formal schemata.

Structured overviews and pattern guides were selected because they are compatible with the schema-theoretic approach to reading comprehension. In addition, they are recommended to content area teachers to facilitate student learning. They are found in education textbooks used in University teacher education courses designed to teach reading in the content areas (Herber, 1978; Vacca and Vacca, 1986; Roe, Stoodt and

Burns, 1987). More specifically, they are recommended in the Alberta ESL 10B curriculum guide (1986).

For each of the three passages, the key words that were important to the meaning of the text were identified. In addition, several words were identified with which the ESL students might have trouble. While this made the list somewhat longer than might normally be used it should be remembered that the students were not allowed to use their dictionaries. These extra words were deemed important so that the passage did not become an exercise in word identification as opposed to comprehension. The three treatments were designed from this list of words.

The first of these treatments--vocabulary (VOC)--is a list of key words from each passage accompanied by a simple definition (see Appendix B). It was presumed to be the minimal standard help that students receive from their teacher or the most common form of self-help by way of using a dictionary. It was also a way of controlling the vocabulary input.

The words were printed on a chart with a simple definition. The chart was posted on the board in the classroom and the experimenter read through the list of words and their definitions.

The second treatment--structured overview (SOV)--organizes key vocabulary so that students see the

relationship between the key terms (see Appendix C). Dupuis and Snyder (1983) describe it as an effective way "to teach vocabulary as a web of concepts" (p.297). Vacca and Vacca (1986) define a structured overview as

"a chart which uses content vocabulary to help students anticipate concepts and their relationships to one another in the reading material...the graphic outline that results shows the hierarchical nature of the concepts to be studied. A concept may be designated as superordinate, coordinate, or subordinate depending on its relationship to other concepts". (p.111-112)

Using the previously identified vocabulary items, the experimenter drew a structured overview on the blackboard highlighting the relationship between the words. A copy of the vocabulary chart, listing the definitions of the words, was also posted on the board.

The third treatment--pattern guides (PNG)--focuses on highlighting the rhetorical structure of the passages rather than the content (see Appendix D). Emphasizing the structure should help the reader identify the key points in a passage and provide a way of organizing them (Vacca and Vacca, 1986; Vacca, 1975).

The experimenter posted the pattern guide on the board. It was introduced to the class and they were told that it should help them focus on the important

information while reading through the passage. The class was told that the outline would be filled out after everyone was through reading the passage, but for those who finished reading early that they should begin answering the comprehension questions and not wait.

In designing these three treatments, the same techniques were used for each of the passages. In this way each of the treatments, despite the passage, could be said to be the same.

Experimental Design

The independent variables were teaching treatments and passage types. In the experimental design, passage types (ENUM, P/S, COMBO) formed the horizontal axis and treatments (VOC, SOV, PNG) formed the vertical axis which resulted in nine cells. Within each cell there was one treatment type and one passage type with no treatment and passage type combination being repeated. The classes were randomly assigned to each of the nine cells. No class received the same passage type/treatment combination. This reflects a Latin Square design.

Data Collection

The testing was carried out over a period of three weeks. Each class had three 55 minute class periods to complete the experiment. During each of the class periods the students received a treatment, completed a reading passage, and answered the comprehension questions.

The following procedure was used to administer the treatment and exercises to the students:

1. The researcher stated at the beginning of the class, "Today you will read a passage about X. After listening to some instruction you will read the passage and, when finished, answer the nine comprehension questions on this paper" (hold up answer sheet). Please remember you are not allowed to use your dictionaries.
2. One of the three treatments was then administered as previously described. This procedure took approximately 10 minutes for the SOV and the VOC. Then the passage and accompanying answer sheet were handed out. For the PNG, the rhetorical structure outline was introduced, then the passage and accompanying answer sheet were handed out. About 10 minutes were spent after everyone had finished reading the passage filling in the outline.
3. Further instructions were then given. "Read the passage, you may write on it if you like. When you finish reading answer the nine questions. When answering the questions don't worry about spelling. If you have any questions raise your hand and I'll come help you".
4. Students then had the rest of the hour (approximately 45 minutes) to read the passage and answer the questions.

Scoring

Answers to the comprehension questions were scored as right or wrong. In keeping with common classroom

practices, missing answers were counted as wrong. When marking the content of the answers neither spelling nor grammar was evaluated. Information for evaluating the textually explicit and textually implicit questions resided in the text. If the respondent answered using personal knowledge such that the question-answer relationship became scriptally implicit then the answer was marked as correct providing the answer made sense within the context of the passage.

A wide range of answers was accepted for the scriptally implicit questions, using the criterion that the answer must demonstrate integration of a personal perspective with the information in the passage. If the respondent answered in such a way that the question-answer relationship became textually explicit or implicit, then the answer was marked as correct providing the answer made sense within the context of the passage.

Answers were marked after all testing was completed. First the answers to each of the passages were collected. The researcher reread the passages and the answers that were previously used to classify the questions. No changes were made. Using these answer sheets, the researcher then marked the answers from all three classes for each passage in random order.

After the researcher marked the answers an independent rater was used to establish reliability of

assessment. The independent rater read each of the passages and developed her own criteria for each of the answers. The marking procedures were the same as those outlined above. Inter-rater reliability for assessing the answers for all three passages was 99%.

Hypotheses

This study focusses on the main effects and interactions of passage and treatment on ESL students' answers to comprehension questions. There was no particular expectation of results since the research was exploratory in nature. Accordingly the following null hypotheses were tested:

1. Treatments (SOV, VOC, PNG) would have no significant effect on the students' ability to answer comprehension questions.
2. Passage types (ENUM, P/S, COMBO) would have no significant effect on the students' ability to answer comprehension questions.
3. There would be no particular combinations of treatments and passage types which would facilitate the students' ability to answer comprehension questions.

CHAPTER FOUR

Analysis and Results

The mean and standard deviation were determined for each of the cells within the experimental design. Data were further analyzed using a three-way Analysis of Variance (MANOVA) and a series of post hoc Scheffés guided by the hypotheses to be tested.

Descriptive Statistics

The first step of analysis involved determining the mean and standard deviation for each of the cells based on the raw data which were the answers to the comprehension questions. For the analysis, comprehension questions were scored as right or wrong. Missing answers were scored as wrong as this is in keeping with most classroom practices. The results are recorded in Table 1.

Table 1

Summary of Cell Means

	ENUM	P/S	COMBO
VOC X=	6.88	6.19	4.55
PNG X=	4.00	6.00	6.25
SOV X=	7.00	5.00	5.13

Analysis of Variance

The second stage of data analysis used a three-way Analysis of Variance (MANOVA) to determine the significance of the main effects and the interaction effects of the independent variables. A three-way Analysis of Variance was used because the subjects were only partially repeated. The effect of the group on the dependent variable, therefore, had to be factored out of the main analysis. For this reason, the subject groups were treated as significant variables in the analysis. The dependent variable was the students' comprehension scores, i.e., the total number of correct answers out of nine possible answers. The results of the MANOVA appear in Table 2.

Table 2

Summary of Analysis of Variance due to Passage Type
Treatment Type and Group: Comprehension Questions

Source of Variance	SS	df	MS	F	Sig of F
Within Cells	208.16	96	2.17		
Constant	3112.04	1	3112.04	1435.19	.000
Group	14.80	2	7.40	3.41	.037*
Passage	7.40	2	3.70	1.71	.187
Treatment	3.21	2	1.61	0.74	.479
Passage X Treatment	16.87	2	8.44	3.89	.024*

* p < .05

** p < .01

The results of the MANOVA show that there were no significant main effects for the variables treatment or passage. A significant main effect was found for the variable group at the 0.05 level. In addition, a significant effect was found for the passage x treatment interaction at the 0.05 level. A discussion of the group effect is necessary before pursuing any post hoc testing. Two explanations can be offered to account for the group effect.

The first explanation is linguistic in orientation. By the nature of the planned sequence of courses--ESL 10A, 10B, and 10C--and subsequent support, the Calgary Board of Education appears to consider the ESL student in 10C as linguistically and educationally equal. It would appear that this is not the case. In light of this finding the planned post hoc comparisons must be viewed as exploratory, to see if there are any indicators for future research where groups can be pre-tested for language ability at least.

An alternative explanation for the difference in performance between groups is that the group effect is not a true group effect but it is a result of some groups receiving optimal treatment x passage combinations. It should be possible, then, to explore and compare the passage x treatment interactions to determine the significant relations between treatment x passage type. To explore this possibility a rank order of the experimental cell means was established. The results are found in Table 3.

Table 3

Ranking of Treatment x Passage Means

Treatment x Passage	Cell Means
SOV - ENUM	7.00
VOC - ENUM	6.88
PNG - COMBO	6.25
VOC - P/S	6.19
PNG - P/S	6.00
SOV - COMBO	5.13
SOV - P/S	5.00
VOC - COMBO	4.55
PNG - ENUM	4.00

This listing clearly shows that with respect to the enumeration passage the SOV treatment (followed closely by the VOC treatment) was more successful than the PNG treatment. With respect to the COMBO passage, it appears that the PNG treatment is better than the VOC treatment. With the respect to the P/S passage, it appears that no one treatment is better than the other. To determine if any one of the treatments is significantly more effective with a particular passage, as outlined above, a series of post hoc Scheffés were completed.

Post Hoc Scheffé

The Scheffé method was selected over other post hoc comparison methods because the number of subjects in each

cell were unequal and because it "is more rigorous than other multiple comparison methods with regard to Type I errors" (Ferguson, 1976). According to Hays (1963, p.484), "this method is also known to be relatively insensitive to departures from normality and homogeneity of variance". The Scheffé test from Roscoe's (1975) Fundamental Research for the Behavioral Sciences, 2nd ed. was used to explore the treatment by passage interactions. Because the Scheffé is so rigorous, a .05 level of significance was considered adequate.

Table 4

Results of the Scheffés on passage x treatment interactions

<u>Passage x treatments</u>	<u>F-score</u>
ENUM-SOV vs ENUM-PNG	3.38*
ENUM-VOC vs ENUM-PNG	2.21
ENUM-SOV + VOC vs ENUM-PNG	2.85*
COMBO-PNG vs COMBO-VOC	0.88

*p<.05

**p<.01

Post hoc analysis of the interaction of the Treatment x Passage Type indicates that the SOV treatment and the combination of the VOC and SOV treatments were significantly more effective than PNG treatment for the Enumeration pattern. The PNG treatment was not significantly more effective than the VOC treatment for

the combination pattern. Implications of these results will be discussed in Chapter Five.

CHAPTER FIVE

Discussion and Implications

Analysis of the data indicates that by themselves neither passage types nor teaching strategies significantly affect this group of ESL students' reading comprehension. This result leads to the acceptance of Hypotheses 1--treatments would have no significant effect on students' comprehension; and 2--passage types would have no significant effect on students' comprehension. There is, however, a significant effect for passage x treatment interaction. This result leads to the rejection of Hypothesis 3--there would be no particular combination of treatment and passage types which would facilitate the students' comprehension.

Passage by Treatment Interaction

Rejection of Hypothesis 3 leads to further exploration of the relationship between passage structure and teaching strategies. From the post hoc comparisons, it is clear that most of the variance contributing to the interaction relates to scores on the enumeration passage. These comparisons show that the enumeration passage was processed better when the structured overview treatment was used, rather than when the pattern guide treatment was used. Although not statistically significant, there is also evidence that the combination passage was

processed better when the pattern guide treatment was used, rather than when the vocabulary treatment was used. This suggests that the passages may be sensitive to the types of teaching strategies used.

Analysis of Treatments

The vocabulary treatment involved simply reading a list with definitions of pre-selected words. This treatment neither deals with the relationship between concepts that were discussed in the passage, nor its rhetorical structure(s). To this extent it can be said to be a neutral treatment.

The structured overview treatment was clearly meant to give the students a hierarchical, visual representation of concepts as represented by the vocabulary selected, thereby helping the student develop a rich semantic foundation. One of the purposes of the structured overview is to show that the concepts in each passage are hierarchically related to each other. The structured overview helps establish a hierarchical relationship between ideas. Each level in the hierarchy demonstrates how subordinate ideas are related to superordinate ideas and subordinate ideas to each other. In developing the structured overviews the rhetorical structures of the passages (i.e., whether they were enumeration, problem-solution, cause-effect, etc.) were irrelevant.

The pattern guide treatment, on the other hand, highlighted the rhetorical structure(s) of the particular text in question. The teacher analyzes the text to determine its dominant rhetorical structure and then highlights the cohesive ties and other indicators that helped clarify the relationship between ideas. For the pattern guide the focus is on understanding the horizontal relationship between ideas established by the author as a means of facilitating comprehension. It does not highlight the hierarchical arrangement of ideas as does the structured overview.

The most significant contrast found between passages was that between the enumeration and combination passage. The problem-solution passage appeared to be relatively insensitive to treatment type.

Interpretations of Passage and Treatment Pairings

The enumeration passage (see Appendix A) is a simple listing of ideas. The main idea, the definition of aggressive behaviour, is explained in the first paragraph. In the subsequent paragraphs three different theories explaining aggressive behaviour are listed. Each of these theories is related to the main idea but they are not necessarily related to each other; that is, it is not necessary to understand theories one and two to understand theory three. Within each of the theories the explanations are simple and examples are listed. What is

significant is how the ideas intersect with each other vertically in the structure. In this passage there is clearly a hierarchical structure, where the listing of theories is subordinate to the main idea.

The structured overview was the most successful treatment with this passage, followed closely by the vocabulary treatment. Clearly, the treatments emphasizing content rather than formal schemata were significantly more successful. It can be argued that the structured overview should be especially effective with passages that reflect an enumerative or hierarchical text structure, because, in addition to building content schemata, there is an implicit hierarchical pattern within the treatment that matches the rhetorical structure of the passage. This may explain why the SOV treatment was slightly better than the VOC treatment.

Conversely, it can be argued that the pattern guide was relatively unsuccessful because it dealt with only the horizontal ties between ideas, failing to show how ideas intersect at higher levels of structure. In this passage perhaps the rhetorical structure and the relationship between the ideas were not confusing. Niles (1965) suggests that the enumeration passage is a common one in school texts, so perhaps through many encounters in class these ESL readers are already familiar with it.

On further textual analysis the combination passage was found to be structurally more complicated than the enumeration pattern. Within this passage there are many different relationships between ideas and many of the relationships are implicit. In the first paragraph the problem of erosion is discussed through comparison and contrast. The subsequent paragraphs outline the cause, effect and solution for each type of water erosion presented. Within each paragraph, the relationship between these ideas is often not clearly defined. This forces the reader to frequently change tacks; and his or her ability to do so depends upon the recognition and utilization of the different cohesive ties. It seems that this makes the passage "denser" and that it makes it more difficult to pick out the important facts. In this passage the horizontal relationships are critical. It is these relationships, established via various kinds of cohesion, that the pattern guide is intended to highlight, which may be why the pattern guide was the most effective treatment for the combination passage.

Conversely, this argument can be used to explain why the vocabulary treatment was the least effective. The rhetorical complexity of the passage required more than a listing of vocabulary items and their definitions. The support of a treatment that helped unpack the ideas and their relationship to each other seemed to facilitate

comprehension. The vocabulary treatment clearly does not satisfy this requirement. The structured overview does this, to some extent, by establishing a hierarchical relationship between concepts. The structured overview may have been more effective than the vocabulary treatment because, although it does not help the reader follow the rhetorical pattern selected by the writer, it does establish some hierarchical relationship between concepts.

Limitations

While these are interesting sample explanations which can be taken up in future research, certain limits of the present study mean that they should not be interpreted as generalizable. A first limitation was the groups could not be randomly selected. In order that there would be enough students to participate in the experiment, it was necessary to select the three largest ESL classes in Calgary public high schools. Second, no pretesting of the students' language ability was allowed. This meant that language ability could not be a controlled factor. It was impossible, therefore, to determine the level of language proficiency or general academic background knowledge students brought to the experiment. Fourth, the experimental design was not a fully repeated measures design. As discussed in Chapter Three, this means that the group significantly affects

the results and as a variable can not be ignored. As a result, the interpretation of the data must be viewed as strictly exploratory. Despite these limitations the results suggest important areas of discrimination and direction for future, more tightly controlled, research.

Pedagogical Implications

Second language reading researchers have established theoretical frameworks to help educators to work through some of the complexities of teaching ESL students to read, in particular the impact of first language schemata on second language reading comprehension. Within this framework, pedagogical techniques that help ESL students access texts so that they are able to read to learn are now being developed. Zvetina (1987) states that one of the important categories of suggestions for teaching L2 reading is the "organization of L2 learners' prior knowledge of the content [formal and content schemata] of the text, during the pre-reading phrase" (p. 234).

Vacca and Vacca (1986) suggest that content area teachers should utilize a wide variety of techniques to enhance reading comprehension in all their students. Carrell (1984b), Carrell and Eisterhold (1983) and Anderson and Barnitz (1984) have suggested a variety of considerations and techniques that would be useful for content area teachers to use with their ESL students who may be experiencing difficulties. Such suggestions

include activities such as generating predictions about text, developing word concept association activities, demonstrations, narrow reading, and Directed Reading-Thinking Activities.

Johnson (1982) and Hudson (1982) have demonstrated that introducing content schemata has facilitated ESL students' reading comprehension. Similarly, Carrell (1984) has shown that teaching rhetorical structure, or formal schemata to ESL students has facilitated reading comprehension. As a result of this research and parallel L1 reading research, educators have advocated the use of a variety of strategies that build background knowledge and teach rhetorical structure to ESL students. They do not state, however, that there may be an "optimal fit" between some teaching strategies and the rhetorical structures of the texts.

The present study suggests that when teachers utilize strategies to boost comprehension they need to be sensitive to the characteristics of the texts. It is not sufficient for teachers to choose background knowledge enhancement strategies randomly. This study suggests teachers should have clear reasons for choosing one technique over another.

As a start, when mediating between text and reader, this study suggests that teachers need to identify the salient characteristics of the text and develop a set of

psycholinguistic expectations for the text to be studied. In effect, teachers need to set up a schema for their students that is compatible with the particular characteristics of the texts. The study suggests that for texts where concepts are structured hierarchically, structured overviews are compatible and facilitate comprehension. For texts where the horizontal relationships between concepts are paramount, students benefit from teaching strategies, such as the pattern guide, that highlight those relationships. Teaching students the characteristics of texts would serve a variety of purposes. First, it would highlight the important relationships that the writer had in mind when writing the text. Second, it would help draw relationships between concepts, highlighting connective techniques used in English, through the text rather than those externally imposed. Third, as ESL readers become more familiar with these techniques, they can become self-sufficient--in effect their own text analysts--rather than depending on someone else to do it for them. Utilization of teaching strategies, such as structured overviews and pattern guides, that enable ESL students to access the contextual clues that are available within the text and reader, help reduce the cognitive demands of difficult academic discourse.

In addition, teachers should be made aware of the issues being raised by and the pedagogical implications of current cross-cultural research in all areas of education. In particular, future teachers need to be sensitive to the effects of first culture schema on reading comprehension. To this end, greater attention should be given to text analysis instruction in the context of cross-cultural considerations.

Implications for Future Research

In light of the limitations previously discussed, this study must be viewed as strictly exploratory. The results, however, suggest an interesting line of development for future research. It is clear that teaching techniques that develop background knowledge, and consequently help mediate between reader and text are very useful when teaching ESL students. Useful research can now be undertaken to determine if, in fact, there are some optimal treatment by rhetorical structure combinations.

The study used authentic texts, one of which had a mixed rhetorical structure. It would be useful to take a step back and develop passages tightly controlled for rhetorical structure, in order more clearly to establish the relationship between rhetorical structure type and treatment. In particular, in light of the passage by treatment interactions in this experiment, and the

results of Carrell's (1985) experiment, it would be useful in future research to develop passages that clearly reflect each of the five rhetorical patterns (see Chapter 2, p. 54) for students to read in order to test the effectiveness of treatments with other types of rhetorical patterning. This would help address the issue as to whether or not the pattern guide is more successful with tighter rhetorical patterns or patterns where the relationship between the ideas within the passage are more complex.

The question of whether or not pre-teaching content or rhetorical structure will help circumvent the limitations of students' low English language ability should be looked at in the future. Clarke (1979) found that low target language proficiency inhibited reading comprehension. Hudson (1984), on the other hand, found that using appropriate teaching strategies facilitated reading comprehension and helped students overcome the limitations of their low target language proficiency. Whether different treatments are more or less useful at varying levels of the student's language ability should be addressed in the future.

Finally, Carrell (1984c) states that teaching strategies recommended for use in the ESL classroom need to be "subjected to classroom-based, pedagogical research in order to establish their efficacy in a variety of

pedagogical settings" (p. 333). This is a direction second language reading research must take.

Conclusion

Immigrant students who do not speak English as a first language have experienced, and will continue to experience, a great deal of difficulty learning English when they enter high school upon arrival in Canada. Although generally placed in reception classes to begin with, ESL students are mainstreamed into regular non ESL classes often before they are proficient or confident in English. Within an academic context, ESL students must not only become fluent in speaking English but also in reading and writing English, a process which Cummins (1984) states may take from 5 to 7 years.

Teaching students how to extract meaning from texts is begun in reception classes. It is unreasonable to believe, however, that ESL students will leave reception classes as independent readers of English. Content area teachers, in addition to ESL teachers, must provide discipline-related reading support. These teaching techniques should be carefully selected to help students gain access to different types of text structure required by the Canadian educational system as a basis for tackling texts at the more advanced levels of communication.

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APPENDIX A

Enumeration Passage (ENUM)

Aggression is defined as behavior which is intended to hurt another person. There must be intent to harm and there must be a target. Aggression can be physical abuse, such as getting into a fist fight. It can also be verbal abuse, such as shouting and swearing.

One theory of aggression is that all humans are naturally aggressive. Scientists think that we, like all animals, are born with aggressive instincts. These instincts are never far from the surface. Sometimes we control these instincts, sometimes we don't. Some people are able to control their aggressive behavior and other people are not.

The second theory is that some people behave violently because of physical disorders which cause them to become aggressive. Some violent criminals have been examined by doctors. Doctors have found something wrong with their body chemistry. In other cases brain damage has been found.

The third theory is that aggression is learned. Children as they grow up model their behavior after people who are close to them. Most often these "role models" are parents and other family members. For example, if children see family members abusing others

there is a good chance they will think it is acceptable behavior and will act the same way.

In addition, some people think that children learn violent behavior from watching television. A study compared the affects of violent shows on two groups of children. One group saw violent movies five nights in a row. The other group saw nonviolent movies. The children who saw the violent movies were more aggressive than the children who did not watch the violent movies.

If we believe that humans are born aggressive then, perhaps, we will use this belief to justify our own violent behavior. But, if we believe that humans learn to be aggressive, then, perhaps, we can decrease the amount of violence in society.

QUESTIONS - Enumeration

Textual Explicit

1. What is aggression?
2. Who are role models for children?
3. Why do scientists think we are like all other animals?

Textual Implicit

1. What causes some criminals to be violent?
2. How do children learn aggressive behaviour?
3. Is television a good influence on children?

Scriptally Implicit

1. Which theory do you think best explains aggressive behaviour? Why?
2. Is it possible for a society to NOT be aggressive? Why?
3. Describe some examples of aggressive behaviour you have seen? Were they learned?

Problem-Solution Passage (P/S)

Erosion is a very destructive form of soil loss. It occurs when water and wind carry away the soil. Wind erosion is a serious problem for farmers. Previous topsoil from millions of acres of our most productive land has been lost by erosion. This soil now lies in riverbeds and on ocean bottoms. Some has been blown thousands of kilometers by violent duststorms.

Wind erosion is especially a problem in the prairie and plain regions. Strong winds often sweep across the treeless land. At one time native grasses grew there. Their spreading roots held the soil.

In the 1930's most of the land was plowed for agriculture. Many areas should have been left with natural grass. Many of the farmed places have climates that are only marginal for cereal grains. In the 1930's several late summer and early fall droughts hit the western plains. Most of the crops did not grow. Strong winds blew much of the exposed topsoil away. Fine particles of soil from these great dust storms filled the atmosphere. Dust particles were in the air as far as the east coast. They were even found several kilometers over the Atlantic Ocean.

How can dust storms be prevented? There are several solutions. Windbreaks or shelterbelts are of some help. They can be planted along the edges of the fields. In

addition, furrows should be plowed at right angles to the prevailing wind. The wind will blow across the furrows instead of down them. Thus each furrow will help to stop the movement of soil. In some places irrigation is possible. This is the running of water into the fields during the dry periods. This will check wind erosion, because moist soil does not blow away. Every centimeter of soil not cultivated regularly should be anchored firmly. This can be done by planting grasses and other soil-binding plants.

QUESTIONS - Problem/Solution

Textually Explicit

1. Where is wind erosion a serious problem?
2. Why does running water check wind erosion?
3. What is erosion?

Textually Implicit

4. How could the dust storms of the 1930's have been prevented?
5. Why is erosion destructive?
6. Why do grasses prevent erosion?

Scriptally Implicit

7. Why isn't irrigation used all the time to prevent wind erosion?
8. What happens to the farmer's crops when topsoil is lost?
9. Why is wind erosion a more serious problem in Alberta than in British Columbia?

Combination Passage (COMBO)

Erosion is the loss of soil by water or by wind. Natural erosion has always occurred. Before any land was cultivated, erosion was not a problem. Soil formation kept up with erosion. However, farming stripped the land of its natural vegetation, and poor farming methods exposed it to the forces of water and wind. The slope of the land, the type of soil, the use of the land and amount of rainfall all influence erosion by water.

Seasonal floods can cause surface water to cover exposed soil. A thin layer of soil is dissolved in the water. As a result, when the water drains, the soil is removed. This is known as sheet erosion. A solution is to leave natural vegetation on bottomlands that flood to help control sheet erosion.

When rain falls on the exposed soil of rolling hills, small channels, or rills develop. Each time it rains, water flows down the same rills. The rills get deeper and wider, forming gullies. If gully erosion is not stopped, gullies can become gulches or even canyons.

One way to prevent gully erosion is to plant trees, grasses or other vegetation on the slopes of the hills. They act as soil binders and prevent gullies from widening. Deepening can also be stopped by building a series of dams across the gully. The dams slow the flow

of water so that the settling soil will gradually fill in the gully.

There is an agricultural solution to water erosion on rolling hills. It is called contour farming. The land is plowed across the slope of a hill rather than up and down. The trench made is called a furrow. Each furrow acts as a small dam to stop the water from flowing downhill.

Terracing is a solution to water erosion on steeply sloping land. This method of preventing erosion has been practiced by humans for a long time.

QUESTIONS - Combination

Textually Explicit

1. What purpose do furrows serve?
2. What is one way to prevent gully erosion?
3. What stops erosion on steeply sloping land?

Textually Implicit

1. Why has erosion become a problem?
2. What is an agricultural solution to water erosion?
3. Why is seasonal flooding bad?

Scriptally Implicit

1. Why is it important to solve the problem of erosion?
2. Why should all people be concerned about the effects of erosion?
3. Should the government give farmers money to prevent erosion? WHY?

APPENDIX B

VOCABULARY - Enumeration

abuse - to treat someone badly

acceptable - agree that something is okay

behavior - "how a person acts or behaves"

belief - "something believed to be true"

body chemistry - the hormones/chemicals in your body that allows it to function

control - "to be in charge of someone or something"

damage - "harm or injury"

decrease - "to grow smaller in size and number"

disorder - something doesn't work properly

examine - "to look at something very...carefully"

instinct - a feeling that makes you do something without being taught

justify - make excuses for some action

learn - "to find out about things or how to do something"

model - a person who sets a good or bad example

target - "something you aim at"

violent - behaving in a way that hurts property or people

All definitions in quotation marks are from the Everyday Canadian English Dictionary

VOCABULARY - Problem/Solution

anchor - to hold in place

acre - a large area of land

cereal grain - wheat, oats, barley

cultivate - to grow plants

destructive - to destroy something

drought - a long period of time with no rain

furrow - the small ditches in a field where seeds are planted

irrigation - "to bring water to a dry land by artificial means"

marginal - not very good

plow - to turn the soil over for planting

prairie - land that is flat with few trees

prevailing - the most common direction

prevent - "stop something from happening"

productive - makes or produces a lot of something

soil-binding - to hold the soil in place

topsoil - the top 5 inches of earth

windbreak - row of trees or bushes which stop the wind

All definitions in quotation marks are from the Everyday Canadian English Dictionary

VOCABULARY - Combination

bottomlands - low land near a river

contour - furrows that follow the natural shape of the hill

cultivate - to grow plants

dams - "a special kind of wall which stops or slow down the flow of water"

destructive - "to ruin something"

dissolve - mix something with water until it disappears

expose - not covered

formation - to make or build up

furrow - the small ditches in a field where seeds are planted

gully - a narrow, deep channel in the ground

influence - to affect something or someone

natural - "part of nature, not man-made"

rolling - low and rounded

soil binders - plants that hold the soil in place

solution - "answer to a problem"

steep - "rising nearly straight up from the ground"

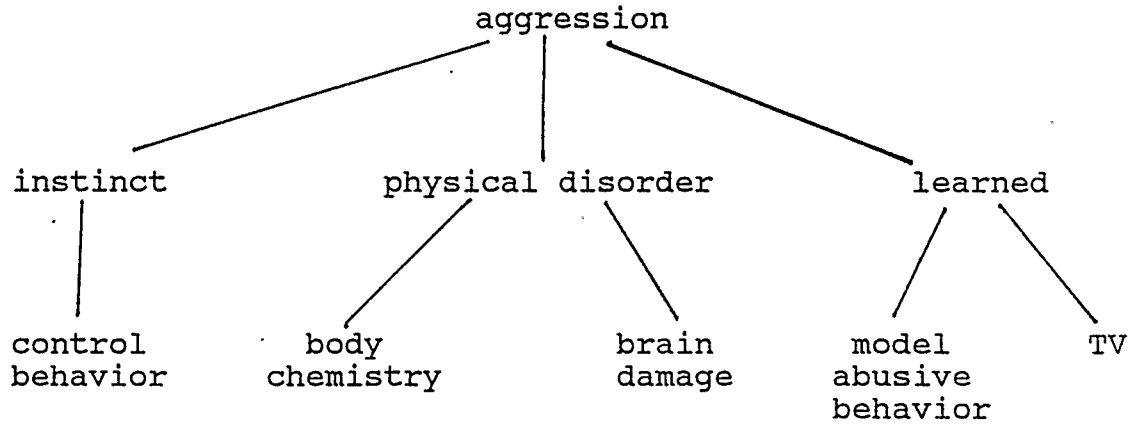
terrace - a series of flat areas, one above the other on a hill where crops are grown

vegetation - plants

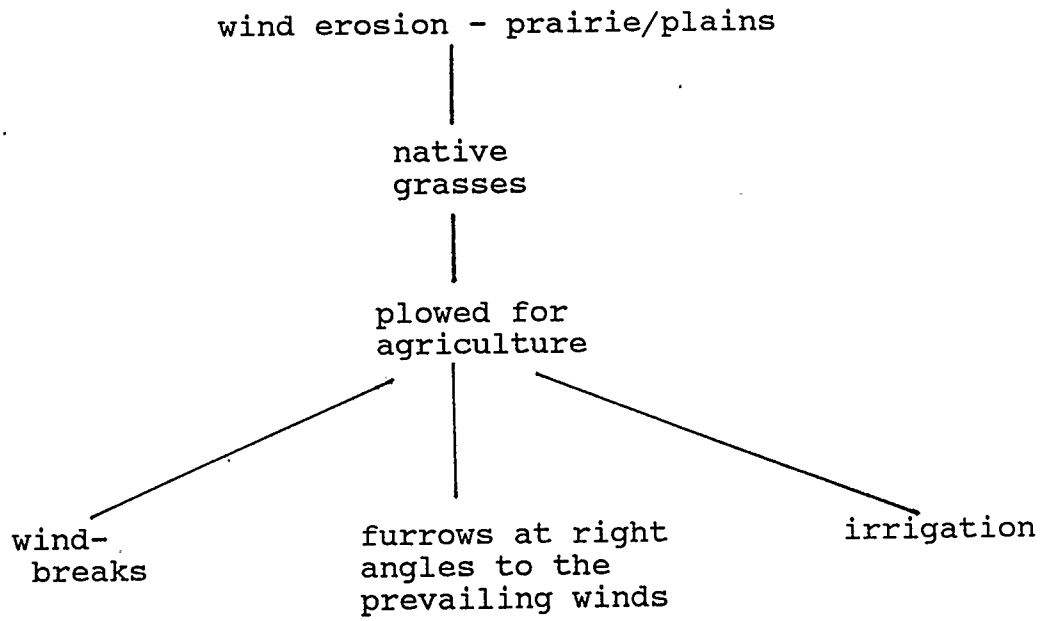
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APPENDIX C

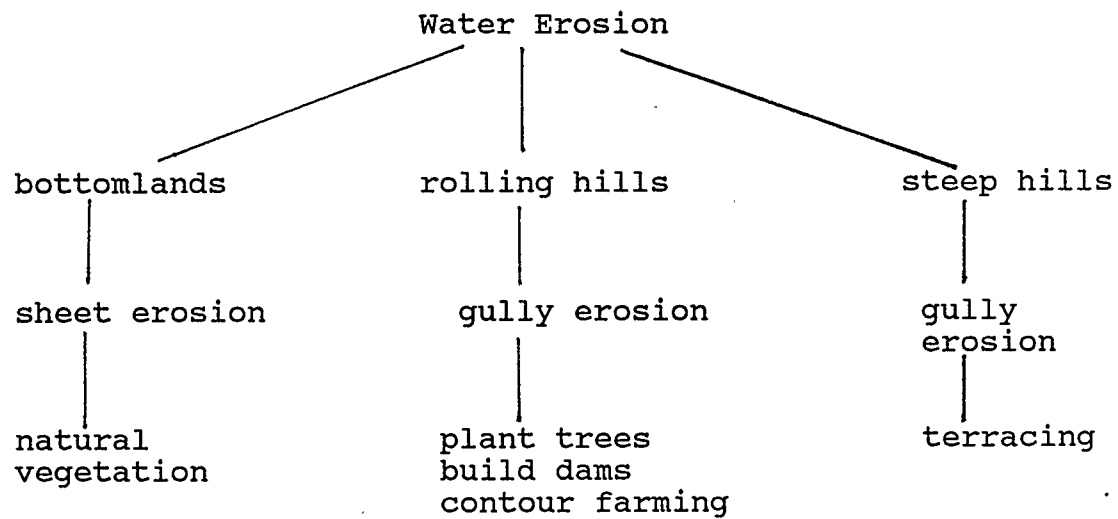
STRUCTURED OVERVIEW TREATMENT - Enumeration



STRUCTURED OVERVIEW TREATMENT - Problem/Solution



STRUCTURED OVERVIEW TREATMENT - Combination



APPENDIX D

PATTERN GUIDE TREATMENT - Enumeration

Aggression is: _____

one theory is: _____

second theory is: _____

doctors have found:

a. _____

b. _____

third theory is: _____

a. for example: _____

b. in addition: _____

PATTERN GUIDE TREATMENT- Problem/Solution

Erosion is: _____

It a serious problem for farmers because?

Where is it a serious problem? _____

Solutions:

1.

2. In addition,

3.

4.

PATTERN GUIDE TREATMENT -Combination

definition of erosion:

Water on bottomlands:

causes _____

A solution _____

Water on rolling hills causes _____

One way to prevent _____

Also _____

Agricultural solution _____

Water on steeply sloping land:

Solution _____