

AN EXPLORATION OF THE EXPLICIT INSTRUCTION
OF DISCOURSE MARKERS ON ESL READERS'
PRODUCTION OF ORAL LANGUAGE

by

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ABSTRACT

English-as-a-Second Language (ESL) students who attend academic institutions are required to communicate orally about the texts they read but are often anxious about their oral language proficiency. They, as well as their instructors, have noted that oral production for ESL students can be problematic particularly in classrooms where English is the dominant language. While previous research has examined the written work of ESL students, this study explores the production of their oral language.

Fourteen intermediate level ESL students at a mid-sized college/university in British Columbia received explicit instruction in discourse marker use through either a question-and-answer series or a graphic representation of the knowledge structure of principles or cause and effect (Mohan, 1986). Participants analyzed the text for key ideas and for markers that are conventionally recognized in cause and effect discourse, then recalled the text orally. Through pre and post-tests, a written questionnaire, a semi-controlled task in constructing graphics and in-depth analyses of participants' oral samples, the effects of explicit instruction on the production of oral language were researched. Findings were expressed as observations with implications for facilitating ESL students' oral production of

cause and effect discourse and possibly for their notemaking so that they might integrate the language and content they require for their academic studies.

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FOREWORD

I think of the classroom as a 'living place,' a place where growth and change occur. Theories of curriculum and approaches to tasks that we enact in the classroom are not only 'to know now' but 'to know better'; they are the impetus for my inquiry into possibilities for greater learning and a deeper understanding of what we do as classroom teachers. I come to the classroom to teach and to learn; out of this setting the origins of this study emerged.

To reflect the immediacy of events I have chosen to write in the first person, to tell the story in a narrative that describes and explains what happened in the research. In this narrative I have endeavoured to "understand and give an account of the ways in which the individual is shaped by the situation and shapes the situation in the living out of the experience" (Clandin in Russell & Munby, 1992). Activities of the learning-teaching relationship have become the action of this research which studies how learners interact with instruction and how I, as instructor, might support these learners to be successful English speakers in their academic classrooms.

CHAPTER ONE

AN INTRODUCTION TO THE STUDY

In Chapter One I provide a context for the study and a discussion of the research questions which inquire into instructional support for ESL students to speak about the texts they read. I also relate the significance of this study to the larger body of ESL inquiry in its attempt to understand the learning/teaching relationship.

Background to the Study

As an instructor of English-as-a-Second Language (ESL) for learners who are preparing to enter diploma and degree programs at a post-secondary institute in British Columbia, I have listened to many students who say they experience difficulty expressing orally the content of their reading texts, in particular, their expository texts. Many of these students, in their writing classes, had successfully composed paragraphs of a specific rhetorical pattern such as comparison/contrast, process and cause/effect, guided by discourse markers appropriate to the purpose of the text yet these students struggled to recognize in their reading texts and to produce in their own speech these same discourse features.

I had encountered a problem amongst students in my ESL classes.

Students had expressed concern about oral language proficiency for their academic success and were anxious about their self-esteem when they participated in non-ESL classes. More broadly, was speaking difficult to other students in the ESL program?

To answer this question I was guided by the findings of an Institutional Research Review (1995) of the College English Second Language (CESL) program which my colleagues and I taught. The review noted that, despite the flexibility of the program and the impressive diversity of teaching styles, a recurring theme was “requests by students for more practice in speaking skills”; the review committee recommended to instructors that they “emphasize speaking across the levels of the program to ensure that these become as successful as reading and writing” (p. 22).

A wider assessment of ESL students’ needs in 13 colleges and institutes in British Columbia also referred to ESL learners’ speaking skills. In their needs assessment survey, Mohan and Dooley (1993) reported from both content-based instructors and ESL students in their programs that oral communication activities, for example, presentations, group discussions and expressing ideas to the instructor, were especially demanding. Speaking in a foreign language is often considered the most difficult aspect of language learning and language teaching

particularly in academic situations where transference tends to require clear and specific information (Brown & Yule, 1983).

The implications of this research are heightened by the increasing numbers of ESL students entering post-secondary study. For example, international student enrollments at the institution where I teach increased from 248 students in Fall 1993 to 313 students in Fall 1995 (University College of the Cariboo Factbook, 1995-96). The intake of new students in the CESL program alone reached a record high of 120 students in Fall 1996. For those students who expect to succeed in college and university programs, proficiency of communication is demanded, reaching beyond conversation to the language of content (Collier, 1987; Cummins, 1981; Saville Troike, 1984; Wong Fillmore, 1983).

This study is a response to students who have expressed their need for competency in oral communication and to the recommendation in the Institutional Program Review (1995) to "investigate methods to help students bridge effectively into academic courses" (p.22). I believe that explicit instruction in the oral use of specific discourse markers could be one way to provide instructional support to ESL learners wanting to speak about the texts they read.

The Question

This study was thus designed to discover the value of explicit instruction that would support ESL learners in their analysis, understanding and oral production of discourse features relevant to a specific text structure. Some text structure can be learned implicitly by readers who share background knowledge, norms and expectations with the dominant culture (Carrell, 1985). However, learners who are unable to discriminate between different discourse structures, oral or written, and amongst their authors' intents, may require socialization into the discourse of specific disciplines (Carrell, 1989; Guyer & Peterson, 1988).

Supporting ESL learners as they become familiar with the discourse of specific disciplines is, I believe, an academic reality if these students are going to speak about the disciplines they are studying. In exploring the instructional implications of this reality, I attempt to answer this question:

To what extent and in what ways does explicit instruction in discourse markers enhance college level, intermediate ESL readers' oral production?

In the process of answering this question, I seek explanation to these more specific questions:

Does explicit teaching of discourse markers facilitate ESL students' oral recall of texts they read when:

- a question-and-answer series is the intervening technique?
- a graphic representation is the intervening technique?

In what ways do these two techniques, question-and-answer series and graphic representation, affect ESL students' learning?

In July, 1996, one year after the onset of the study, and on the basis of participants' responses to the graphic I had chosen, I inquired further into the effects of instructional materials on learning, specifically the effect of student generated graphics, on their oral recall of text. I was also interested to know the long term effects of training on the participants' construction of graphics. I asked these questions:

What do advanced level ESL students do when they construct a graphic representation of a text to support their oral recall of a reading?

In what ways and to what extent does the student-generated graphic support oral production?

To what extent did the graphic training in the study one year earlier, in July 1995, affect the student-generated graphic?

To integrate the language and content which ESL students require in their academic studies, Early (1990) suggested that "one requires concepts which bridge both areas" (p.82). One way to "bridge" language and content, in order to enhance the learners' oral communication, might be to determine the distinct discourse features that set discourses apart semantically and syntactically. An approach based on the Knowledge Framework (Mohan, 1986) uses the structures of description, sequence, choice, classification, principles and evaluation to locate logical and meaningful relations between the ideas expressed in a text.

Studies have illustrated how explicit instruction of text/knowledge structures could positively affect the production of the written expository discourse of English-speaking high school students (Armbruster, Anderson & Osterag, 1987; Bartlett, 1979; Meyer, 1975, 1985; Meyer, Brandt & Bluth, 1980; Meyer & Freedle, 1984; Taylor & Beach, 1984) and of ESL children and adult learners in their classrooms (Carrell, 1985; 1992; Carrell, Pharis & Liberto, 1989). Past studies have examined the written protocols of elementary and secondary ESL students for the effects of graphic representations on text/structure knowledge (Early, Mohan & Tang, 1989; Early & Tang, 1991; Tang, 1991, 1992,

1994). In this study I look at the oral rather than the written discourse of college level ESL learners to discover the effects of explicit instruction, specifically instruction in the use of discourse markers relevant to Mohan's (1986) knowledge structure of principles or cause/effect relationships.

I refer to reading texts as the source for an analysis of language and content using two different instructional techniques - a question-and-answer series and a graphic representation. The reading texts and instructional materials will support students' oral discourse of cause/effect events.

This study attempts to fill a gap in ESL research in the area of oral production of knowledge structures. By responding to a real need expressed by students and instructors, it aims to contribute to the pedagogy that informs ESL teaching and learning. However, before describing the conduct of the study, a definition of terms used in the study is in order.

DEFINITION OF TERMS

Unique reader characteristics influence the meaning that individual readers bring to a text (Barnett, 1989). To clarify my use of key terms in this study and to provide some convention to its reading, I have given definitions to the italicized key terms.

The Students and Their Purpose for Study

The students in this study are *international students*; they are students from Hong Kong, Japan and Taiwan who have obtained a visa for the purpose of attending college or university in Canada. Many international students intend to pursue *academic* or *content courses* in addition to their English-as-a-Second Language studies. In this research, academic or content courses are identified by a defined body of knowledge within the perspective of a discipline.

Text, Text Structure and Related Terms

For the purpose of this study, *expository text* refers to factual text. The *discourse*, which is the language used by students to communicate a text's content, is considered meaningful and is made purposeful by a network of relevant *discourse markers*, the words that connect the speakers' ideas. Discourse

markers may be found within or between sentences and paragraphs. A discourse which is goal-oriented and has a distinct social purpose is referred to as *genre* (Callaghan & Rothery, 1989). A mode of discourse that follows conventions in its form and in the discourse markers used is referred to as a *rhetorical pattern*; examples of rhetorical patterns include narrative, process, comparison/contrast and cause/effect discourse.

In this study, the students' *oral production*, that is, their verbal communication, is the vehicle for discourse. Their oral production is their text.

The Knowledge Framework

The *Knowledge Framework* is an organizational scheme which brings together both language and content (Mohan, 1986). The main *knowledge structures* of the Knowledge Framework are three practical aspects of knowledge - description, sequence and choice - and their theoretical counterparts - classification, principles and evaluation. The Knowledge Framework, which uses specific language to organize information, is key to the concept of ESL classroom activity (Mohan, 1986).

To organize and represent abstract ideas of the Knowledge Framework in a concrete manner, Mohan (1986) recommends the use of *graphics* which, in this

study, refer to diagrammatic representations of cause/effect ideas and the relationships between these ideas.

Considering my study in relation to the research of others is necessary to understand its purpose and place in the field of ESL inquiry. In the Literature Review which follows I examine studies in reading comprehension and oral production affected by text/knowledge structures.

CHAPTER TWO

LITERATURE REVIEW

In Chapter Two I review selected studies which are central to the identification and instruction of text/ knowledge structures. I also search for the relevance of graphics to these. Further, I consider the ESL learner as both reader and speaker and, for this reason, create two identities around which I organize the review of literature: The ESL Reader and The ESL Speaker.

Introduction

I have organized the review of literature into two main sections, "The ESL Reader" and "The ESL Speaker," although in this study where readers are expected to recall text content orally, these two identities would be more accurately represented as one, reader-as-speaker. Distinguishing the ESL learner as "The ESL Reader" allowed me to search the literature for studies in the organization and language of text/knowledge structures and, more specifically, the explicit teaching of these features of discourse. However, many of the researchers have used written summaries to measure outcomes while the purpose of my study

was to examine the readers' oral production. For this reason, I have included a discussion of "The ESL Speaker."

In this literature review, I have attempted to trace effects of explicit instruction in the following: text structure, discourse markers, the use of graphics and the knowledge framework. I have then considered the relationship between reading a text and presenting its content orally wherein the reader becomes speaker. This path of inquiry has, at times, been discursive but, as a part of my search for understanding the interaction between reader, expository text and instruction, has helped me to review the demands and examine the possibilities of the reading/speaking relationship.

The ESL Reader

Research has shown that reading comprehension is an interactive process between the reader and the text. A reader's background knowledge of and processing strategies for the organization of text structure have been the subject of extensive inquiry both in English-speaking and ESL classrooms (Carrell, 1984, 1995; Meyer, 1985; Meyer & Freedle, 1984; Rumelhart, 1977).

Text Structure Awareness

Meyer (1975, 1985), Meyer, Brandt and Bluth (1980), and Meyer and Freedle (1984) have investigated English-speaking readers of English interacting with different types of expository text structure. From her research, Meyer established hierarchical relationships between and among sentences, paragraphs and longer units of text from which she formulated five structures of expository text: collection, description, causation, problem-solution and comparison, noting that most text would contain more than one of these basic organizations. These organizing principles which indicate the interrelationships between ideas have been useful in examining the ways in which readers integrate structural pattern of text into their view and consequently into their comprehension and recall. These studies confirm the presence of hierarchical dynamics in expository text; they provide the basis of my understanding that possibly I could teach ESL students to recognize structural patterns in their expository reading.

The Relevance of Discourse Markers to Text Structures

The work of Meyer, Brandt and Bluth (1980) added another consideration to the study of text structure by examining the effect of "signalling devices" (referred to in this study as "discourse markers") on the readers' understanding and recall of text. Signalling devices were defined by Meyer (1975) as ways in

which the authors emphasize aspects of the structure of the text. These devices included phrases such as “because of” and “as a result” in cause/effect discourse, language relevant to the topic I was researching.

Using a sample of 102 ninth grade English-speaking students, Meyer, Brandt and Bluth (1980) randomly assigned their participants to read text “with signalling” or “without signalling.” Meyer et al (1980) found that readers who had scored well on the reading comprehension achievement test (the “good” readers) organized their written recall protocols with the same structure used in the passages they had read and that they recalled significantly more information than students who did not use the “signalling” strategy (the “underachievers”). The strategy of more successful readers included the systematic and organized encoding of information as an aid to recall; less successful readers seemed to lack the recognition of structure and language, specifically discourse markers, that connect ideas in a reading text. These findings suggested that, to be effective, “signalling” required the learners’ awareness of structure. Meyer, Brandt and Bluth (1980) had relied on students’ implicit knowledge of text structure. Could the conventions of text structure be explicitly taught to ESL students?

Explicit Instruction of Text Structure and Discourse Markers

Teaching about expository text structure can facilitate comprehension during the reading process for English-speaking students (Armbruster, Anderson & Osterag, 1987; Bartlett 1979; Taylor & Beach, 1984) and for ESL students (Carrell, 1985; Carrell, Pharis & Liberto, 1989).

Carrell (1985) designed a training study to determine to what extent ESL reading comprehension could be helped by explicit ESL teaching of text structure. In her study, the experimental group of 14 Level Four ESL students at an Illinois university were preparing for entrance into a university program. They were given instruction over five successive one hour sessions in four of Meyer's expository structure types: comparison, problem/solution, cause/effect and collection of descriptions. Students were provided with a packet of materials which the instructor used for the direct teaching of each structure; the instructor also gave individual feedback on students' work. Students in the control group were not given direction in structure of text but rather focused at sentence level on linguistic elements typical of the reading instruction at this level; they also answered questions about the text in writing and through discussion. Texts for each group were the same. Results showed that recognition and use of the two structures tested, comparison and collection of descriptions, increased significantly for the

experimental subjects in written recall posttests given immediately after training and three weeks later.

Carrell's study (1985) provided a useful model illustrating the value of explicit instruction in text structure and associated discourse markers.

The Use of Graphics

A facilitating approach to teaching text structures included graphic representations of ideas, for example, in charts and diagrams. This approach not only displayed the relationship between ideas but also reduced the amount of language for ESL learners to negotiate. By representing text/knowledge structures graphically, the learner was encouraged to consider all the references needed for comprehension and to create a coherent representation of what was understood (Anderson & Armbruster, 1980). Networking (Dansereau, 1979), mapping (Anderson, 1978), a structured overview (Barron, 1979), flowcharting (Geva, 1983) and map construction (Berkowitz, 1986) have been used as techniques relevant to the purpose of the instruction and the function of the graphic.

Geva (1983) studied the extent to which the flowchart technique was teachable to 48 first year English-speaking community college students taking a required English course. Her findings showed, as Meyer, Brandt and Bluth's (1980) study did, that students who improved their comprehension appeared to use

structural text information to guide their graphic representations. In Geva's (1983) pretest-posttest design, there was also a positive correlation between comprehension scores and students' representations of text structure in flowcharts suggesting that flowchart instruction could be effective. However, Geva (1983) noted that the use of a flowchart did not necessarily require the student to represent the relationship of ideas in a meaningful way; ideas could be represented in a linear fashion without recognition of the author's intent to organize ideas hierarchically. While graphic displays could encourage learners to produce a representation of what they understood after reading a text, they did not necessarily help students understand the structure of the text relevant to its content.

While reading researchers (Bates & Dudley-Evans, 1976; Herber, 1970, 1978; Widdowson, 1979) recognized that reading and understanding the structure of text require both a language and a cognitive component, the use of a graphic did not seem to guarantee that learners would make this connection.

The Knowledge Framework

Mohan (1986) advised using the structures of knowledge as a framework for the integrated development of language and understanding. Mohan believes

that classroom activities can be treated as “frames” of knowledge; each of the three theoretical frames is aligned with a practical one (Figure 1).

Figure 1.
General framework for knowledge structures (from Mohan 1986)

ACTIVITY		
	Specific, Practical (Action situation)	General, Theoretical (Background knowledge)
Description		Concepts and Classification
Sequence		Principles
Choice		Evaluation

Mohan (1986) recommends the use of visuals/graphics to make the abstract ideas of an activity more comprehensible for ESL learners.

Effects of teaching ESL students to use a graphic representation of the knowledge structure, classification, were studied by Tang (1992). ESL students in Grade 7 were randomly assigned to an experimental or a control group. Both

groups received training in the same vocabulary and content of a Social Studies unit. The experimental group received instruction in using a tree graph for classification of vocabulary; the control group was given a list of the words and questions to answer. In a written posttest, the experimental group recalled significantly more information than the control group and, according to the researcher's observation, showed "marked improvement" (p. 187) in the structure of their recalls where structure meant "an overt statement of the classification organization of the text" (p. 186). For example, in a summary about governments, students wrote, "The government of ... is made up of ..."; "There are three levels ..."; and "Japan has three levels of ..." The results of Tang's (1992) study showed that teaching ESL students how to use a classification tree could enhance their understanding and summary writing of the relations expressed in a classification text. In Tang's (1992) study, however, two students of extremely limited proficiency showed no gain from studying the graphic suggesting that explicit instruction of the graphic alone may not be enough to positively influence text/knowledge structure particularly for less English-proficient students.

In recent research by Ruhe (1996) a classification tree was used to support the listening comprehension of 103 ESL students at a mid-sized university/college in British Columbia. Four groups in a matched-group experimental design were set up to test the effects on comprehension of a classification tree with content

words written on the graphic compared with vocabulary lists of content words. Results showed that the graphic group scored significantly higher than the control groups indicating that "the better performance of the graphics groups was due to the diagrammatic features in combination with the vocabulary labels and not a result of the vocabulary alone" (p. 53). Thus, as Ruhe concludes, the graphics may provide an "illustrative equivalent" of the rhetorical pattern of the text which the participants' listened to. This is valuable to ESL students because, in attending to the meaning, students are likely to lose the language which structures the meaning (p. 53). Ruhe's study was focused on a text which students listened to while the study that I was carrying out involved students reading a text. However, the role of a graphic to represent text structure and to organize content was the same. In both situations the graphic supplied clues to meaning.

Work by Early, Thew and Wakefield (1986), Early, Mohan and Hooper (1989) and Early, Mohan and Tang (unpublished) have found knowledge structures present across British Columbia's Ministry of Education guides (K-12) which emphasizes further the immediacy of students' need to be familiar with their texts' discourse in order to successfully read the expository materials used in their classrooms. Furthermore, these findings stress the need for effective instruction which supports students in the analysis of text/knowledge structures in their reading. Because ESL students frequently experience reading texts as an

'overload' both linguistically and cognitively, the visual representation of the knowledge frame contained in the text can be a beneficial instructional resource.

The above studies illustrate the possibility of using graphics as teaching tools and give tangible evidence in their participants' written protocols of the positive effects of instruction in text/knowledge structures.

The ESL Speaker

Research in making the materials in university ESL classes more realistic and practical has shown that content-area instructors want their students to be able to analyze and synthesize assigned course readings (Ferris & Tagg, 1996; Horowitz, 1986; Johns, 1981a, 1981b, 1988, 1992; Ostler, 1980; Reid, 1989; Spack, 1988) and further, that they want students to present their understanding orally (Ferris & Tagg, 1996a; Mason, 1995; Ostler, 1980).

Swain (1988) states that understanding without precise syntactic and morphological knowledge is within students' capabilities but that producing discourse without this knowledge is not. Implications for instruction of oral discourse based on extensive data collected in elementary French immersion classrooms in Ontario (Swain & Carroll, 1987) were reported as follows:

1. input that will help learners focus their attention on particular form-function relationships is essential, and that
2. learners' language production will have to be at more than a phrase or clause level if they are to learn the mechanisms for coherent and accurate discourse.

The implications of Swain and Carroll (1987) provided impetus for my research where reading texts were the source of an extended discourse and where the purpose of reading was to talk about the cause/effect relationships contained there. Explicit teaching of discourse markers could, perhaps, focus students' attention on the relationship of events in a text and inform them of language that would express the ideas in a way that would be meaningful where English is the dominant discourse.

Expectations for Oral Tasks

Ferris and Tagg (1996b) noted that, at the same time that instructors expect oral proficiency in English, ESL students are frequently intimidated by academic speaking tasks. Students are insecure about their linguistic competency and they are unfamiliar with the differences in discourse between their native and English-language classrooms. To understand and plan for teaching/learning

strategies that would support content-specific discourse, Ferris and Tagg (1966a) recommended "analyzing the discourse of target situations" (p. 51). Their investigation began with a survey of academic oral/aural tasks at four different types of tertiary institutions in California - a community college, a public university that emphasizes undergraduate teaching, a public university that emphasizes research and a private school that focuses on research and graduate programs. Instructors in the academic departments with ESL students in their classes were surveyed to determine the types of oral/aural tasks they required, the shortcomings of ESL students who were unsuccessful in these tasks and recommendations they would make to enable ESL students to succeed in these activities. Although the findings of Ferris and Tagg (1996a) were limited by the response they received - a total of 234 from instructors in business, engineering, computer science, mathematics, music and natural sciences - the responses indicated that oral assignments were "real-world academic tasks" (p. 53). Tasks such as in-class debates, student-led discussions and out-of-class assignments requiring interaction with native speakers were "fairly uncommon" while other oral assignments seemed "very important." Business students, for example, were responsible for presenting case studies, participating in simulations and reporting on course readings; undergraduate science students needed to know how to give on-the-spot oral reports during labs. A number of instructors commented on their Asian students,

in particular, who were seen as culturally inhibited or shy to speak in class, to ask and answer questions effectively. In their recommendations, instructors encouraged ESL students to experience authentic lectures either in their ESL classes or by sitting in content classes to become familiar with the language and content of the discipline and to practise making oral presentations of different types including oral summaries of course readings.

Furthermore, Ferris and Tagg (1996a) reported that “college/university classroom of the 1990’s appear to be evolving toward less formal, more interactive styles” (p. 50) placing increasing demands on ESL students to be orally competent amongst their native English speaking peers. Library research, surveys and oral reports will likely be done in pairs or groups.

Content Specific Discourse

Encouraging ESL students to be active participants in classroom activities means that learners have the opportunity to produce language. Learners’ active involvement in oral activities is now considered “more acquisitionally beneficial than experience limited to passive reception” (Zuengler, 1993, p. 404) so that ESL learners will likely want to know they can speak competently about their content courses. Explicit teaching of text/knowledge structures could provide support for

ESL learners to understand the content and to speak competently and confidently about the texts they read.

Zuengler (1993) indicates that knowing content encourages oral participation of ESL learners. She researched native and non-native speakers of English who shared a major field of study at a large Midwestern university. In one group, 15 were non-native speakers (NNS) in intermediate-level oral skills ESL classes with more content knowledge in the shared major, 15 were native speakers (NS) with less content knowledge and 15 were shown to have an equal proficiency of content knowledge. The NNS group in a paired setting with a NS, became "the talkers" (measured by number of words including clarification requests, confirmation checks, comprehension checks and fillers) when they had the greater content knowledge. This outcome suggests that greater competency in expressing content knowledge can override broader limitations in oral proficiency.

The findings of DeAvila and Duncan (1981) illustrate the value of oral production relevant to a specific discourse, in this case, the language of mathematics. DeAvila and Duncan (1981) noted in their study of nine linguistic groups involved with problem solving that language proficiency was positively correlated with students' level of achievement. Cocking and Mestre (1988) also supported this finding among mathematics students adding that "the very act of talking through problems - of discussing various strategies for beginning the

problem and using the language to solve the problem - enables the students to gradually become comfortable listening to and using mathematical language.”

Attention to the oral production of language specific to content has the potential to support ESL learners linguistically and cognitively as it familiarizes them with the discourse of the classroom.

The discourse of specific disciplines, where language, content, thinking and oral production interact, is intense and demanding.

Bialystok (1982) believes that

... instruction must consider the specific goals of the learner and attempt to provide the appropriate form of knowledge to achieve these goals (p. 205).

In response to Bialystok's requirement for “an appropriate form of knowledge” and to the need expressed by both students and instructors for competency in oral English, I will explore the effects of explicit instruction of cause/effect structures on the reader-as-speaker and will describe the research process in the following chapter, Conduct of the Study.

CHAPTER THREE

CONDUCT OF THE STUDY

In Chapter Three I explain the research method which I implemented in this study. I describe the participants, the materials, the pre-test - training - post-test model including the scoring criteria for test analysis and the follow-up study one year later which extended the inquiry to examine student-generated graphics.

Introduction to the Study

The expectation of competency has been expressed in recent studies of content classrooms at the post-secondary level (Ferris & Tagg, 1996a, 1996b; Johns, 1988, 1992; Reid, 1989; Spack, 1988), in ESL needs assessment surveys in British Columbian colleges and universities (Mohan & Dooley, 1992) and by ESL students and instructors in classrooms where I teach. Understanding the content of discipline specific text and speaking about it proficiently are, I believe, real needs in language and content classrooms today.

Researchers have suggested that specific intervention techniques taught to students, both English-speaking and ESL, have the potential to enhance

communication about a text (Anderson, 1978; Geva, 1983; Mohan, 1986; Tang, 1992) and that explicit teaching of text structure can positively influence language learning for ESL students (Carrell, 1985, 1992; Tang, 1992).

In this study, I have examined the effect of intervention on the oral production of ESL learners in a university preparation program. The instructional techniques used were a question-and-answer series and a graphic. Both techniques drew attention to the text's structure and to the discourse markers normally attached to it which, in this study, referred to the meaning and language of cause/effect relationships. The questions I explored were:

To what extent and in what ways does explicit instruction in discourse markers, relevant to cause/effect relationships, influence college level, intermediate ESL readers' oral production?

In what ways do two intervention techniques, a question-and-answer series and a graphic representation, affect college level, ESL intermediate readers' oral recall of cause/effect text?

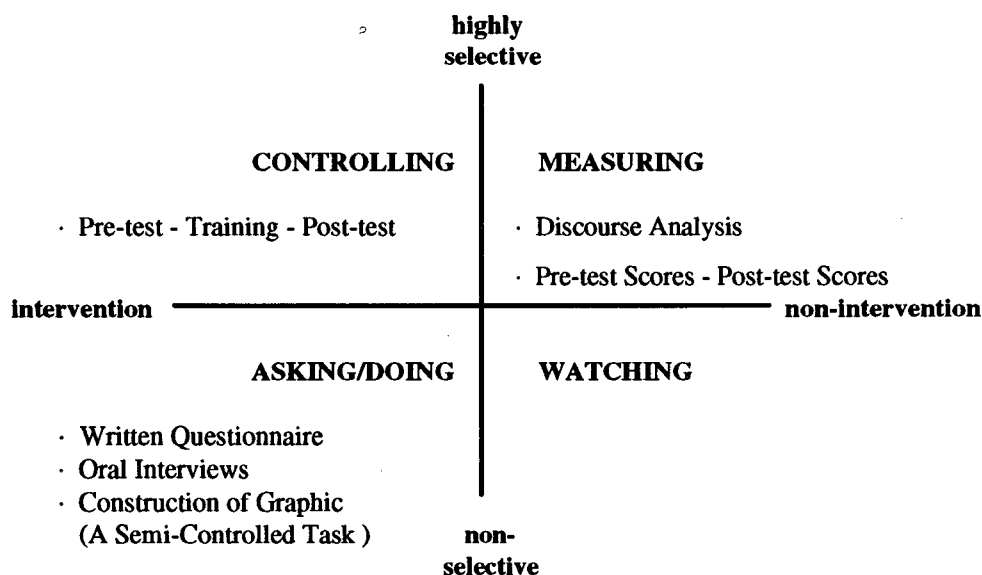
Through this research process I attempted to clarify my understanding "about the range of meanings" (Crookes, 1993) that participants attached to

specific instructional techniques designed to promote comprehension of text and oral production about that text.

The Research Method

I began this research study to learn how ESL students experienced reading - how they comprehended text and spoke about it. In carrying out the research, I discovered that the research process does not move in a single direction in linear fashion but between, around and in response to existing and emerging criteria. One model that allows for such movement during the research process was developed by van Lier (1988) whose analysis places research along two parameters, a selectivity parameter based on the degree to which the researcher prespecifies the event being investigated, and an interventionist parameter based on the extent to which the researcher intrudes on the event. The intersection of these two parameters creates four 'spaces' to describe the interaction between the researcher and the participants with the possibility for research to shift from space to space as new issues develop. As illustrated in Figure 2, the four spaces are: (a) a 'controlling' space (b) a 'measuring' space (c) an 'asking/doing' space and (d) a 'watching' space; I have placed the processes of this research study on van Lier's model (Figure 2).

Figure 2.
Research design (based on van Lier, 1988)



I initiated the research process in a 'controlling space' with experimental conditions to assess the effects of instruction in cause/effect language and to analyse the discourse students produced orally in a 'measuring space.' This pre-test, training session, post-test model, based on previous studies by Carrell (1985) and Tang (1992), was followed by a qualitative method of research in the form of a questionnaire in the 'asking/doing' space. The questionnaire contained open and closed items to discover the participants' perceptions of effects of the training and its effects on their learning. The closed items of the questionnaire provided a

general group response and the open items allowed for idiosyncratic differences (Schumaker & McMillan, 1992). I also included in the 'asking/doing' space, one year later, oral interviews for the purpose of contextualizing the effects of the previous training within the current academic experiences of participants and to determine long-term effects of the training. As the final stage of the research process, in response to students' reflection and evaluation of the graphic instruction, I investigated participants' construction of a graphic to support their oral recall of a cause/effect reading passage in an 'asking/doing' space. By asking participants to read and construct their own graphic and to describe and explain this construction, I sought to understand what might be meaningful and necessary to develop language that would enhance students' oral recall of text.

In summary, the study included:

1. a pre-test, training session, post-test
2. a written questionnaire

One Year Later

3. a group interview
4. a semi-controlled task
5. individual interviews

I have expressed the outcomes of this study as findings. The findings are not meant to be generalizable and compared to other data but to be analytical of data as 'they are' (van Lier, 1988, p. 2). They reflect the perspectives of the ESL students who participated in the role of reader-as-speaker and, for this, offer insight into student experiences which extend my understanding of the teaching/learning relationship.

The Participants

I visited an ESL reading class, intermediate level (Level Three), to explain my interest in supporting ESL students in their reading and speaking. I asked for volunteers who would be willing to practise outside of their regular class time. Fourteen students were eager to participate; they signed the Informed Consent Form (Appendix 1).

The volunteers had been placed in Level Three, the intermediate level of a five level program, either by their performance on the department's entry examination, the English Placement Test, or by their instructor after successfully completing Level Two of their ESL program.

A profile of each student is given below (Table 1); the names are not the participants' real names.

Table 1.
Profiles of participants

Question-and-Answer Group

<u>Name</u>	<u>Gender</u>	<u>Age</u>	<u>First Language</u>
Sanae	Female	24	Japanese
Taro	Male	28	Japanese
Hide	Male	30	Japanese
Yoshiteru	Male	28	Japanese
Tosh	Male	23	Japanese
Ayumi	Female	21	Japanese
Keiko	Female	21	Japanese

Graphic Group

<u>Name</u>	<u>Gender</u>	<u>Age</u>	<u>First Language</u>
William	Male	24	Mandarin
Ken	Male	17	Cantonese
Hiromi	Female	24	Japanese
Samuel	Male	23	Mandarin
Annie	Female	19	Mandarin
Kana	Female	22	Japanese
Jonathan	Male	29	Mandarin

Each student was randomly assigned to a group, the question-and-answer group or the graphic group. The fact that students in the Question-and-Answer Group were all Japanese was coincidental. The groups met independently, at different times; I instructed both groups using identical reading texts.

The Materials

The reading texts used in this study consisted of six passages adapted from The New Encyclopedia of Science (Raintree Publishers, 1982): Rain, The Rainbow, Volcanoes, Lightning, The Monsoon and A Geyser (Appendices 3, 4, 5, 6, 7, 8). I chose these passages because they represented natural phenomenon that were likely familiar to all participants and seemingly without cultural bias. The macrostructure of each passage was cause/effect. I revised the passages to be approximately equal in length (approximately 200 words) and to be of similar difficulty in their vocabulary and sentence structure.

I prepared materials for two instructional techniques: a series of questions for each passage which could elicit discourse markers in students' answers specific to cause/effect discourse (a sample is found in Appendix 9) and a graphic adapted from Teaching Factual Writing (Callaghan & Rothery, 1988) which consisted of a series of circles and arrows (Appendix 10). I chose this graphic as it is frequently used in text to represent cause/effect relationships. Words written in the circles represent 'a state of being' and words in the spaces between the circles represent 'a changed state' (Callaghan & Rothery, 1988, p. 70). Arrows connecting the circles and spaces indicate that a cause/effect is occurring (Callaghan & Rothery, 1988, p. 70).

The written evaluation (Appendix 11) which participants completed during the last training session consisted of six questions to elicit their perceptions of the instructional technique they had experienced.

The Pre-test

The pre-test was conducted by ESL colleagues. We had met prior to the pre-test to discuss the procedure so that the data collecting techniques would be consistent. The interviewers received the following written guidelines (Figure 3) on the procedure and on the collection technique, particularly the use of prompts, appropriate to the study.

Interviewers met with the participants individually. The interviewer gave each participant the pre-test passage, Rain, to read in preparation for an oral recall. The participant also received a Glossary and a piece of blank paper for notemaking. Following a period of fifteen minutes, after the participant had independently read the passage, the interviewer asked for an oral recall of the passage; participants could use the Glossary for reference.

Participants completed their recalls within fifteen minutes.

The entire pre-test session was audio-taped and later transcribed for analysis.

Figure 3.
Guidelines for interviewers.

DURING THE PRE-TEST AND POST-TEST INTERVIEWS, YOU WILL BE ASKING THE PARTICIPANTS TO READ A PASSAGE AND TO RETELL THE CONTENTS TO YOU. IN THIS SENSE, THE PARTICIPANTS WILL BE THINKING ALOUD. SHOULD THE PARTICIPANT SEEM HESITANT OR COME TO A STOP, YOU MIGHT SAY, "KEEP TALKING" OR "PLEASE GO ON." THIS KIND OF PHRASE IS APPROPRIATE BECAUSE IT IS MINIMALLY DIRECTIVE AND DOES NOT PROVIDE THE PARTICIPANTS WITH INFORMATION ABOUT THE CONTENTS OF THE PASSAGE THEY HAVE READ. ALTERNATE CUES MIGHT INCLUDE THESE USED BY SARIG (1987):

"YOU'RE DOING JUST FINE. PLEASE GO ON." OR

"WHY DON'T YOU GO ON?" OR

"WHAT ARE YOU THINKING OF NOW?"

The Training Session and the Written Questionnaire

Although the training sessions were held out of class time, I wanted to create a setting that was natural to the students' expectations of a classroom. Students sat at desks and were encouraged to ask questions, take notes and interact with each other and myself, as instructor. I used the blackboard and an overhead projector to present material. Students attended the one-hour training sessions at a regular time for three successive days.

During each training session, I planned that participants would be involved in the following activities:

- reading a cause/effect text
- writing answers to a series of questions or
completing the graphic display
- reviewing their answers to clarify understanding in student-student and student-instructor settings
- identifying discourse markers that occurred in their questions and answers
- recalling the text orally with a partner

A detailed account of the training sessions follows.

Day One

Participants completed a written Profile (Appendix 2).

To orient students to the study, I then presented an overhead display (Figure 4) outlining the purpose of the training.

Figure 4. The overhead display

THE PURPOSE

THE PURPOSE OF THE TRAINING SESSIONS IS TO READ A "CAUSE AND EFFECT" PASSAGE AND TO TALK ABOUT THE CONTENT

1. GIVING ACCURATE INFORMATION
2. USING LANGUAGE THAT EXPRESSES "CAUSE AND EFFECT"

A DEFINITION

WHAT IS "CAUSE AND EFFECT"? Cause and effect gives a condition or a reason for something to happen (the cause) and gives the result (the effect).

EXAMPLES OF LANGUAGE

If ... happens, then it rains.

Because ... happens, rain falls to the earth's surface.

The result of ... is rain.

As a result of ..., rain falls.

In addition, I included a definition of “cause and effect” both to inform those who were uncertain about a meaning and to provide, but not limit, the participants with an explanation they could apply to the activity. Finally, I drew participants’ attention to examples of language that express cause/effect relationships.

Each participant then received the passage, Rain (Appendix 3), a Glossary (Appendix 3) and a piece of blank paper for notemaking. I chose the passage, Rain, as the first reading because it was familiar to all of the participants from the pre-test and, for this reason, could reduce the cognitive demands of the text thus allowing the students to attend more easily to the instructional technique I was introducing at their first training session.

The Question-and-Answer Group

I presented this rationale for the instructional technique chosen for the group (Figure 5):

Figure 5.
Rationale

The Question and Answer Group

ANSWERING THE FOLLOWING QUESTIONS WILL HELP YOU TO ORGANIZE YOUR THOUGHTS ABOUT "CAUSE AND EFFECT." IN THIS SERIES OF QUESTIONS THERE ARE CAUSE AND EFFECT EVENTS. ONE EVENT, A CAUSE, LEADS TO ANOTHER, AN EFFECT. THIS PATTERN CONTINUES THROUGHOUT THE PASSAGE.

I then gave participants a set of questions typical of end-of-chapter reading activities designed to elicit the main ideas of the text and to promote the use of discourse markers.

For example, the text, Rain, includes this paragraph:

As the condensation continues in a cloud, the tiny water droplets grow into bigger ones. When they are heavy enough, they fall from the cloud as precipitation. If they do not evaporate as they pass through warmer air below, they will hit the Earth's surface as rain.

To elicit language relevant to the text/knowledge structure of cause/effect, I asked:

“What is produced when the water vapour condenses into ice and freezes?” (Question 4, Appendix 9).

Answers such as these might have been given:

The droplets in the clouds become heavy so (therefore, as a result, consequently) they fall as rain.

Droplets fall as rain because they become heavy in the clouds.

Because droplets in the clouds become heavy, they fall as rain.

Following student-student and student-instructor discussions of answers, participants identified orally the discourse markers they had used that were specific to cause/effect structures and marked these in their questions and answers. I recorded these on the overhead.

Finally participants recalled the passage orally to their partners with the overhead list available for reference. The partner acknowledged discourse markers as they were spoken and confirmed the accuracy of the recall.

The Graphic Group

I introduced the participants to their instructional technique with this rationale for its use (Figure 6).

Figure 6.
Rationale

The Graphic Group

THE GRAPHIC OR DIAGRAM BELOW WILL HELP YOU TO ORGANIZE YOUR THOUGHTS ABOUT "CAUSE AND EFFECT." IN THIS DIAGRAM A SERIES OF CAUSE AND EFFECT EVENTS TAKE PLACE. ONE EVENT, A CAUSE, LEADS TO ANOTHER, AN EFFECT. THIS PATTERN CONTINUES THROUGHOUT THE PASSAGE.

The graphic group received a piece of paper on which to draw a series of circles and arrows, modeling my graphic from the blackboard. Words written in the circles would record a condition of the phenomenon and words in spaces would record a change in the condition. Arrows would indicate that a cause/effect event was occurring. At this stage of the training I included the first three main ideas of the text and the last to create a cloze activity.

Participants read the passage, completed the graphic display and discussed their ideas with other students and with me. To raise awareness of the connectedness between the language of cause/effect and the content, students inserted discourse markers in appropriate locations on the graphic (Appendix 12). I recorded these on the overhead.

Participants then recalled the passage orally with a partner, as the question-and-answer group had, confirming discourse marker use and accuracy of content.

Day Two

I reviewed with both groups, through discussion and questions, the purpose of the training sessions, a definition of "cause and effect" and the discourse markers they recalled using on the previous day.

I introduced a new reading passage, The Rainbow (Appendix 4), a Glossary (Appendix 4), as well as participants' instructional materials, either a series of questions-and-answers or a graphic, to the participants.

The Question-and-Answer Group

As on Day One, participants read the passage, answered the questions to record main ideas and discussed answers in a paired and whole group setting. They identified discourse markers in their questions and answers which were appropriate to cause/effect relationships then listed these on the overhead for reference during their oral recall of the text.

The Graphic Group

Training continued as on Day One with participants reading the passage, completing the graphic, discussing the graphic in paired and whole group settings and inserting appropriate discourse markers on the graphic. The participants added discourse markers to the previous days' overhead list then practiced recalling the text orally with a partner attending to the cause/effect language and the accuracy of the recall.

Day Three

In both groups participants began their sessions by orally brainstorming and listing on the blackboard the cause/effect discourse markers they had used over the previous two days. I then distributed a list of discourse markers (Figure 7) which I had compiled from their Day One and Day Two overhead lists of discourse markers.

Figure 7.
List of discourse markers from day one and day two

as	if ... then
as a result	so
the result is	consequently
because	therefore
cause	when
causes	
if	

I gave students their third reading, Volcanoes (Appendix 5), a Glossary (Appendix 5) and the questions or a graphic.

Day Three continued as Day One and Day Two had. Participants read the passage, completed the questions or graphic attending to the discourse markers, discussed the answers and orally recalled the contents of the passage.

At the completion of training on Day Three, I introduced and distributed a questionnaire (Appendix 11) which required students to reflect on and evaluate the effectiveness of the instruction they had participated in and to determine what changes might better facilitate their oral production of language relevant to cause/effect structures.

The Post-test

On the next day participants received a post-test passage, Lightning (Appendix 6), which was similar in text/knowledge structure, length and difficulty to those passages used in the pre-test and in the training sessions. The procedure followed that of the pre-test and was again carried out by my ESL colleagues. Interviewers met each participant individually and introduced the passage and a Glossary. As in the pre-test, the participants received a piece of blank paper; they could use their dictionaries. After fifteen minutes of independent reading, the interviewer asked the participant to recall the passage orally with the Glossary available for reference.

All of the participants completed the recalls within fifteen minutes.

Interviewers taped the entire post-test session. I transcribed and analysed the tapes.

Analysing the Oral Recalls

To analyse the participants' oral recalls, both pre-test and post-test, I referred to Mohan's (1986) criterion for determining cause/effect in discourse: "to analyse a cause-effect relation is to work out what conditions are necessary and sufficient to result in an effect" (p.83).

In scoring the recall protocols I was concerned with the presence of cause/effect discourse markers to fulfill the criterion I had set out for a cause/effect event to occur but was also aware that accurate ideas and comprehensible speech were required for proficient academic performance. As a result, I chose scoring categories adapted from Bialystok (1982) which separately identified syntactic and semantic elements of discourse and which allowed for the expression of ideas in 'information units' rather than complete sentences in keeping with characteristics of natural speech. Through the syntactic analyses I evaluated grammatical accuracy in participants' use of discourse markers; through the semantic analysis I evaluated the meaning of the discourse markers and the interrelationship of cause/effect ideas. The categories and relevant scores are as follows:

i) **Syntactic Accuracy**

CRITERIA	SCORE
a. error-free use of discourse marker	2
b. error in discourse marker use	1
c. incomprehensible statement	0

ii) **Semantic Accuracy**

CRITERIA	SCORE
a. fulfills the cause/effect criteria by -	
1. expressing a cause/effect relationship	2
2. formulating a hypothesis about a cause/effect relationship.	2
3. juxtaposing time or order to create an outcome	2
b. partially fulfills cause/effect conditions	1
c. represents inaccurate information	0
d. represents insufficient information	0

A colleague in the ESL department and I rated the oral protocols of each participant resolving differences through discussion.

At the completion of the training on Day Three, I had given the participants a questionnaire to evaluate the influence of the training. Several students in the group using graphic representations of text had indicated limitations to an imposed graphic. To examine the long term influence of explicit instruction in the use of

the graphic I had selected for the study in July 1995 and to investigate the process of student-generated graphics, I attempted to contact participants but most had left the college to travel, to return home or to attend other institutions. In July 1996, almost one year after I began this study, three students who had by this time completed their ESL program and were in academic programs, agreed to participate in further research.

One Year Later

Introduction

I organized a group interview with three participants from the July 1995 study at which time I introduced the discussion topic and guided the conversation with specific questions (Rubin & Rubin, 1995). The three participants had experienced the training with graphics. I asked these questions:

How did the study last year using the graphic - circles and arrows - affect your reading and speaking?

How are these diagrams or visuals useful to you as ESL students?

What suggestions would you have for other students who might use this technique or might not use this technique?

I audio-taped and transcribed the discussion to look more closely at students' interaction with graphics as they read and spoke about text.

The Student-Generated Graphic

To inquire further into the effect of a graphic on ESL students' reading and oral recall I introduced a semi-controlled activity which required students to construct their own graphics while reading a cause/effect passage. The purpose of this research was to examine the following questions:

1. What do advanced level ESL students do when they construct a graphic representation to support their oral recall of a reading?
2. In what ways and to what extent does the student-generated graphic support oral production?
3. To what extent did the graphic training in the study one year earlier, in July 1995, affect the student-generated graphic?

For this inquiry, I chose two cause/effect passages that were comparable in length and readability to those used in July 1995. The passages were called The Monsoon (Appendix 7) and A Geyser (Appendix 8). The task required each participant to create a graphic which would represent the text in a meaningful way

and to use the graphic as an aid to orally recall the text. I gave the participant the reading passage and blank paper; as in the first study, the participants could use their dictionaries while reading the passage. Students took as much time as they needed to complete the task and this time was recorded.

The Individual Interviews

On completion of the task, I asked each participant these questions:

Tell me about your graphic. What did you draw first? Next?

After that?

Do you think your graphic will help you to recall the text?

At this point the student recalled the text.

In this graphic, what helped you to talk about the text?

In general, how are graphics helpful to you as a student?

What recommendations would you make about the construction of a graphic?

By listening to the participants' audio-taped discussions, I completed the comparison/contrast chart illustrated below (Table 2) to compare and contrast students' interaction with graphics in an individual as well as a collective sense.

Table 2.
Comparing and contrasting individual responses in students' oral interviews:
A sample.

TITLE OF THE READING PASSAGE:			
STUDENT'S NAME	STUDENTS' RESPONSES		
	CONSTRUCTING THE GRAPHIC	USING GRAPHICS	RECOMMENDATIONS
John	<i>Write the most important detail step by step. If I don't write down vocabulary, I can't describe. Some symbol is useful. Writing whole word takes much time.</i>	<i>Make a visual if I don't have much knowledge about the topic. If I have presentation or speak to other people, probably I can get more confidence.</i>	<i>Making graphic depends on subject. Science needs more detail to understand the knowledge.</i>

By coding students' responses, I identified recurring ideas which, integrated with findings throughout the research process, contributed to the following chapter, Findings of the Study. The development of findings occurred through connected processes as I identified, examined and attempted to explain events.

CHAPTER FOUR

FINDINGS OF THE STUDY

In Chapter Four I discuss the findings of the research observations based on the results of students' pre and post-tests, samples of their work during the training, their responses to the written questionnaire and their ideas expressed during our interviews. These observations are placed in the context of the classroom with a view to enhancing the teaching and learning of English-as-a-Second Language.

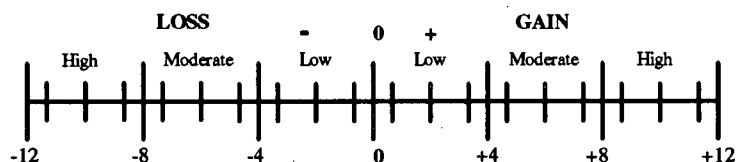
Introduction

Throughout this study I have been guided by the need to support ESL students who are required to speak about texts they read. Specifically, I have been interested in students' interaction with cause/effect text and the production of their own oral discourse. The following observations suggest possibilities for student learning when cause and effect discourse markers are explicitly taught.

OBSERVATION ONE: Explicit Instruction of Cause/Effect Discourse
Markers has the Potential to Enhance Oral
Production

Following the pre and post-tests, I transcribed the students' oral recalls to look for changes in the syntactic and semantic elements of their oral production. Students' scores, based on the criteria in Chapter Three (p. 14), are summarized and compared on a scale of relative gain and loss in Table 3. I have measured students' gain or loss relative to other participants and, to facilitate discussion, have referred to these gains or losses as low, moderate or high within the range of scores produced by the two groups in this study; zero represents the lowest of participants' scores and twelve the highest.

Table 3
Summary of Pre-test and Post-test Scores for Oral Recalls on a Scale of Relative
Loss and Gain



The Question-and-Answer Group

Participants	Syntactic Accuracy		Gain/Loss	Semantic Accuracy		Gain/Loss
	Pre	Post		Pre	Post	
Sanae	9	8	-1	5	0	-5
Taro	2	14	+12	3	4	+1
Hide	7	2	-5	2	2	0
Yoshiteru	5	10	+5	6	8	+2
Tosh	2	8	+6	0	2	+2
Ayumi	4	8	+4	0	0	0
Keiko	7	7	0	0	4	+4
Mean	5.14	8.14	3.00	2.29	2.86	+57

The Graphic Group

Participants	Syntactic Accuracy		Gain/Loss	Semantic Accuracy		Gain/Loss
	Pre	Post		Pre	Post	
William	3	8	+5	0	3	+3
Ken	10	10	0	4	0	-4
Hiromi	4	11	+7	0	6	+6
Samuel	5	2	-3	0	4	+4
Annie	12	11	-1	3	5	+2
Kana	3	10	+7	4	5	+1
Jonathon	1	2	+1	2	1	-1
Mean	5.43	7.71	2.29	1.86	3.43	1.57

Overall Mean	5.29	7.93	2.64	2.07	3.14	1.07
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Scores for pre and post-tests (Table 3) show that four students in each group increased the syntactic accuracy of their post-test recalls and that syntactically, each group made a small but definite gain (Question-and-Answer group Mean = +3.00; Graphic group Mean = +2.29). Syntactically participants' scores in the Question-and-Answer group showed gains that were more than four times the losses and, in the Graphic group, five times greater than the losses.

Semantic accuracy, on the other hand, in each of the groups showed more modest improvement (Question-and-Answer group Mean = +0.57; Graphic group Mean = +1.57). In this area of oral production, three students in each group had scored zero in their pre-tests highlighting the complexity posed in communicating the relationship of cause and effect events in English. In the post-tests, each of these participants, with one exception, increased their semantic accuracy by at least two and as much as six. For students who have difficulty recognizing the structure of cause and effect in English discourse, and whose oral production may not adequately express the semantic relations of the cause and effect event, explicit instruction in relevant discourse markers could provide a means for these students to structure their oral discourse.

For three students, the training received in this study affected neither their syntactic nor semantic accuracy in a positive way. The post-test scores of these three students, Sanae, Hide and Ken, remained unchanged or showed a loss of as

much as five. Moderate to high scores in pre-test syntactic accuracy suggests that prior learning might have influenced these students' scores and that their learning was relatively unaffected by the training. However, loss in post-test scores for semantic accuracy point to some interference possibly created by the training. Although the mean for semantic accuracy is greater in the Graphic group (Mean = +1.57), the difference (+1.00) is too slight to say that this instructional technique is preferable to a Question-and-Answer series. Overall, scores indicate that more students showed gain rather than loss semantically (Mean = +1.07) and syntactically (Mean = +2.64).

The number of participants in the study was very small for inferential statistical analysis to be valid; however, observation of pre and post-test protocols revealed some positive change in students' language. For example, several students in their post-test, added to the variety of conjunctions and verbs that were appropriate to the discourse as summarized in Table 4. Eleven of the fourteen participants retained, in their post-tests, language that typically construes cause and effect meaning and eight of these participants included in their speech discourse markers that had been featured in their training (Figure 7). Discourse markers that were featured during the training and produced during the post-test recall are in bold print.

Table 4
A summary of cause and effect language produced by participants

The Question-and-Answer Group

NAME	PRE-TEST	POST-TEST
Sanae	makes, if, so, getting	if, making, make
Taro	so, become, if	made by, the reason of, if, that is the reason, so, the result
Hide	become, if, after, gets to be	if, change to, when
Yoshiteru	become, so, change, when	makes, so, when, become, happen
Tosh	if	make, happen
Ayumi	if	causes, become, the result
Keiko	if, become	when, happen, become

The Graphic Group

NAME	PRE-TEST	POST-TEST
William	if, so, because	makes, as a result, when
Ken	become, after, if, because of	when, make, become
Hiromi	so, made	made, cause, become, if, when
Samuel	if, become	when, change, become, if, happen
Annie	when, become, happens, because, make	when, make
Kana	when, become	when, make, become
Jonathon	when, become	when, make

A comparison of test scores (Table 3) and quantity of discourse markers produced (Table 4) shows that, with the exception of Tosh, students who had gained in their syntactic accuracy had also increased their use of discourse markers in their post-test recalls. Furthermore, students in the graphic group, in their post-tests, included both cause and effect events in their statements and formulated a hypothesis about the cause/effect relationship more frequently than they had in their pre-tests. These students appeared to have used the language of cause and effect to help them structure meaning.

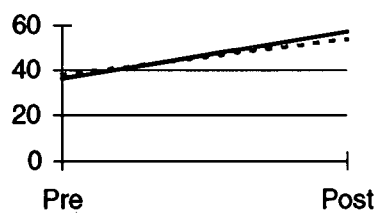
Explicit instruction in the use of discourse markers offers students an understanding of language that is conventionally recognized in cause/effect discourse and may serve to prompt its production in their oral text with the exception, in this study, of the markers "consequently" and "therefore." Perhaps with a longer training period or in a written rather than a spoken recall, this language would have emerged as students became more familiar with and understood their meaning and function.

Further analysis of participants' scores showed that gain from pre to post testing for both groups, syntactically and semantically, was similar (Figure 8). The strengths of the gains across the groups was consistent suggesting that explicit instruction of cause/effect discourse markers supported by a question-

and-answer series or by a graphic can have a positive effect on students' oral production.

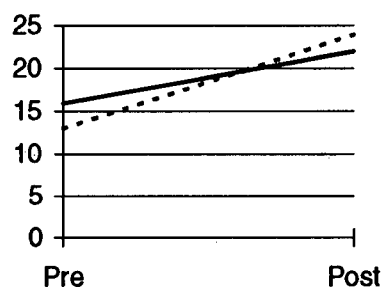
Figure 8.
Comparison of syntactic and semantic gain

Syntactic gain



..... Graphic — Q-A

Semantic gain



..... Graphic — Q-A

More students showed gain both syntactically and semantically: the Question-and-Answer group +3.00 syntactically and +0.57 semantically, the Graphic group +2.29 syntactically and +1.57 semantically. The results of this study are not meant to conclude that explicit instruction caused students to improve their oral production of cause and effect discourse; rather, the results of this research suggest that the training encouraged a process that brings language and meaning together without causing negative effects for the majority of the participants. Explaining the outcomes of this study would require consideration of the tendency for people to perform differently because they are participating in research, as well as stricter controls over variables such as students' reading proficiency, speaking ability, prior knowledge and cultural/linguistic background. Possibly the results of the Question-and-Answer group were influenced by a shared Japanese background. However, to understand these effects, if they exist, would require further study with larger samples of a student population.

Cause/effect discourse, as the participants experienced in this study, presents challenges to ESL learners as they attempt to speak. To further understand the complexities of cause/effect oral production, I have analyzed statements from three oral recalls of students whose scores had shown relatively high gain.

I have referred to linguistic devices which Mohan (1995) attributed to the knowledge structures of principles (Figure 9). The linguistic devices are as follows:

generic references: ideas that classify phenomena; are typically used by the author to link the main ideas

conjunctions: cohesive mechanisms that are often realized through the use of adverbial and prepositional phrases and causative conjunctions

transitivity: material processes in the verbal system

lexis: specific words that encode the meaning of the knowledge structure of cause and effect, or principles

Figure 9.
Sample discourse analyses of participants' oral protocols

CODE:	References	CAPITALS
	Conjunctions Transitivity Lexis Pause	bold <i>italics</i> <u>underlined</u>
CONDITION/CAUSE		EFFECT/RESULT
i) <u>when</u> the WIND of air uh rise through the CLOUDS <u>so then</u> the rubbing <u>when</u> the WIND <i>blows</i> . from the . through the CLOUDS		the WATER and ICE <i>rub</i> other WATER and ICE <u>makes</u> the CLOUDS . to lose ELECTRON the ELECTRIC CHARGE <i>became</i> become larger and the huge SPARK <i>happens and it is</i> LIGHTNING.
ii) They (crystal drops) <i>are rubbing</i> each other		and it <i>makes</i> CLOUD <i>cause</i> ELECTRON <i>become</i> negative and negative and positive. Mm . clou . under the CLOUD <i>become</i> negative ELECTRON and tops <i>become</i> positive.
iii) <u>If</u> the WIND uh . turn to side electric light flow to each side uh one side to other side		it's <i>make</i> it is <i>make</i> uh ELECTRIC CURRENT CHARGE <u>so</u> mm . uh .. <u>the result</u> mm . LIGHTNING . <i>flows</i> to each side <u>so</u> it's like LIGHTNING

Language is a dynamic means of expressing intended meaning (Brown & Yule, 1983). The analysis in Figure 9 helps to identify what students can and can't do and to understand their difficulties. By knowing the discourse of a text/knowledge structure ESL students have the potential to enhance their learning about references, conjunctions, transitivity and lexis, features of English which give meaning and cohesiveness to the discourse they produce and which their listeners hear.

OBSERVATION TWO: Self-Reports of Students Reveal Differences in the Effects of Using Question-and-Answer Series and Graphics as Supports to Oral Recall

In this study, I explored the question-and-answer series as a source for language as well as for content learning because question-and-answer series are commonly found in teaching materials to summarize and review content and to test comprehension. According to their post-training evaluations (Appendix 11), six of the seven participants had not previously received instruction in using questions and answers to talk about a cause/effect reading passage. However, they responded in their written evaluation after the training that the instruction in this study had helped them to understand and to talk about the reading passage. In

their self-reports, they spoke of the comprehension and clarity which the training provided and, in particular, to the support they needed “to explain” their ideas.

As Mohan points out in Knowledge Structure and Academic Discourse (ms.), ESL students in academic settings are involved in language socialization. If students, such as the participants in this study, are unfamiliar with the expectations of the academic environment, they may require explicit instruction in the organization and use of language for an intended meaning and purpose. In this study, “to explain” a cause/effect situation to peers and to an instructor provided an opportunity for language socialization to occur.

Like most of the participants in the question-and-answer group, the participants in the graphic group reported that they had not previously received instruction in their specific training - constructing graphics to talk about a cause and effect reading passage. Three of the participants in the graphic group were satisfied that the graphic had helped them to talk about the text although not each of these students made noticeable gain in the post-test. They expressed the effects of their instruction this way:

It is easy and quickly to find the main ideas.

Help me to take down the most important details in the article.

It shows me to find out the event easily.

However, not all participants in the graphic group shared this sense of success. As one student commented about the value of the graphic, "sometimes it make me more confuse ... I use a different way to make it clearer." I began to reconsider my choice of graphic forms.

From my experience in the classroom I had recognized the use of arrows in cause/effect graphics in textbooks, teaching manuals, reference materials including electronic media and students' notes. In recent discussions at The University of British Columbia (Working Paper, 1995), researchers of knowledge structures analysis stated that "The simplest way to express the relationship of a cause or condition and the effect or result is with the use of arrows" (p. 29). As well, Callaghan and Rothery (1988) in their report, "Teaching Factual Writing: A Genre Based Approach," had used a series of circles and arrows to display a series of cause/effect events. My decision to introduce a graphic of circles and arrows to this study seemed appropriate. But several of the students in the graphic group found the graphic problematic which they expressed in their post-training evaluation. These were some of the responses:

This ideas (cause result) puzzled me because I didn't know which are cause or result.

When I read the article, I did not know which parts should I write down in the circles.

Other participants made these suggestions:

Paint another kind of picture, maybe just have one circle or use arrow to explain.

Drawing picture is more helpful, I think.

Based on students' responses, I could not assume that the meaning I had intended the graphic to have would be a shared meaning.

OBSERVATION THREE: The Explicit Instruction of Discourse Markers
Could Facilitate Students' Development of
Notemaking Skills

The questions which I set out to explore in this study did not include an investigation of students' notemaking skills. However, as I reviewed students' pre and post-test samples, I noticed several recurring characteristics in the notes they made as they read in preparation for their oral recall. I wondered if the recurrence of these characteristics could be represented on a continuum of skills. For the purpose of this study, I have attempted to organize these characteristics which students demonstrated to reflect stages of their notemaking beginning with randomly listed words and developing into a graphic representation of the text.

A comparison of pre and post-test samples (Figure 10, 11, 12, 13) showed that students might be guided toward organized and meaningful notemaking if they attended to the dominant text/knowledge structure in their reading and particularly if they used a graphic to support their analysis of the text. In the results, in the Question-and-Answer group, four of the seven students did not make notes during their pre or post-tests while the remaining three students demonstrated some development in their notemaking skills on their post-tests. In the graphic group, six of the seven students did not make notes during their pre-tests but, in the post-test, all students attempted to organize their ideas by grouping and sequencing. Pre and post-test samples follow (Figure 10, 11, 12, 13) to illustrate how explicit training in answering a series of questions or using a graphic to represent relationships between ideas might affect notemaking in a positive way. It is also a possibility that students, by developing their notes, might be better able to recall the texts they read, syntactically and semantically, as suggested by the gain these participants made in their post-test scores.

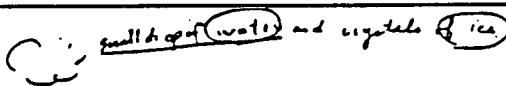
Figure 10.

Yoshiteru's (the question-and-answer group) pre and post-test notemaking sample.

PRE-TEST

Water is made up of molecules.
if
evaporation

POST-TEST

 small droplets (water) and crystals of ice.
 When wind of warm air rise through the cloud.
 they carry the water and ice.
 These rub against other drops of water and ice.
 Then the clouds
 The rubbing makes lose electrons to become positive
 gain electrons to become negative.
 If the wind of air rise
 electrons will be larger
 The result is that whole cloud becomes
 charged with electricity
 top positively charged.
 bottom negatively charged.
 When wind blows → it causes a static charge of
 water. This huge spark is lightning electricity.

Syntactic Gain: 5

Semantic Gain: 2

From the Stage 1 characteristics of his pre-test sample, (randomly placed words and phrases), Yoshiteru, in his post-test, includes a sequenced text characteristic of Stage Two. Although he includes a number of symbols, these appear to be isolated from each other and are not used to organize information thus omitting a key function of a graphic (Tang, 1991). However, his identification of cause/effect discourse markers (when, then, if, the result is) with boxes and circles demonstrates an awareness of incorporating cause/effect language into his text.

Figure 11.

Keiko's (the question-and-answer group) pre and post-test notemaking sample.

PRE-TEST

particle -
molecules

1 { vapour
vapour \Rightarrow liquid
vapour
2.

POST-TEST

Clouds - are made up - small drops of water and ice crystals

- When drafts of warm air rise through the clouds. They carry the water and ice with them.
- Cause of nothing against other drops of water and ice crystals in the air, the clouds lose electrons \Rightarrow become positive or gain electrons \Rightarrow become negative.
- When the drafts of air rise with force, the electric charge will be larger.

It results in that during storms. The whole clouds become charged with electricity. When the underside of the cloud becomes negatively charged, the top side of cloud becomes positively charged.

When a wind storm suddenly, it causes a high charge of electricity to build on one side of the cloud. When a large spark is sent from one side of the cloud to the other, this lights up the whole cloud from inside. This drops of water and crystals of ice radiate the light - it is lightning.

Syntactic Gain: 0

Semantic Gain: 4

Keiko's brief list of content words fits Stage 1 in her pre-test sample. In the post-test she sequences key events demonstrating Stage 2 skills and includes discourse markers that relate the main text/knowledge structures of the text characteristic of Stage 3.

In their evaluations following the training, both Yoshiteru and Keiko stated that the question-and-answer series had facilitated their understanding of the reading passage. They wrote:

It was helpful for me to clear the contents which were difficult to explain.

(Yoshiteru)

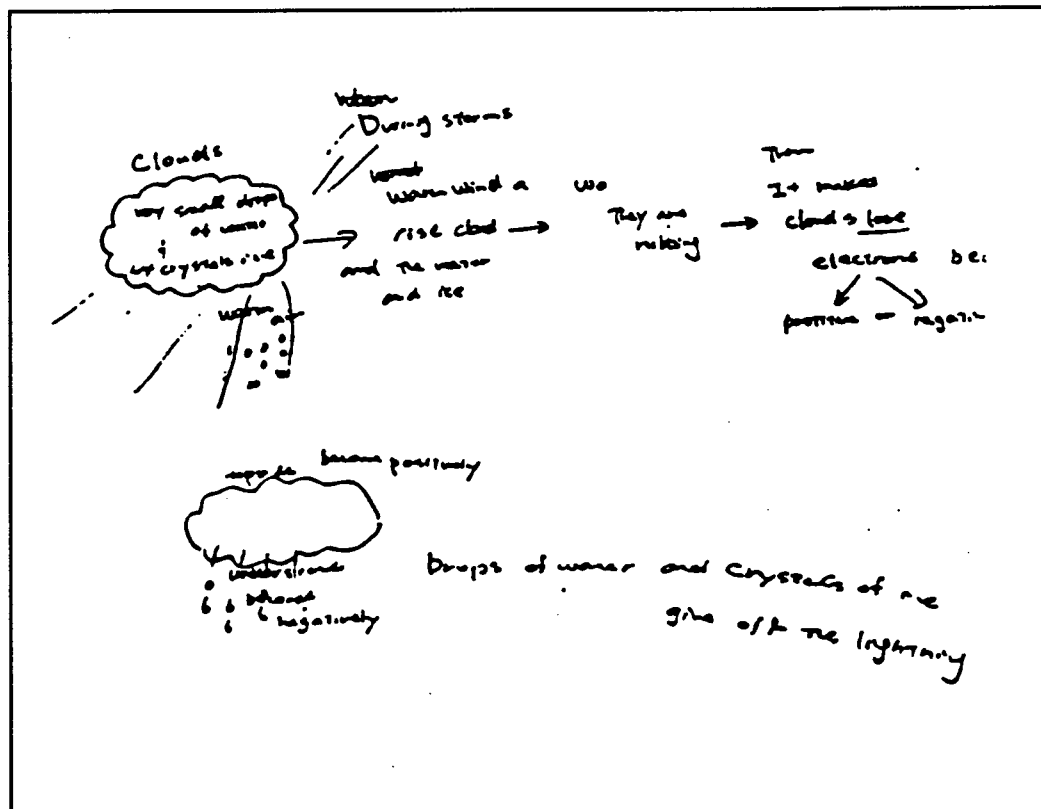
It helps me to understand the relations between cause and effect. (Keiko)

Figure 12.
Hiromi's (the graphic group) pre and post-test notemaking sample.

PRE-TEST

This student did not make notes in the pre-test.

POST-TEST



Syntactic Gain: 7

Semantic Gain: 6

Hiromi's pre and post-test samples demonstrate that explicit teaching of discourse markers using a graphic can positively change students' notemaking.

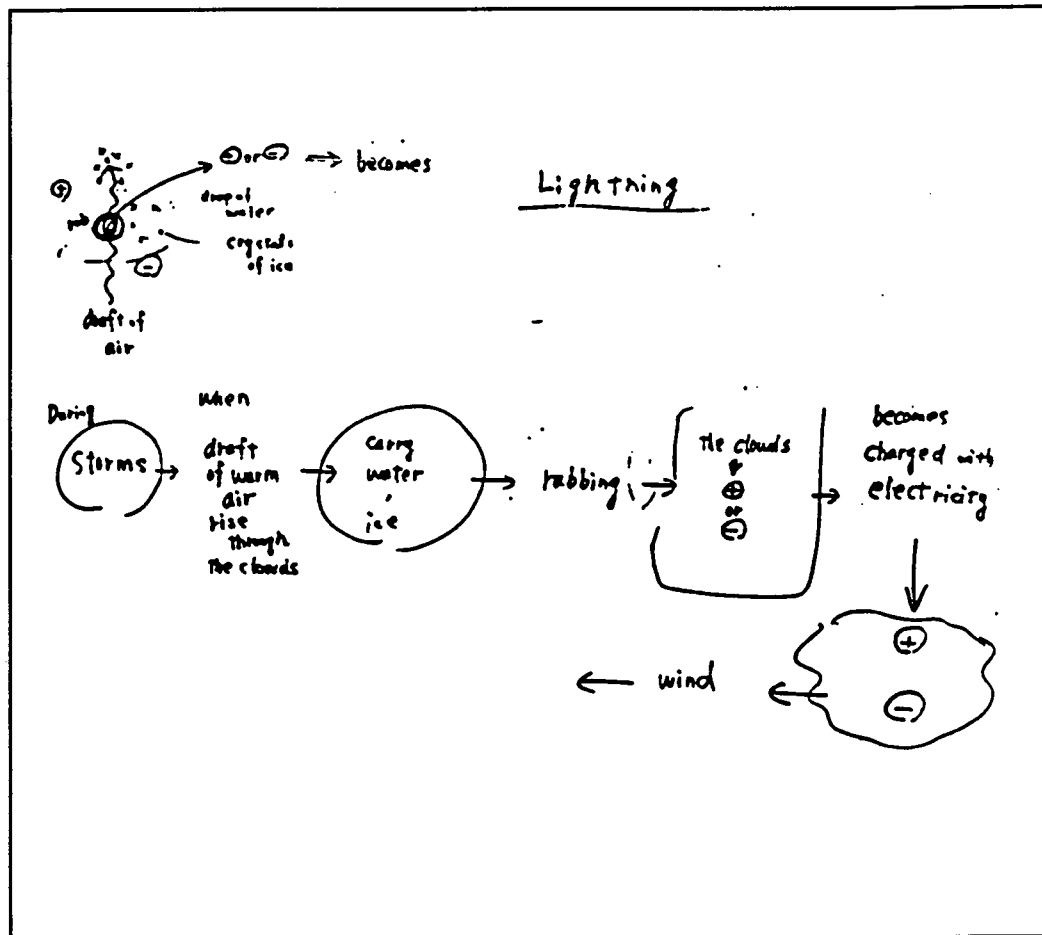
Hiromi's post-test notes show how she constructed a graphic to represent the content of the text she was reading and how she used the graphic to organize the events into a logical, sequenced pattern (Hawks, 1986).

Figure 13.
Kana's (the graphic group) pre and post-test notemaking sample.

PRE-TEST

The student did not make notes during the pre-test.

POST-TEST



Syntactic Gain: 7

Semantic Gain: 1

Similarly, Kana, in her pre-test, did not include notemaking yet her post-test sample illustrates well developed notemaking skills. In her graphic representation of the text, she inserts cause/effect discourse markers appropriate to the text/knowledge structure of the reading.

Hiromi (Figure 12) and Kana (Figure 13), of the graphic group were less sure about a positive influence of the graphic on their comprehension of the text answering, "I'm not sure" and "A little bit" when asked, "Did the graphic help you to understand the cause and effect reading passage?" However, there appeared to be a discrepancy between their perception of the graphics' usefulness and their application of its form to their notemaking and their oral recall. Perhaps the uncertainty of their evaluation was directed at the circle and arrows series that I had introduced during the training. With the freedom to make notes as they chose during the post-test, both students appear to have adapted the graphic form they had been taught during the training to a form that was meaningful to them. (Criticism of the imposed graphic form was frequent in students' evaluations; I will discuss these criticisms in Observation Five: Student-Generated Graphics Could Fail to Represent the Relationship of Ideas in a Text.)

OBSERVATION FOUR: Explicit Teaching of Discourse Markers Possibly
Facilitates Students' Oral Expression of the
Cause/Effect Genre

As I reviewed students' oral protocols, I noticed the recurring presence of language that signalled the distinctive purpose, the genre, of their speech to their listeners. These students demonstrated a knowledge of the cause/effect genre in their oral production for the purpose of communicating information for academic purposes. To analyze the presence of genre in the participants' discourse, I have transcribed their oral interviews and their oral protocols (Figure 14) using the following criteria:

function: illustrates the students' awareness of the purpose of the discourse

structure: is used to signal stages of the discourse, for example, an introduction and an end, and

linguistic devices: is included specifically for generic reference, conjunction, transitivity and lexis (These were described in Observation Two, page 65).

Figure 14.
Samples of Genre Analysis of Participants' Oral Protocols.

CODE OF LINGUISTIC DEVICES:

Generic Reference	CAPITALS
Conjunction	bold
Transitivity	<i>italics</i>
Lexis	<u>underlined</u>
Pause	

FUNCTION	STRUCTURING	LINGUISTIC DEVICES
<i>Samuel</i>		
States purpose of discourse:	Positions the listener with an opening statement:	
<i>Show when and why the monsoon happened.</i>	<i>Monsoon means . that means season.</i>	
	Uses cause/effect statements	<i>... there is . lots of RAIN <u>because</u> the land is hotter than AIR.</i>
		<i><u>When</u> WIND blow to the land, there are lots of RAIN.</i>
<i>Shows what and how the geyser happened.</i>	Positions the listener:	
	<i>It is about the geyser, how it happened.</i>	
	Uses cause/effect statements:	<i><u>When</u> the PRESSURE is less, the WATER moves higher. the WATER heats moves higher so that means the PRESSURE decreased.</i>

Figure 14 (continued).
Samples of Genre Analysis of Participants' Oral Protocols

FUNCTION	STRUCTURING	LINGUISTIC DEVICES
Annie		
States purpose of discourse:	Positions the listener:	
<i>Tell what happened</i>	<i>First of all uh mausim is made the season wetter. It's the basic cause the weather summer and winter.</i>	
	Uses cause/effect statements.	<i>In the winter ... the sea is cools more slowly than land <u>so</u> the AIR raises</i>
Jonathon		
States purpose of discourse:	Positions the listener:	
<i>Helps me to explain what's in the article.</i>	<i>This article talk about the geyser in Iceland and the geyser is hot spring bubble from earth.</i>	
	Uses cause/effect statements:	<i>Superheated WATER moves . higher place in the TUBE <u>because</u> there is less PRESSURE.</i>

Although students in their oral recall protocols seemed to intend a cause/effect relationship between ideas, they frequently used “and” as a conjunction rather than using discourse markers more conventionally recognized in the cause/effect text/knowledge structure. For example, in Jonathon’s statement (Figure 14), “Then land is heat more quickly than air in the summer time and the pressure uh . the air pressure is lower in land,” the use of specific discourse markers such as “so,” “as a result” or “consequently” in place of “and” could have encoded the relations between the cause and effect elements of this action. I wondered if the oral medium contributed to students’ overuse of “and.” Perhaps the speaker was using “and” as a filler while he planned his next statement. Perhaps a written recall would have included more subordination (Brown & Yule, 1983). But why had students so frequently replaced cause/effect language with “and” in this recall and not in their post-test recalls one year earlier? Studying the graphics they had constructed in this recall helped to answer this question. I found that while students had been attentive to representing content in their graphics, none of the students had written in the discourse markers that connected the cause/effect ideas suggesting that, without the prompting they had received in their training one year earlier to include discourse markers, ESL students might neglect language that cues the listener to a specific discourse. “The syntax of spoken language is typically less structured than that of written language” (Brown & Yule,

1983, p. 15) so that ESL students may be even more unlikely to incorporate cause/effect discourse markers into their oral text without explicit attention to this feature of English discourse.

In Observations One, Two, Three and Four of this study, I have pointed in a positive direction to the value of explicitly teaching discourse markers to ESL students using question-and-answer and graphic techniques as a means to support their oral recall of texts they had read. Observation Five, in which I explored students' responses to an imposed graphic and subsequently investigated student-generated graphics, revealed limitations to this explicit instruction of discourse markers.

**OBSERVATION FIVE: Student-Generated Graphics Could Fail to Represent
the Relationship of Ideas in a Text**

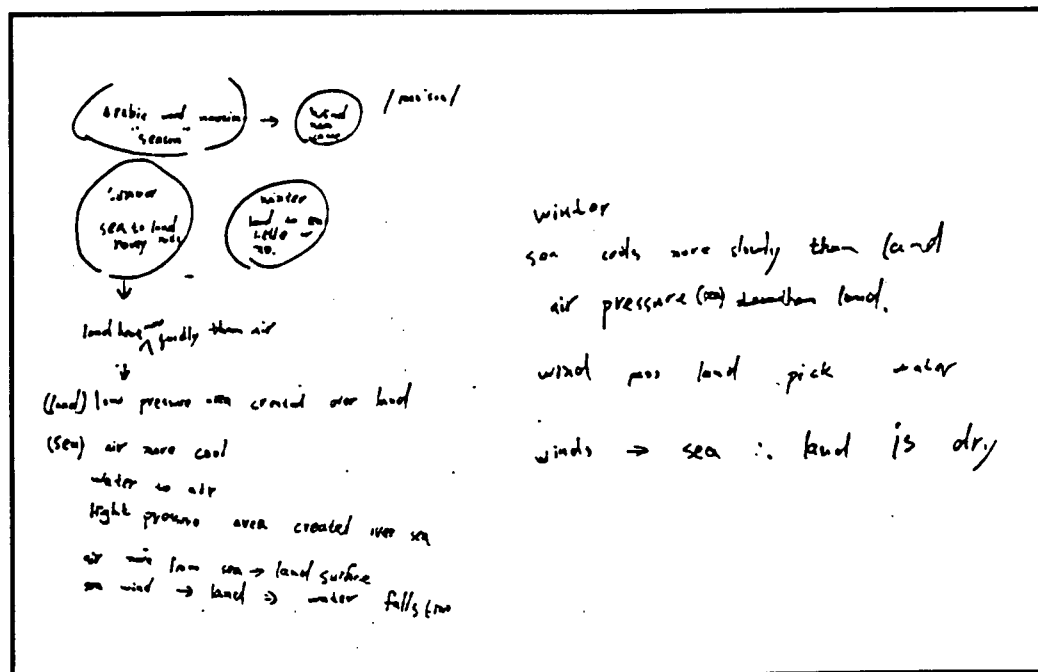
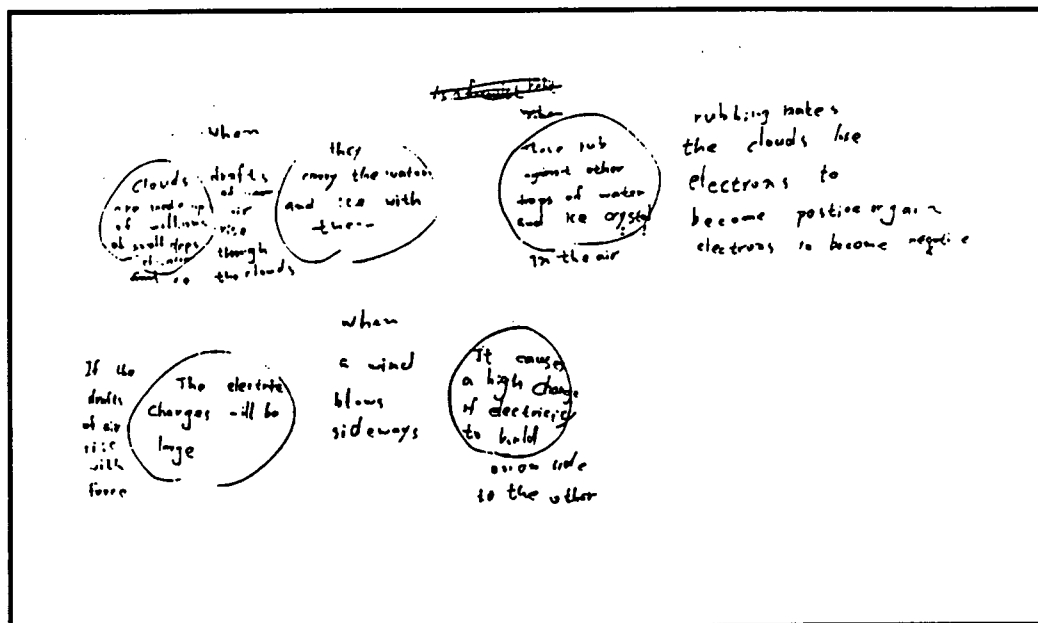
One year later, in July 1996, during discussions with students from the graphic group, I had heard again their hesitation toward using a teacher-imposed graphic. "If we just follow the instructor's one way to do this ... (pause) we just know the one thing but ... person are different so we have a different understanding," commented one student. My response to this had been to extend the study to look more closely at student-generated graphics and the possibilities they offered for supporting comprehension and recall. Following their

construction of a graphic while reading a given text, I had asked the participants to describe the construction of their graphic and had audio-taped their answers. In this data four elements emerged that were consistent in participants' descriptions of graphic construction and in the graphics they produced suggesting that students had a notion of how to create a graphic that they thought would facilitate their comprehension and recall. Each student noted the following procedures in their construction of a graphic:

- they listed the events of the text in order
- they included key vocabulary
- they drew pictures or symbols
- they were selective of information to record

I also looked for evidence in participants' graphics that suggested they had incorporated elements of their training from the previous year, July 1995, when they had represented cause/effect text/knowledge structures with a series of circles and arrows. Two of the students appeared not to have been influenced by the graphic's form except for the placement of arrows leading from one event to the next. The third student, Jonathan, produced a series of circles and arrows to represent some of the cause/effect relations, shown below (Figure 15).

Figure 15.
Comparison of one student's graphic representations of text:
June 1995 (Lightning) and July 1996 (the Monsoon)



The graphic suggests that Jonathan was attempting to follow the pattern of circles and arrows he had used one year earlier but , in parts, he had omitted the circles. He reported:

The arrow is very important to tell me the order but circle - I want to save time so I don't use circle. Arrow let me know order or cause and effect but sometimes I think the circle is not very useful. I know which sentence is the group.

Although the student omitted circles, he was certain he could follow his notes; the accuracy of his oral production confirms this. When students use their own graphics to support oral production it appears that the complete graphic form may not be necessary if the function of the form has been internalized.

The student-generated graphic provided choices for the readers. What was important to their understanding and how their understanding should be represented in graphic form were decided on by the student. I was concerned, however, about the content of their self-generated graphics. Would students copy lengthy excerpts directly from the text onto their graphic and simply read back the text during their recall? A comparison of the reading passages, *The Monsoon* and *A Geyser*, with the participants' graphics and with the transcribed oral recall showed this occurred rarely although copying text at length, without being

selective of top level ideas, could be a risk with some students, for example with lower level, less discriminating or less confident students in search of tangible support. For students inexperienced with graphics, explicit attention to the function of graphics in reducing the quantity of language while retaining key features of text/knowledge structures would likely be beneficial.

I also examined students' perception of the function of pictures, or symbols, in graphic representations. In their discussions of the construction of graphics, students had included the drawing of pictures or symbols in their description of the process of graphic construction. Their samples of self-generated graphics suggested, however, an unclear and limited understanding of the purpose and value of pictures and symbols to represent the interrelationship of ideas. In two of the samples, students had included few or no pictures or symbols. Although these students gave accurate recounts of the text, it is unclear if they understood the cognitive functions of the graphic form. Tang's (1991) conclusions in her study with seventh-grade ESL students would seem also to apply to me, as the instructor, and to the college level participants of this study:

The teacher should be aware that constructing graphics is no easy task. Students do not learn the technique in one or two lessons or even in one or two weeks. The teacher, therefore,

has to form the habit of using graphing and graphics as a teaching/learning strategy in the classroom so as to constantly expose students to the technique (p. 13).

ESL students in the research I undertook would likely gain from explicit instruction that extended over a period of time in order to reinforce the value of graphics as an additional or alternate way of communicating the semantic relations of a text.

Summarizing the Observations - Toward Classroom Practice

Throughout the research process, participants had contributed their energy, time, interest and enthusiasm toward a collection of data that reflects their experiences of reading and speaking about the text/knowledge structure of cause and effect. From the data they have provided and the theory and practice of others in the field, I have looked for answers to the questions I asked and have found insights to questions I did not ask. In summary, these were the observations relevant to the ESL participants in the study:

- Explicit instruction of discourse markers had the potential to enhance intermediate students' learning text in these ways:
 - developing notemaking skills

- aiding comprehension of cause/effect text/knowledge structure
- supporting oral production syntactically and semantically
- providing an opportunity for language socialization
- Using a graphic meaningfully required that students understood the logic of the graphic's construction.
- Students who had experienced graphics training included these elements in the construction of their own graphics:
 - listing the events of the text in order
 - including key vocabulary
 - drawing pictures or other symbols
 - being selective of information to record
- Students generating their own graphics would likely need explicit instruction as well as time and practice to acquire the skill.
- Student-generated graphics could appear incomplete yet provide support for comprehension of the text if the graphic form had been internalised.
- Students who supported their oral production with self-generated graphics might express cause/effect relationships with "and" rather than with cause/effect discourse markers because in their graphics they had not incorporated the language relevant to the text/knowledge structure.

- Students could demonstrate a knowledge of the function and structuring of cause/effect genre without explicitly being taught these aspects of discourse.

The research questions which led to these observations arose from concerns that are immediate and relevant to ESL students' academic needs and expectations. The questions placed learners' and instructors' day-to-day experiences within a research process that, in its objective to provide "locally-valid understandings," was reflective, collaborative and dialogic in its method (Crookes, 1993, p. 134). In Chapter Five I will look at conclusions of the study and how they might change the planning and practice of ESL reading and speaking curricula.

CHAPTER FIVE

Possible Recommendations and Conclusion

In Chapter Five I place the findings of this study in the context of the classroom in an attempt to provide support to ESL instructors and their students in their academic reading and speaking tasks. I include possible recommendations for integrating the explicit teaching of discourse markers with students' language learning. I also discuss the role of collaboration amongst members of the institution to extend the findings of this study.

Introduction

The challenge that I experienced in my teaching was to understand more carefully and to better support ESL students in their oral production of text/knowledge structures so that they might "bridge effectively into academic courses" (Institutional Research Review, 1995). Through a process of action and reaction I have made observations from this research which stimulate theoretical and practical interest in "why things occurred" (Rubin & Rubin, 1995, p. 253). The method of this study allowed me to explore changes that occurred as students

experienced different instructional techniques and to potentially help ESL students and my colleagues work effectively with discourse markers in support of oral production. With the objective of supporting ESL students and their instructors in their classroom learning and teaching, I have suggested possible recommendations from the five observations of this study that move the study toward the reality of the classroom.

Possible Recommendations Related to the Findings of the Study

ESL students in post-secondary study are expected to read extensively and to speak competently about their reading to their instructors and to their peers. Thus it is expedient that these students become aware of discourse features essential to effective language use (Brinton, Snow & Wesche, 1989, p. 3). The following recommendations are made to give assistance to instructors and their students in the oral production of cause/effect discourse:

POSSIBLE RECOMMENDATION ONE:

Discourse Markers Relevant to Cause/Effect Relations be Explicitly Taught.

Both question-and-answer series and graphic representations relevant to a cause/effect text could positively enhance intermediate reading students' oral production syntactically and semantically. Pointing out to students the presence

and function of the language of cause and effect and having students identify and use the language orally and in writing exposes them to text/knowledge structures prevalent in academic materials in North American colleges and universities. The analysis and use of discourse markers in a meaningful context reinforces for ESL students the organization and expression of cause/effect ideas; this may be taken for granted in academic settings where English is the dominant language.

Knowledge of cause/effect text structure and the discourse markers associated with it enables students to recognize text of the same structure in other situations (Tang, 1991). The teaching/learning process, however, requires repeated opportunities for practice.

POSSIBLE RECOMMENDATION TWO:

Question-and-Answer Series and Graphics be Used to Support Oral Recall of Cause/Effect Text

Both instructional techniques used in this study, the question-and-answer series and graphic, provide ESL students access to language and content. As previous research (Early, Mohan & Hooper, 1989; Early, Mohan & Tang, unpublished; and Early, Thew & Wakefield, 1986) has demonstrated, the knowledge structure of principles, or cause and effect, is prevalent in British

Columbia's instructional materials from kindergarten to Grade 12 so that instructors at the tertiary level might well expect their students to be familiar with its relevant language and conceptual framework. ESL students may not know the language and text structure which carries cause/effect meaning in English despite its presence in textbooks. Question-and-answer series and graphics are frequently found in instructional materials but may not have been analyzed for their discourse markers. By guiding students to identify and use this language as it relates to the content of their reading, ESL students may be more likely to comprehend and express more fully the relationship of cause/effect ideas. As suggested in this study, familiarizing intermediate readers with language in relation to content using graphics rather than a question-and-answer series may be more beneficial in helping them to form complete cause/effect statements because graphics tend to represent ideas at a discourse rather than a sentence level. Attention to the complete cause/effect event brings students closer to the "rational thought [that is] semantically realized in English" (Low and Early, April 1997).

POSSIBLE RECOMMENDATION THREE:**Explicit Instruction of Discourse Markers be Used to Facilitate ESL Students'****Development of Notemaking Skills**

Several students in this study, in both the question-and-answer group and in the graphic group, had made their notes more representative of the post-test texts they had read compared with the notes they had made during their pre-test reading. Drawing attention to the discourse markers of cause and effect text/knowledge structures appeared to have helped them to represent the semantic relations of a text. Practice in identifying these markers in the texts they read and using these markers in their speaking and writing enables students to connect ideas in their notemaking. Students can be taught the role of discourse markers to relate cause/effect ideas and can develop their notes sequentially, using symbols and incorporating appropriate discourse markers to facilitate their recall of the text they read. Learning to manage this task independently could help them as they prepare to meet the demands of their academic classrooms. Although the results of this study do not indicate a consistently positive correlation between notemaking and improved oral recall, the development of notemaking skills could benefit academic students as they prepare for oral presentations, as they review course content and as they plan their answers to examination questions.

POSSIBLE RECOMMENDATION FOUR:**Explicit Teaching of Discourse Markers be Used to Facilitate Student's Oral****Expression of Cause/Effect Relationships as an Academic Genre**

Teaching discourse markers relevant to a text/knowledge structure has the potential to raise students' awareness about genre in terms of the text's function, structure and linguistic devices. Students' expression of the cause/effect genre may vary depending on their cultural and academic background. ESL students may or may not come to the North American classroom with an implicit understanding of the expectation to produce, for example, an opening or closing statement to their speech, to position their listeners to what they have to say or to choose language which encodes the text/knowledge structure they are discussing. Exposing ESL students to a knowledge of genre helps to prepare them both linguistically and socially for the academic classroom so that they recognize and use discourse structures that native English speakers would likely use.

POSSIBLE RECOMMENDATION FIVE:**Students be Taught to Generate Their Own Graphics**

Students might want to construct their own graphics if, for example, they think that the instructor's choice is limiting to their understanding and expression

of ideas. However, the construction of a graphic requires that students are clear about the choice of graphic and the logic of its form so that they can decide which words and symbols to include. Cross-lingual knowledge structures such as those studied by Tang (1994) are valuable resources for both learners and their instructors. Tang's (1994) sample of Chinese Social Studies textbooks contained knowledge structures that were also common to Canadian materials suggesting that cultural information as well as formal and functional knowledge about language is available in text for use by instructors and students. Some symbols that are used in graphic representations in North American reading materials have meanings which, however, may not be known to students from different cultures and, consequently, may need to be explicitly taught.

Students who construct their own graphics will likely benefit from having a clear understanding of the graphic's purpose to represent relationships between ideas according to the dominant knowledge structure. Students will need to know the functions of the parts of the graphic so that choices they make about the graphics' form will later assist them in accurately recalling the text's content. Furthermore, the development of the student-generated graphic and the amount of textual support included will depend on the students' level of English competency and the confidence they have to generate a new text of their own.

Further Possible Recommendations that Refer to Existing Models of Instruction

Instructional models where the recommendations of this study might be effectively placed favor the integration of language and content so that opportunities are realized for language, content and thinking to interact. Authentic content materials determine the academic language objectives allowing the application of the instructional techniques of this study to occur and discourse markers to be made explicit. Three models which successfully integrate language and content are Mohan's Knowledge Framework, Content-Based Instruction (Brinton, Snow and Wesche, 1989) and the Cognitive Academic Language Learning Approach (Chamot and O'Malley, 1994).

Mohan's Knowledge Framework

Mohan's Knowledge Framework is one model that has already identified dominant knowledge structures, specifically cause effect or principles, in curricula, materials and learning processes. Exploring the link between the knowledge structure, discourse and language could help instructors to plan curricula and develop tasks that will encourage ESL students to think about the form and function of English and to produce both syntactic and semantic elements necessary for proficient language development. The structures of knowledge (description, classification, sequence, principles, choice and evaluation) form a conceptual

framework that instructors can use to plan activities that consider the cognitive and language skills needed to study in diverse academic settings where English is the dominant language. Because the knowledge structures are abstract, graphics such as the circle and arrow diagram used in this study and photostories, charts, classification trees and drawings, including those in electronic media, are recommended to represent and communicate about the relationship of ideas.

The Content-Based Instruction of Brinton, Snow and Wesche

Brinton, Snow and Wesche (1989) have also organized language and content into a model of content-based instruction using three approaches that are applicable to the college/university setting of this study. *Theme-based instruction* centers on a topic around which the ESL curriculum is developed; *sheltered courses* separate ESL learners from native-speaking students for the teaching of content material; and *adjunct courses* require ESL students to be enrolled concurrently in a content course where they are integrated with native speakers and in a language course that shelters them but complements the material of the content course. In the summary below (Table 5) I have indicated in bold print where, relevant to my research, the explicit instruction of cause/effect discourse markers could be contextualized in alternate curricula. The potential for applying the findings of this research to Brinton, Snow and Wesche's model are frequent.

Table 5
Summary of Content-Based Models (adapted from Brinton,
Snow & Wesche, 1989) Relevant to the Explicit Instruction of Discourse Markers

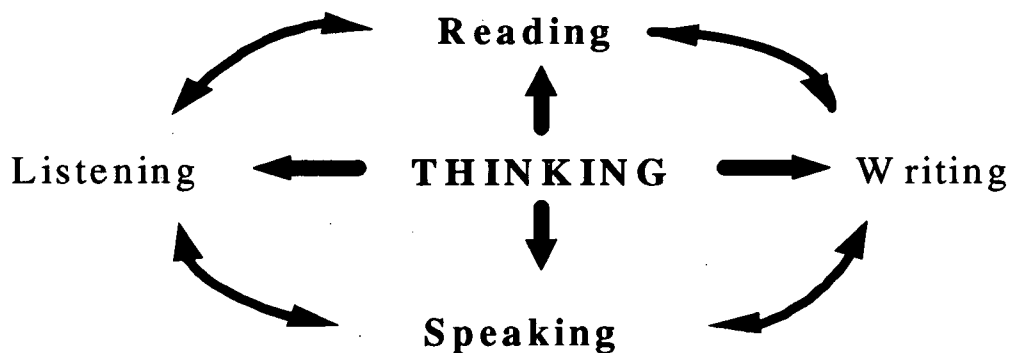
	THEME-BASED	SHELTERED	ADJUNCT
Setting	Language institutes Community ESL Colleges and Universities	Secondary schools Colleges and Universities	Secondary schools Colleges and Universities
Proficiency	Low to advanced	Intermediate to high intermediate	High intermediate to advanced
Curriculum	Theme based - integrates reading, speaking, listening and writing.	Content course syllabus. Study skills.	Curriculum objectives co- ordinated between content and language instructors.
Materials	Instructor developed. ESL texts	Co-ordination of lectures, readings.	Content texts and lectures. ESL texts and materials to co-ordinate with content.

In each approach the content material provides a source for analysing and practicing the language of a particular topic organized by the ESL instructor or by the curriculum of a non-ESL course and thus provides the opportunity for explicitly attending to the discourse markers relevant to particular text structures.

The Cognitive Academic Language Learning Approach (CALLA)

The CALLA approach (Chamot & O'Malley, 1994) was developed to meet the needs of ESL academic students in transition from language to content classes by providing direct instruction in content as well as in vocabulary, functions of language and learning strategies. The teaching of discourse markers relevant to knowledge structures views cognition as central to the reading/speaking relationship (Figure 16).

Figure 16.
Cognition at the centre of reading and speaking
(adapted from Chamot & O'Malley, 1994, p. 286)



Chamot and O'Malley emphasize in *The CALLA Handbook* (1994) the value of explicit teaching. When students learn strategies, "they are told the names of particular strategies, they are given reasons for using the strategy, they observe the teacher modeling the strategy, and they are given opportunities to practice the strategy with ordinary classroom tasks" (p. 22). The CALLA approach to strategy learning closely resembles the training session of my research which included giving a rationale for the question-and-answer and graphic techniques, modeling the technique and practising oral recalls in pairs supported by the question-and-answer series or graphic. In CALLA, authentic content material determines the academic language objectives allowing the application of the instructional techniques of this study to occur.

The integration of language, subject area knowledge, and thinking skills requires systematic monitoring and planning. As pointed out by Swain (1991), "good content teaching is not necessarily good language teaching and may fail to help students develop appropriate form-meaning relationships in language". My recommendations for integrating content and language imply mutual support and collaboration between content and language instructors, curriculum planners, researchers and administrators.

Directions for Future Research

To support ESL learners in their oral production of discourse markers relevant to text/knowledge structures I began "a small-scale intervention in the functioning of the real world and a close examination of the effect of such intervention" (Cohen & Manion, 1985, p. 134). My study reflects both the possibilities as well as the constraints of such a reality - limitations of time, number of participants and their first-language background. While in this study I was concerned with changes, both in students' learning and in my teaching, the methodology allows for replication with larger numbers of participants and statistical analyses to examine the significance of the groups' differences. In replicating the study, future researchers might consider the effects of a longer training period, different instructional techniques and different text/knowledge structures.

In this study I have attempted to respond to the expressed need for students to be prepared to speak with understanding about their cause/effect texts in their academic classrooms. To do this requires, I believe, the further action of both instructors and administrators to inquire into and develop together diverse ways of practising our profession. Cope and Kalantsiz (1993) state that,

...explicitness about language involves more than simply spelling out the necessary skills relevant to completing a task. It involves fostering

common perceptions about the meanings and purposes of any formal learning situation established in the classroom (p. 206).

Conclusion

Through collaboration, instructors, researchers, administrators and students can “search for a common agenda of the intersection of language, content and thinking objectives” (Mohan, 1993, p. 5). Examples of this “intersection” can be found in our ESL department where the recently approved electives, “English for Marketing” and “Advanced English for Business Communications,” are being taught. Courses such as these provide the opportunity for ESL instructors and instructors in other departments to understand and respond to the needs of ESL students. Through collaboration and consultation, curricula can be developed where discourse markers of specific text/knowledge structures such as cause and effect are contextualized in content and where explicit instruction has the potential to guide students toward improved oral production. Professionals concerned with the development of courses within the ESL program and between ESL and other disciplines have the potential to promote meaningful dialogue that strengthens the connection and positively affects ESL students who are preparing to meet the communicative demands of their academic classrooms.

AFTERWORD

Through this research process I am understanding the “knowledge of practice” (Schon, 1983) which recognizes that teachers learn from their classroom experiences and from the students they interact with. Through this interaction with students I have explored how they might bridge effectively into academic courses through cognitive learning. But through this interaction with students I have also become more sensitive to the intense demands placed on them as they think, speak and feel in the academic classroom. As one ESL student in his first year of a Business program explained,

Speaking is a big problem. When I speak to friend, maybe that's OK. I can do that but when I talk to my instructor I feel very nervous. English is not my first language. When I read an article, I can exactly tell what the article is about in my own language, no problem, but if I speak English, no way.

While students may be reasonably proficient socially in their communicative skills, their intellectual and emotional well-being in a classroom where the dominant language is English is less certain.

Through this research process I am also becoming aware of the significance of teachers/researchers to collaborate with their students and colleagues to create

bridges for those who think there is “no way.” ESL students take up to eight years to fully benefit from their education in North America (Tang, 1991, p. 2).

Recognizing and sharing information about the text/knowledge structures of the dominant discourses of our classrooms supports ESL students in their long and demanding journey as they attempt to participate more fully in their learning and to make English their “own language.”

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Appendix 1**Informed Consent by Subjects to Participate in a
Research Project or Experiment****Form #1
Page 2**

Copies of the results of this study, upon its completion, may be obtained by contacting: _____

_____ Gerry Hewitt, ESL Department, UCC _____

I agree to participate by _____ attending two interviews and three training sessions and being audio-taped _____
while participating in the study. The volunteers will practise reading and discussing the contents _____
of the texts. _____

(State what the subject will do)

as described above, during the period: _____ June - July 1995 _____

at _____ UCC _____

(place where procedures will be carried out)

NAME (Please print): _____

ADDRESS: _____

I have read and understood the above information regarding this project and voluntarily agree to participate in the project. I understand that my identity and any information obtained will be kept confidential through the process of _____ not using the student's name and by destroying all of _____
the data when the analysis is completed. _____

I have received a copy of this consent form and a subject feedback form.

SIGNATURE: _____

WITNESS: _____

DATE: _____

Appendix 2**PROFILE**

1. YOUR NUMBER FOR THIS RESEARCH PROJECT: _____
2. SEX: MALE OR FEMALE
3. AGE: _____
4. YOUR FIRST LANGUAGE: _____
5. ARE YOU TAKING A SPEAKING COURSE THIS SEMESTER? YES NO
IF YES, WHICH LEVEL? (CIRCLE ONE)
014 024 035 045
6. ARE YOU TAKING A WRITING COURSE THIS SEMESTER? YES NO
IF YES, WHICH LEVEL? (CIRCLE ONE)
016 028 038 048 058
7. HAVE YOU EVER TAKEN A TOEFL TEST? YES NO

Appendix 3

RAIN

Introduction

Water is made up of tiny particles called molecules which, if they are close to each other, stick together and form a liquid. But if they are far enough apart, they form an invisible vapour. A change from a liquid into a vapour is called evaporation and the opposite change, from a vapour into a liquid, is known as condensation.

Explanation

Evaporation of water occurs continually on the Earth's surface. It is greatest in the hottest regions on and around the equator. The water vapour is less heavy than liquid water. The result is the water vapour floats upward into the atmosphere. There the vapour is carried very high by winds across the Earth.

The temperature of the air decreases as height increases. When the rising air is cooled below a certain temperature, its water vapour begins to condense. Tiny droplets of liquid water are formed in the air and, when they freeze into particles of ice, become clouds.

As the condensation continues in a cloud, the tiny water droplets grow into bigger ones. When they are heavy enough, they fall from the cloud as precipitation. If they do not evaporate as they pass through warmer air below, they will hit the Earth's surface as rain.

Appendix 3**GLOSSARY: RAIN**

**** YOU MAY REFER TO THIS GLOSSARY WHEN YOU ARE TALKING ABOUT THE PASSAGE.**

condensation (noun)	-	the process of changing gas or vapour to liquid
droplet (noun)	-	a small drop
evaporation (noun)	-	the process of changing liquid to vapour
float (verb)	-	to be carried through the air
freeze (verb)	-	to be cold enough to turn water into ice
invisible (adjective)	-	cannot be seen
liquid (noun)	-	matter that is fluid
molecule (noun)	-	small particle of matter made up of atoms
particle (noun)	-	a very small part of something
precipitation (noun)	-	rain
surface (noun)	-	the outside of something
vapour/vapor (noun)	-	the invisible matter formed when liquid is heated

DO NOT WRITE ON THIS PAPER!

Appendix 4**THE RAINBOW**Introduction

Most rainbows are seen when the sun is shining and it is raining at the same time. A rainbow can't be seen on a dry day or when the sun is hidden by clouds. This suggests that light from a source like the sun and tiny droplets of water in the air make a rainbow.

Explanation

Light that enters the rain droplets bounces off the inner surface of the droplet. It is reflected just as it would be by a mirror. As the light passes out of the water droplet, it is bent or refracted. White light, such as sunlight, contains all the different colours of the rainbow. When this sunlight, or white light is refracted by the water droplets, each colour is bent by different amounts of light so each droplet separates the light into different colours: red, orange, yellow, green, blue, indigo and violet.

Finally, the reflected and refracted light appear as a colourful rainbow wherever the water droplets are. Each colour comes from a different direction to make the separate bands of colours seen in a rainbow. However, a rainbow can't be seen every time the sun shines. The sun must be low in the sky so that the coloured light is reflected downward and can be seen.

Appendix 4**DO NOT WRITE ON THIS PAPER****GLOSSARY: THE RAINBOW**

**** YOU MAY REFER TO THIS GLOSSARY WHEN YOU ARE TALKING ABOUT THE PASSAGE.**

- bounce (verb) - to move quickly up and down or back and forth
- droplet (noun) - small drop
- indigo (noun)(adjective) - blue colour
- rainbow (noun) - coloured arch or arc in the sky
- reflect (verb) - to send back, to throw back
- refract (verb) - to send back at an angle, to bend
- separate bands of colour (noun) - strips of colour that are not attached to or not mixed with each other
- surface (noun) - the outside of something
- white light (noun) - natural sunlight

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Appendix 5**VOLCANOES**Introduction

A volcano is an opening where gas and rock are thrown out of the Earth onto its surface. Usually the rock is molten or melted. This kind of rock is called magma. It seems to come from inside the earth from the thick, normally solid layer between the crust and the central core of the Earth.

Explanation

The Earth's crust is made up of many plates which move very slowly and rub against each other with great force. This rubbing together, or friction, makes enough heat to form volcanoes. The friction within the Earth raises the temperature to melt the rock. The melted rock expands and rises from below the Earth. It does this by moving along a crack in the Earth or by melting the rocks which it passes through.

As the magma rises to the surface of the Earth, pressure is decreased. The gases that are in the magma are released. This sudden release of pressure causes the melted rock to rise up from deep cracks in the Earth between areas of rock that have shifted. This sudden explosion and escape of melted rock and gases is known as a volcano.

Appendix 5

DO NOT WRITE ON THIS PAPER!

GLOSSARY: VOLCANOES

**** YOU MAY REFER TO THIS GLOSSARY WHEN YOU ARE TALKING ABOUT THE PASSAGE.**

crust (noun)	-	the hard outside part of something
crack (noun)	-	a thin, narrow break
escape (noun)	-	a release, being set free
expand (verb)	-	to become larger
explosion (noun)	-	something blowing up, bursting
friction (noun)	-	rubbing one thing against another
gas (noun)	-	chemical substance that has no definite shape
magma (noun)	-	melted rock that is below the Earth's crust
melt (verb)	-	to change from solid to liquid by heating
plate (noun)	-	flat piece of something
pressure (noun)	-	a force of weight or strength
shift (verb)	-	to change place, to move
volcano (noun)	-	a mountain shaped like a cone that has an opening in the top; melted rock and gases can come out of the opening.

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Appendix 6**LIGHTNING**Introduction

Lightning is a flow of electrons from one place to another. Electrons are parts of atoms and have a negative charge that is normally made neutral by positive charges in the surrounding air. However, in some circumstances both positive and negative charges can be found in clouds.

Explanation

Clouds are made up of millions of very small drops of water and crystals of ice. During storms, when drafts of warm air rise through the clouds, they carry the water and ice with them. These rub against other drops of water and ice crystals in the air. The rubbing makes the clouds lose electrons to become positive or gain electrons to become negative. If the drafts of air rise with force, the electric charges will be larger.

The result is that during storms the whole cloud becomes charged with electricity. Usually the underside of the cloud becomes negatively charged while the top side of the cloud becomes positively charged. When a wind blows sideways, it causes a high charge of electricity to build on one side of the cloud. A huge spark is sent from one side of the cloud to the other. This lights up the whole cloud from inside. Drops of water and crystals of ice radiate the light which is seen as lightning.

Appendix 6**DO NOT WRITE ON THIS PAPER!****GLOSSARY: LIGHTNING**

****YOU MAY REFER TO THIS GLOSSARY WHEN YOU ARE TALKING ABOUT THE PASSAGE.**

atom (noun)	-	the smallest part of matter
charge (noun)	-	energy that is stored and ready to be made into electricity
circumstance (noun)	-	situation
crystal (noun)	-	a chemical formation which has a regular shape
draft/draught (noun)	-	a wind
electron (noun)	-	the basic part of an atom that carries negative electricity
force (noun)	-	strength, power
neutral (adjective)	-	neither positive nor negative
radiate (verb)	-	to give off light
sideways (adjective)	-	from the side rather than from the front
spark (noun)	-	a bright flash of electricity
underside (adjective)	-	the bottom side, underneath

DO NOT WRITE ON THIS PAPER!

Appendix 7**THE MONSOON**Introduction

The word “monsoon” comes from the Arabic word “mausim” meaning “season.” Seasonal winds are the main cause of the monsoon climate. In summer, the winds blow from the sea bringing heavy rains while in winter they blow from the land and bring dry weather with little or no rain.

Explanation

During the summer, the land heats up more quickly than the air. When the air above the land becomes hot and rises, a low pressure area is created over the land. The air above the sea, however, is cool and moist as the water evaporates from the sea into the air. This cool, moist air does not rise and a high pressure area is created over the sea. Air then moves from the sea toward the land, replacing the air that has risen from the land surface. As the sea wind blows over the land, its moisture falls as rain. This is the summer monsoon.

In the winter, the opposite process occurs. The sea cools more slowly than the land so the air pressure is lower over the sea than over the land. Winds pass over the land picking up the little moisture there is. The winds blow toward the sea so the land is left dry during the winter months.

Appendix 8

A GEYSER

Introduction

Iceland may have a very cold-sounding name but, in fact, hot springs bubble from its earth in many places. Why does this hot water, also known as a geyser, gush boiling water and steam high into the air for a time and then stop?

Explanation

A geyser tube, or tunnel, is twisted and may have many underground branches or tributaries. Water seeps through the rocks into the geyser passages and collects at the bottom gradually filling up the passages. The deeper tubes which are surrounded by volcanic rock become hotter. As water heats, it expands and becomes less dense so it is carried to the surface by convection currents. But in a geyser, the twisted tubes slow down the convection currents and the water is trapped.

The deeper the tube, the greater is the pressure of the water above it. The trapped water becomes hotter and hotter. Eventually this superheated water moves higher in the geyser tube where the pressure is less. Here the water can turn into steam and bubble upwards. As soon as this happens, pressure on the water below is decreased. It heats so high and so fast that it is quickly turned into steam. This steam blasts the water above it out of the geyser tube and high into the air.

Appendix 9

QUESTION AND ANSWER TECHNIQUE TO EXPLAIN CAUSE
AND EFFECT

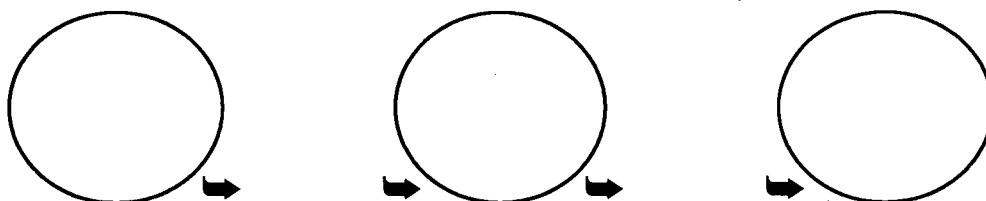
RAIN

Answer in sentences.

1. What causes water vapour to rise?
2. What happens to the temperature of water vapour as the water vapour floats higher into the atmosphere?
3. If the temperature of the water vapour decreases, what is the result?
4. What is produced when the water vapour condenses into ice and freezes?
5. What causes the droplets in the clouds to fall as rain?

Appendix 10

THE GRAPHIC



Appendix 11**EVALUATION OF THE GRAPHIC (DIAGRAM) TECHNIQUE**

PLEASE ANSWER EACH QUESTION AS COMPLETELY AS YOU CAN.

1. YOUR NUMBER FOR THIS RESEARCH PROJECT _____
2. BEFORE THESE TRAINING SESSIONS WERE YOU EVER TAUGHT TO DRAW A GRAPHIC TO TALK ABOUT A CAUSE AND EFFECT READING PASSAGE?
YES NO
3. DID THE GRAPHIC HELP YOU TO UNDERSTAND THE CAUSE AND EFFECT READING PASSAGES?
YES NO
4. DID THE GRAPHIC HELP YOU TO TALK ABOUT THE CAUSE AND EFFECT READING PASSAGES?
YES NO

PLEASE EXPLAIN YOUR ANSWER. HOW DID THE GRAPHIC HELP OR NOT HELP YOU?

5. WOULD YOU CHANGE THE GRAPHIC TO BE MORE HELPFUL?
YES NO
IF YOU ANSWERED YES, WHAT CHANGES WOULD YOU MAKE?
6. DO YOU HAVE ANY OTHER COMMENTS?

Thank-you again and see you tomorrow at 4pm!

Appendix 12

A COMPLETED GRAPHIC DISPLAY

