

The Adaptation of Chinese Engineering Students to Academic Language
Tasks at the University of Calgary

by

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ABSTRACT

Adaptation to Canadian graduate studies from a Chinese background is both culturally and linguistically challenging. This study reported how the traditional and contemporary methods of instruction used in teaching English as a second language in some Chinese universities prepared students adequately to study at a Canadian university in order to see what initial difficulties and coping strategies that students had. Twenty-four Chinese graduate students and six Canadian professors in the five engineering departments at the University of Calgary were randomly and proportionately selected for the study. In the first stage twenty students who had been in Canada for some time were interviewed using an interview guide about 1) their language preparation in China; 2) their initial language difficulties in their study; and 3) their compensatory strategies used to overcome the difficulties in listening, speaking, reading, and writing. Six Canadian professors were then interviewed about Chinese students' actual English abilities in the four aspects of the language arts. Both sets of the interview data were subject to content analysis to perceive the emerging themes in the students' and professors' opinions.

In the second stage, case studies of four newly-arrived Chinese students in engineering were done over a four month period to record monthly their adaptation process to academic language tasks in listening, speaking, reading, and writing through interviews and classroom observations. Meanwhile, students kept a weekly journal based on the findings of the first stage of the data analysis.

The results indicated that prior preparation in reading skills was good, listening

was mediocre, and speaking and writing were poor due to the massively used traditional methods of instruction which focused on grammar, exercises on sentence patterns, and reading in general English. Students had difficulty in understanding conversations among native speakers and professors with a strong accent, in making contribution to classroom discussion and in-depth conversations, and in expressing succinctly and linearly their research ideas and opinions in writing. They coped very well by excessive reading, strenuous preparation procedures, help from experts in English in their disciplines, and conscientious effort to improve their listening, speaking, and writing. The findings support the position that teaching English in the content area and study skills using simulations better prepare students for their communicative functional competency in their real educational life in Canada.

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DEDICATION

To my Dad, Mom, Nonie and Elsie for initiating me into this world of learning.

CHAPTER 1

INTRODUCTION

1.1 Overview

In recent years, many Chinese students have come to Canada to do graduate studies in almost every discipline. Their total experience abroad is full of both joy and frustration. The most challenging experience is the initial adaptation to the academic language tasks in Canadian universities. To this day, many of them have a clear memory of the early period of unbearable panic when they were first transplanted to a land where the language sounds absolutely different from theirs and where people seem to do things in an original fashion. And above all, they have to learn complex subject matter and develop scholarly capability in the course of communication with their Canadian instructors.

When Chinese students interact with Canadian instructors, both parties are engaged in intercultural communication in the context of Canadian institutions. Prosser (1978) stated that people tend to be more successful interculturally when they understand and appreciate the special character of members of other cultural groups and other cultures as a whole. Different ways of conceiving of and thinking about the world seem to have existed at different times in the history of scientific thought, and these ways seem sufficiently unlike each other to warrant being called different conceptual schemes (Petrie, 1984). For example, Chinese generally promote whole-hearted respect for teachers, whereas Canadians encourage challenges for teachers.

For Chinese students new to Canadian education, acquiring better perceptions of academic practices and tasks in Canadian universities means acknowledging the existence of alternative conceptual schemes. In other words, Chinese students must be prepared for conceptual changes from their prior culture, prior expectations, and prior learning experiences.

The smooth transition for Chinese students to carrying out successfully new academic tasks in Canadian universities depends on how well their previous language learning has prepared them for their learning in Canada. For the majority of Chinese students who come to do graduate studies in Canada, English is a foreign language which is taught either in the traditional Chinese methods or in the contemporary methods in a non-English-speaking environment. When English is the medium of instruction in the Canadian setting, their abilities in English to deal with academic tasks are a major issue in achieving academic success (Hull, 1978; Ryan & Fleming, 1986; Sun, 1987). In one way or another, Chinese students invariably go through a period of initial adaptation to Canadian academic language tasks, encountering the new language use specific to the new educational setting in their acquisition of knowledge. During this adaptation process, a great number of difficulties will inevitably arise out of coping with new academic practices. They must use some strategies to cope with initial academic language problems. It is important, therefore, to examine the characteristics of Chinese students, particularly how their previous language learning experience causes academic language problems in a Canadian university and what compensatory strategies they have developed to cope with their academic studies.

1.2 Purposes of the Study

In this study, one aspect of higher education, the Chinese students' adaptation to Canadian academic language tasks, will be examined. More specifically, this study intends to explore whether selected second language (L2) instructional methods used in some Chinese universities prepare students adequately to study in a Canadian university. The aim is to discover the compensatory strategies that students develop to achieve academic success in a Canadian institution.

In order to obtain an in-depth look at the initial language adaptation of Chinese students to Canadian graduate studies, an ethnographic approach will be adopted. This study will address the following research questions: 1) Whether the previous language training prepares students adequately to listen, speak, read, and write in Canadian universities? 2) What initial difficulties do students have in listening, speaking, reading, and writing? 3) What compensatory strategies, if any, are developed to cope with demands in listening, speaking, reading, and writing?

1.3 Significance of the Study

All the information obtained from this study will not only add to the body of literature on the academic success of international students, but also provide concerned institutions and prospective students in China with a better picture of how to prepare for the academic language tasks to achieve academic success in a Canadian university such as the University of Calgary. The results of the study may point to the discrepancy between English language teaching in schools and universities and in some orientation programs in China and current educational practices in Canadian universities. The revelation of the discrepancy may call the attention of Chinese authorities to changing the current curriculum in their language and orientation programs towards a more target-oriented one based on the first-hand information in

this study. It is intended that results gained from this study will be made available to the Faculty of Engineering at the University of Calgary and some Chinese universities. Furthermore, there will be a possibility of providing some interested Chinese universities with lesson modules to improve their English language teaching so that prospective students are better prepared for their study in engineering at the University of Calgary.

1.4 Theoretical Construct

Rumelhart (1977) posits that memories are stored in schemata. Schemata are the building blocks of cognition -- the fundamental elements upon which all information depends. Reading, writing, listening, speaking, and experiencing are all directed by the prior knowledge or experience, i.e., schemata (Carrell & Eisterhold, 1983). Furthermore, schemata are culture specific (Barnitz, 1986). Variations in culture may account for the distinctions in academic work. When there is a slight discontinuity in the educational experiences, problems may arise which will affect students' academic success.

Mohan (1986) emphasizes that language is related to learning. Language is not only a means of organizing and consolidating the accumulated experience, but also a means of learning (i.e., interacting with people and objects to create new experience) (Britton, 1970). In the context of academic tasks, language, as a medium of learning and teaching, involves all the four aspects of the language arts. and success of learning in a second language is determined by the level of cognitive/academic proficiency (Cummins, 1980) which is evaluated by the integration of input, i.e., prior learning experience and the abilities in the language to deal with academic tasks.

1.5 Definitions

1. Adaptation refers to the coping behavior involved in the transition from the old to the new environment. In this study, adaptation refers to the strategies to cope with the academic language tasks in Canadian graduate studies which are new to Chinese students. Adaptation is also socio-cultural and involves acquiring the new norms, values, ways of doing things, and a new language specific to a new academic environment.

2. Foreign/international students refer to students of different language, psychological sets and assumptions, and life styles (Hull, 1986).

3. Second language instructional methods refer to traditional methods of teaching where classes are conducted in a lecture format and there is an obvious emphasis on grammar, translation, intensive reading, and extensive reading of classical literary works. Contemporary methods of instruction feature interactions using the target language between teachers and students in class, frequently focusing on a selected topic and the presence of authentic learning materials and the use of native speakers of the second language. .

4. Academic language tasks refer to listening, speaking, reading, and writing that are essential in carrying out daily studying activities in order to accomplish a degree program in a university environment.

1.6 Assumptions

1. It is worthwhile to do research on foreign students which is of current interest to researchers in language learning and teaching (Barnitz, 1986; Carrell, 1987; Johnson, 1988).

2. Problems of foreign students adapting to North American academic language tasks do exist because of the contrast in the learning cultures (Hull, 1978; Ryan & Fleming, 1986).

3. The capacity to learn is hampered by difficulties caused by poor abilities in a second language to deal with some academic tasks (Hull, 1978; Ryan & Fleming, 1986; Sun, 1987).

4. The adaptation to new academic language tasks can be examined. Through the triangulation of observation by researchers, introspection by students, and opinions of professors, it is possible to describe the adaptation process.

5. The key-informant interview is a useful tool for the inquiry of students' perceptions, because of its capacity to delve into the subjects' minds. The perspective of students is meaningful, knowable, and able to be made explicit (Patton, 1990).

6. Field observation is a research tool capable of understanding the situation like the adaptation process as an insider while describing the situation for outsiders (Patton, 1990).

7. Adaptation is a developmental process that occurs over an extended period of time; thus, study of the process requires long-term examinations on an on-going basis (Hull, 1978).

8. Compensatory learning strategies are effective. Strategies that are developed to compensate for some deficiency in the academic language skills help international students to achieve academic success eventually (Ryan & Fleming, 1986).

1.7 Organization

This study is organized in the following way. Chapter one presents an introduction to this study. Chapter two reviews the related literature on the two methods of English language instruction that are used in China, the academic language tasks prevalent in North American universities, effective studying strategies in the university setting that are used to cope with university study, and some research methodologies for studying international students in North America. Chapter three describes the data triangulation design of this study which includes the setting, the subjects, and the instruments and procedures used to collect and analyze the data of this study. Chapter four presents the results of this study in three parts. The first part describes the interview responses from Chinese students. The second part presents the interview responses from Canadian professors. The third part describes the four case studies depicting how newly-arrived Chinese students adapt to studies in Canada. Chapter five provides the interpretation of the results of this study under the headings of listening, speaking, reading, and writing so as to answer the three research questions: 1) whether the previous language training in China prepares Chinese students adequately to study in a Canadian university; 2) what initial difficulties students have; and 3) what compensatory strategies students have developed to cope with the demands in the academic language tasks.

1.8 Limitations

This study is limited in the following areas.

1. The findings are based on the action of particular people in a particular time in a particular place. Generalizations may be made by the reader only to the extent that the conditions under which the study was conducted are duplicated elsewhere.

2. Academic language tasks in graduate studies are so varied and interrelated. They may present a variety of problems to foreign students. This study focuses only on the abilities in the English language to deal with academic tasks.

3. Learning about a culture is a dynamic and complex process which may be affected by the changing time frame. As a result, the subjects' perceptions may have been compounded by their different lengths of stay in Canada and at certain period of time in history.

4. The subjects in this study are members of a small group in one discipline in a Canadian university. Therefore, they do not reflect the entire Chinese student population in Canada. Nor do the academic skills perceived by the students necessarily represent those required in other disciplines and in other universities. This study is on academic language tasks in engineering at the University of Calgary.

5. The perceptions of adaptation may have been affected by the different natural facilities for language in various people. Although TOEFL scores are used as a criterion for language proficiency in this study, they are not a strong predictor of academic success.

6. Adaptations occur on an ongoing basis, which requires examination on a much longer term than four months during which this study was carried out. This study deals with only a fraction of a long period of adaptation.

CHAPTER 2

REVIEW OF THE LITERATURE

2.1 Introduction

The modern idea of culture is conceived of as a complex whole including knowledge, belief, art, morals, law, customs, and other capabilities and habits acquired by human beings. Martindale (1962), who is in essential agreement with this description, reiterates that culture is a mode of socially-learned actions. Each society, in terms of geographical boundary, has something most important about it that has been cultivated for years and that distinguishes it from other societies.

In the vast arena of higher education, there are different aspects of cultural tradition, such as school organization and management, professors' values and expectations, and pedagogy in the acquisition of knowledge. Generally speaking, it is not difficult to see some basic similarities in patterns of cultural tradition of higher education in different countries, for example, the expectation that faculty members will not only impart higher levels of knowledge, but also contribute to the total sum of human knowledge by their own research. However, beyond these similarities, there are salient aspects of the tradition that are culture specific, because variations in national history, geographic location, and social ideology lead to a distinctive pattern that prevails at the core of higher learning in each country. China has a long history of hierarchical rule that features clear-cut class stratification and authority. The training of scholars also cultivates a focused mode of thought and an austere respect for knowledge. To most Chinese, knowledge is an end in itself. By contrast, free capitalist competition has inspired Canadians to create a new world on a new

continent on an egalitarian basis. Their sometimes single-minded pursuit of material success has motivated them to treat knowledge as a means to other ends in their social life. This contrast of social background often produces salient value systems and modes of thought that can create difficulties in intercultural communication.

In addition, the Chinese have been preoccupied with the classical wisdom and revolutionary dialectics, while the Canadians have been animated by liberal science and philosophical pragmatism. The development of higher educational institutions in China also started at least two centuries later than that in Canada and postgraduate training in China has blossomed really only since 1981. By contrast, Canadian universities have featured graduate programs since the late nineteenth century. In short, the Chinese experience is relatively recent and Chinese students have yet to be exposed to much of the information on graduate training that exists in Canada.

The contrast in the social background also results in the way in which the two countries organize their educational practices. Teaching in China is characterized by rote-memory learning and saturation of knowledge by teachers to accumulate wisdom. Canadians adopt child-centered approaches and modern classroom teaching equipment which are designed to encourage critical thinking. To change from the habit of rote-memory and lecturing to active participation in lectures, seminars, discussions, presentations, and all sorts of academic assignments in Canadian universities is a challenging process for Chinese students. They need to make adaptations to the North American learning culture in order to achieve academic success. With regard to foreign students in North America, Spaulding and Flach (1976) found, of all the factors that might affect international students' academic success, proficiency in English plays a key role. A recent study by Heikinheimo and Shate (1986) further points out that a

pattern of apparent passivity in the classroom setting combined with insufficient English severely impedes foreign students' classroom participation, thus interfering with their academic success.

In discussing the language skills necessary for academic success, Cummins (1983) hypothesizes that academic success is determined by cognitive/analytic linguistic proficiency, which is the integration of input (i.e., prior learning experience and students' abilities in the language to deal with academic work.) His evaluation framework incorporates the interaction between student input and educational variables, making it possible to look at students' linguistic development from the perspective of its effect on students' educational outcomes. Following Cummins's hypothesis, it is meaningful to interpret Chinese students' academic success with regard to the dynamics of the interaction between their prior language learning experience and the academic language skills prevalent in North American educational settings, thus revealing a picture of compensatory strategies Chinese students developed to cope with academic language skills needs.

2.2 Prior Language Learning in China

The essence of traditional Chinese teaching consists largely of educating one's internal self by first inculcating into children the desire to perfect themselves. This is achieved by making children learn by heart long passages from the vast literary scriptures (Clyde, 1971). From earliest childhood, children are taught to memorize stroke-orders of characters, then characters, phrases and finally lengthy essays and poems (Sun, Hu, Gu, & Xin, 1988). It is assumed that by impregnating children's minds with high-quality literary texts, children will attain the intellectual development which will enable them to understand these texts. They will have basic data at their

disposal without having to search for them laboriously in a library. To be able by memory and in appropriate style to apply a classical phrase to the solution of a philosophical problem has been the goal of the scholars.

Similarly, the Chinese approaches to language teaching have been to draw on rote-memory with lecturing as the major means of teaching. This implies an exclusively teacher-centered approach to curriculum and teaching (Sampson, 1984). Many researchers (Liu, Deng, & Liu, 1988; Sun, Hu, Gu, & Xin, 1988) argue that the nature of the Chinese language requires learners to practice many times in order to memorize correct strokes of characters. The point is that memorization of the forms, pronunciations and meanings of Chinese characters not only facilitate word identification and differentiation of many words of similar shapes, but also enhance reading and writing in Chinese. It is common to see language teachers assign students to copy words in isolation many times, to read words aloud many times, and finally to recite words and essays as a measure of language competence. To facilitate memorization, teachers make an effort to discuss the origins and formations of Chinese characters by analyzing the radicals.

The teacher-centered approach and the analytical method are also reflected in Chinese tradition in teaching English as a foreign language (EFL) which has focussed on the study of grammar, literature and an in-depth analysis of literary texts (Henze, 1984; Ting, 1987). This has many similarities with the formal approaches to literacy and language in the West. Scholars of literature and the humanities (Hirsch, 1977) suggest that literacy should be seen as mastery of linguistic and textual forms. Hirsch (1977) claimed that language learners should be taught the grammatical conventions of the standard language as being the correct standards of communication. Such a

perspective often leads to a formal pedagogy which emphasizes knowledge of prescriptive rules about language, for it presupposes a privileged canon of texts which define the great works of western thought.

With the formal approaches, the literate individual (Walters, Daniell, & Trachsel, 1987) is the person who, having read widely from the classics, has thus become attuned to the conventions of standard written English and who therefore uses the language effectively. The extent of a person's literacy can thus be assessed by testing for knowledge in these areas.

Comparable to the formal approaches to literacy and language are the two traditional methods in second language (L2) learning and teaching which have also permeated in China. The first is the grammar-based method. Rivers (1981) notes that in ancient times scholars established a set of grammatical rules by which language could be analyzed. To learn a second language is to learn the grammar. Second language learning is therefore accomplished through the means of studying the grammar of a second language. While the grammar-based method continued to refine its categories, other methods of language learning and teaching proliferated. One of them is the structural method markedly influenced by Bloomfield (1933) who attempted to discover regularities and structures that constitute the corpus of language. Accordingly, the structural method intuitively and repeatedly exposes students to language structures and patterns to acquire a set of habits of language use.

Since the beginning of this century, the grammar based methods and the structural methods have combined with western influences, such as the Soviet traditions of intensive and extensive reading and American audiolingual methods. The

results of these influences have again tended toward grammar-translation, intensive reading, and respect for the study of literature and a concomitant lack of emphasis on communicative activities in the classroom.

The bulk of the foreign language teaching is conducted by Chinese teachers; the majority of them have seldom talked to a foreigner or been outside of China, making it very difficult to adopt functional communicative language teaching. In view of resource materials, only a few opportunities are available for learners to read or hear contemporary authentic foreign language materials, much less to interact with native speakers. Due to regional differences, the extent of such availability of authentic teaching resources varies considerably. A key university in a big city like Shanghai may gather many listening and reading materials and native speakers through funding and exchange programs, whereas an ordinary university in remote areas of the countryside cannot afford such materials, not to speak of hiring native speakers due to the lack of funds.

Another attributive factor are the national examinations and TOEFL examination (Burnaby & Sun, 1989), both of which focus on more easily judged aspects of language, such as grammatical accuracy and vocabulary knowledge in order to discriminate between those students who will advance and those who will not. In summary, the English language programs in China basically address the skills of translation from English to Chinese and vice versa, intensive reading and understanding of reading materials, memorization of key sentence structures and vocabulary, and simple personal writing (Zhu, 1987). During the 1980's, there was a growing presence of foreign experts in China up to June 1989, making a considerable impact at the tertiary level in terms of communicative teaching approaches and in

terms of student contact with native speakers (Burnaby & Sun, 1989). Foreign experts often brought with them contemporary ideas of teaching, most notably, the communicative methods.

Communicative or functional approaches to language are organized on the basis of communicative functions (e.g. apologizing, describing, inviting, promising) that a given learner needs to know and emphasize the ways in which particular grammatical forms may be used to express these functions appropriately. What is achieved in communicative approaches is the grammatical competence, sociolinguistic competence, and strategic competence (Canale & Swain, 1980). Grammatical competence indicates knowledge of lexical items and grammatical rules to express meaning accurately. Sociolinguistic competence indicates knowledge of socio-cultural and discourse rules for proper interpretations of a communication event. Strategic competence indicates knowledge of how to use verbal and non-verbal strategies to compensate for breakdowns in communication. Such coping strategies are not likely to be acquired through formal classroom practice that involves no meaningful communication. Communicative methods of teaching mean many different things to many different people (Savignon & Berns, 1984). In this study, Burnaby and Sun's (1989) description will be adopted. Communicative methods of L2 teaching, or the contemporary methods of L2 teaching, emphasize a learner-centered approach to curriculum and teaching, testing that is linked to such a curriculum, student access to teachers and others with native-speaker competence in the target language, and the availability of authentic learning materials. Moreover, they focus on students' need for communication in the target language, including the need for sociolinguistic and general cultural knowledge of the population that speaks the target language.

From the late 1970's to the late 1980's, the open policy in China allowed a number of foreign experts to come to teach English in China. Foreign experts familiar with contemporary communicative teaching methods were made available to some university students who were non-English majors. Quite often, the class size was smaller than that in a regular language class of around forty students, making it possible for meaningful interaction and conversation to take place in class. Sometimes there was teaching of academic specializations in English. Materials published in North America were provided by foreign experts.

A university graduate in China has usually received English language training using either the traditional or the contemporary methods of L2 instruction at the different stages of their educational experience. The two methods of L2 instruction aim at enhancing students' abilities in English in listening, speaking, reading, and writing, so that some students can ultimately pass the TOEFL tests and go to study in North American universities. The growing number of Chinese students visiting English-speaking countries for the purpose of academic study makes it worthwhile to ask if English language instruction in the traditional methods or the contemporary methods in China prepare Chinese students adequately to study abroad. Since the academic success for Chinese students impinges on their prior language learning experience and their abilities in English to deal with academic tasks, this study asks whether Chinese students' previous language training taught by the two methods of instruction prepare students adequately to listen, speak, read, and write in a Canadian university. To answer the question, it is necessary to examine the academic language tasks prevalent in graduate studies in North American universities.

2.3 Academic Language Tasks in North American Universities

In every aspect of life, language plays an important role in communicating meaning. This functional basis of language determines correct communication through the medium of language in different social contexts. According to Halliday (1973) and Britton (1975), specific social activities in a specific social context determine the types of language use. Britton (1975) presents two categories of transactional and poetic language use. It is believed that transactional language use is the most common type. People transact all sorts of different tasks by means of language and the language varies according to the demands of the transaction or task. Where the task demands accurate and specific reference to what is known about the reality, this need constitutes a demand for the use of language in the transactional category. Current Canadian universities employ a great deal of lecturing and discussion in the transaction of knowledge. In the description of modern teaching methods, Frederick (1986) feels that the traditional distinction between the lecture and some of its alternatives, such as discussion, has become very blurred. He talks of the "participatory lecture" (p. 43), a term that is possibly more apt for the modern classroom at the graduate school level in North America. In their evaluation report of the Canada-China management education program, Ryan and Fleming (1986) reported the difficulties that the Chinese students experienced initially in getting used to study in Canada. The students responded that they were not adequately prepared for Canadian teaching/learning methods. Their opinions about their academic preparation indicated that distinctions between Chinese and Canadian education in the form of class management, the extent of student participation in class, and the emphasis on knowledge were the major sources of difficulty in coping with their studies in Canada. Clearly, these teaching/learning methods are related to ability in English which is the medium of instruction. A great deal of proficiency in spoken and written English and

knowledge of the typical patterns of verbal and social interaction in the North American university contexts are a pre-requisite for foreign students to achieve academic success.

A number of studies have been done to discover the patterns of language use by second language speakers in academic settings. With regard to spoken English, Sun (1987) surveyed Chinese students at a Canadian university on what aspects of English are most important in order to succeed in Canada. Giving talks and seminars, understanding the instructions of the supervisors, understanding lectures, and discussing issues in class were of great importance. Participation in seminars was a major feature in North American graduate studies. According to Smith, Toohey, and White (1989), basic to dealing with academic seminars were proficient listening skills and note taking, verbal contributions in seminars by asking focused questions, and active communication with supervisors and instructors.

In an effort to explore the actual abilities in spoken English needed to deal with academic tasks, especially in the case of graduate students, Benson (1989) studied the academic listening experience of one ESL graduate student taking a single course at an American university. By examining data collected from taped lecture materials, the student notes, and interview responses, Benson provided a detailed picture of what the student faced in the course and the variety of academic activities he engaged in processing spoken English. His activities can be summarized as follows: taking down lecture materials involving lists for tests, abstracting main points, taking down subsidiary points, taking notes during lecture style teaching, taking notes during interaction, listening to discussions among fellow students, recognizing the teacher's perspectives, dealing with specialized vocabulary items, asking questions for

clarification, answering general questions, making short contributions to general discussions, and making short contributions in brain storming. Benson's study provides some indication of the spoken English needs of nonnative graduate students in order to achieve academic success.

In the area of written English, increased interest in schema theory has brought developments in the understanding of the processes of reading and writing by nonnative students. It is known that there are culturally specific patterns reflected in oriental and western writing (Barnitz, 1986). For instance, western research articles emphasize linearity as opposed to widening gyre (Kaplan, 1966) and there is a lack of comparison and contrast in Asian writing, such as in Chinese writing (Carrell, 1985). Kaplan (1966) claims that there are different conventions for rhetorical structuring in different cultures. Smith, Toohey, and White (1989) claim the usual western approach is to make a general thesis statement and then support the statement with more specific evidence and then make a final general concluding statement. But Asian students show a tendency to move from a general statement to a discussion of the more general statement. In response to the need for information processing in academic reading and writing typical of North American educational settings, Spack (1988) synthesized a number of research studies in the teaching of writing to help students succeed in university courses. He called upon the necessity of initiating foreign students into the unique academic discourse community to become better academic readers and writers.

Swales (1987) has shown that research articles have a regularized macro structure such as introduction-methods-results-discussion and rhetorics that follow identifiable role models (e.g., authors' persuasion, the abstract nominal style, and the

distanced reconstructions of research activities.) His illustration indicates that foreign students need to learn the unique structure of research papers.

Horowitz (1986) surveyed faculty members at an American university to examine what academic tasks they actually require by creating classifications of their writing tasks. He provided seven categories: 1) summary of/reaction to a reading, 2) annotated bibliography, 3) report on a specified participatory experience, 4) connection of theory and data, 5) case study, 6) synthesis of multiple sources, and 7) research project. He proposed that ESL students should practice the three academic information processing skills: 1) selecting data which are relevant to a question or issue from a source or sources, 2) reorganizing those data in response to the given question or issue, 3) encoding those data into academic English.

Bridgeman and Carlson (1983) surveyed 190 academic departments in 34 American universities to ascertain faculty views on what types of writing are most important in different disciplines. It was found that types of writing reportedly assigned varied widely across disciplines and academic levels. The short research paper and summaries of written materials were the most frequently reported.

Other studies have dealt with the four aspects of language skills. Johns (1981) compared graduate and undergraduate division faculty members' opinions on what academic skills (reading, writing, speaking, and listening) are essential to non-native speakers' success in American university classes. Reading and listening are considered the most essential of the four skills by instructors of both divisions. However, there is some difference between the faculty members teaching the two divisions in their view of the importance of writing and speaking, which receive higher scores in importance from graduate division instructors.

Christison and Krahnke (1986) studied foreign students in American colleges to determine how they use English in academic settings. Listening and reading were the most frequently used skills followed by speaking and writing. In students' opinions, speaking and listening were the most difficult skills.

A study by Pearson (1981) examined some of the specific skills that were expected from foreign students. The faculty surveyed stated that they expected international students to possess the following skills: 1) to read and follow directions, 2) to get through large quantities of reading materials without wasting time on unnecessary details, 3) to use the structures and organizations of a text as well as underlining and note taking as study aids, 4) to revise their own written work, 5) to take various kinds of examinations under the pressure of time.

In a more comprehensive study on the international level, Hull (1978) categorized academic work related to English ability as writing papers, reading speed, reading comprehension, speaking in class, understanding discussions, and understanding lectures. It was found that most students perceived speaking in the classroom as difficult followed by writing papers and reading speedily.

In the context of Chinese students in Canada, Ryan and Fleming (1986) also used six types of academic work related to the students' initial abilities in English: 1) talking with Canadians, 2) listening/understanding lectures, 3) participating in class discussions, 4) reading Canadian textbooks and materials, 5) writing papers, and 6) writing examinations. The students perceived their abilities in English were quite limited in all the six categories of academic tasks.

The above studies indicate that academic language tasks in North American universities require ability in listening, speaking, reading, and writing. The studies are valuable in that they have endeavored to define the various aspects of necessary language abilities to deal with academic tasks in North American universities. They are equally valuable in that they have endeavored to determine the extent of problems foreign students have in the various aspects of language abilities to deal with academic tasks in North American universities. However, those studies stop short of the effort to search for compensatory strategies that may have been used by foreign students to achieve academic success in North America. This study intends to take a further step in looking at Chinese students' initial difficulties in listening, speaking, reading, and writing in order to discover what compensatory strategies Chinese students have developed to overcome their initial difficulties in listening, speaking, reading, and writing while studying at a Canadian university.

2.4 Effective Studying: Compensatory Strategies

Many foreign students go through an initial adaptation to North American academic study and achieve academic success eventually. Reports by Ryan and Fleming (1986) show that foreign students successfully finished their post graduate studies despite the initial stage of adapting to academic language tasks in North American universities. It is presumed that foreign students have developed their own ways of surviving the initial adaptation process. This presumption offers a great deal of potential for research, but, few studies have examined the compensatory strategies that foreign students develop in order to cope with the language problems while studying in Northern American universities.

Success in adapting to North American academic language tasks presumably depends on the extent to which foreign students have developed their English language skills in their home countries and the range of strategies they have developed to compensate for the deficiency in some of their academic language skills. Compensatory strategies, therefore, include the ways of effective studying. The following is an examination of some effective study strategies relevant to the university situation.

Anderson and Armbruster (1984) claims that at the core of academic success is a matter of studying. Successful students know how to study effectively. There is a sequence of academic tasks that students, be they native-country or foreign, are expected to perform when they enroll in higher education. The most-demanded are the basic communication skills (Wood, 1986). To do well in colleges, universities, and graduate studies, students will need to read textbooks and library materials, to listen to lectures, to write papers and exams, to speak in class discussions and give oral reports, and to adapt to different types of classes and professors. When they can do a good job of communicating, they possess the most essential skills for academic success.

Wood (1986) developed a series of reading and study skills to help college students overcome a particular study problem and help them become more successful in university. She tested the study skills in the classroom with two groups of students. The first group learned and practiced her study skills, whereas the second group did not. The students in the first group were found to be more successful in their academic study than the second, because the first group of students learned and used certain skills that the other students did not. According to Wood, areas of study

skills can be summarized as preparation of 1) knowledge in the subject, 2) knowledge in general and special vocabulary, 3) knowledge in note taking, 4) knowledge in classroom participation, 5) knowledge in rhetorical organization of research papers, 6) knowledge in reading skills, 7) knowledge in writing skills, and 8) knowledge in exam-taking skills.

The techniques for participation in class discussion and giving oral presentations are: to do readings for the class; catch exactly what point is being discussed; summarize others' comments; use reading notes; make brief occasional remarks such as "Yes/No"; ask a question for clarification; write a written report in an appropriate style; make a speech outline; practice oral reports; use devices such as voice, repetition, personal pronouns, and short sentences to stress main ideas; use visual aids; and ask questions of the audience.

The techniques for listening to lectures are: to do readings on the topic, sit close to the professor, identify unfamiliar words early in the course, identify the professor's lecture organization, be an active note-taker, take complete notes, use abbreviations and labels, differentiate facts from opinions, take notes on discussions, and write down one's own ideas and questions.

The techniques for writing are: to choose a manageable topic, investigate the topic by talking to professors or do background reading, build a bibliography in the library, find reading materials, take research notes, write an outline, write a draft quickly, revise a paper, proofread for mechanical errors, type a paper using a word processor, read exam questions thoroughly before answering them, and answer short and easy questions first.

The techniques for reading are: to survey a book and a chapter before reading it, survey the organization of ideas, pinpoint key words and concepts, watch for visual aids, use different reading and skimming speeds, take reading notes, write summaries, revise notes quickly, remember main ideas and facts. Wood's techniques are somewhat similar to what Vaughan and Estes (1986) suggest for efficient study in reading. On the principles that reading should be done through anticipation, realization of meaning, and contemplation, some effective study skills are: textbook previewing, reading selectively, note taking using outlining, locating resource materials in the library, reviewing for tests, and analyzing errors on tests.

Anderson and Armbruster (1984), who emphasized research on techniques to help written information processing, state that the outcomes of studying are a function of the interaction between student knowledge of the criterion task and processing of the relevant information. Student knowledge of the criterion task refers to reading in preparation for performing a criterion task. Anderson concluded that if the criterion task is made explicit to students before they read a text, they will learn more from studying than when the criterion task remains vague. The underlying assumption is that anticipating course test types such as an essay exam, multiple choice or others is a helpful strategy for effective studying.

In terms of processing of the relevant information, Anderson and Armbruster (1984) suggest that studying will be effective if students process the right information in the right way. In other words, studying will be facilitated to the extent that students know the performance requirements of the criterion task and encode the information in an optimal form to meet those requirements. In the university learning situation, the common criterion tasks require comprehension, recall, and critique.

Therefore, performance will be facilitated if students attend to, interact with, and elaborate on the underlying meaning of the text. Anderson and Armbruster assume that students do use a variety of common study techniques to help them process the right information in the right way, such as underlining, note taking, summarizing, outlining, student questioning, elaborating, representing text diagrammatically, repetitive reading, recopying notes. In the area of research on study techniques, Anderson and Armbruster point out that a lot of empirical research has been done with a confusing arraying of inconsistent results about the effectiveness of the common strategies. They also point out that those strategies that are found likely to yield the highest learning benefits have the greatest cost in student time and energy. Because of the failure to discover one perfect strategy, it is suggested that research be focused on ways to make the study techniques compatible with the demands of different instructional programs, disciplines, and student background.

In the context of Chinese students who learned English as a foreign language and have come to do graduate studies in Canada where English is the medium of instruction, research should be directed towards what strategies they develop to compensate for their handicap in the language and how they develop strategies to compensate for the lack of time and energy to use the highly-demanding study skills. This study addresses this issue and focuses on Chinese students in a Canadian university to determine what compensatory strategies Chinese students use to cope with the academic language tasks in a Canadian university.

2.5 Research on Methodology

The issue of the importance of adequate English language skills for academic success among foreign students in North American universities has assumed growing

attention as a result of the increased enrollment of foreign students. The most widely used measure to determine the extent to which foreign students have developed the English language skills necessary for successful college-level study is the Test of English as a Foreign Language (TOEFL) score. Major TOEFL scores are divided into listening comprehension, structure and written expression, and reading comprehension and vocabulary. Writing is sometimes included. Canadian universities require applicants from non-English-speaking countries to take the TOEFL and a score of 550 is the usual cutoff point for admission. Studies by Johnson (1988) and Yule and Hoffman (1990) correlated TOEFL scores with grade point average of foreign students and found that the TOEFL score was a reasonable indicator of the academic performance of the students.

In Yule and Hoffman's (1990) study, TOEFL scores were used to predict success for international teaching assistants. At the end of a preparation course at Louisiana State University, international students were either positively recommended to be permitted to teach or negatively recommended not to be permitted to teach. The mean TOEFL score for the positive recommendation group was 607 and the negative recommendation group was 560. It was found that the difference between mean TOEFL scores for the two groups was statistically significant. It was concluded that a TOEFL score has some predictive power with regard to recommendation status for their population. In another study by Johnson (1988) who studied undergraduate international students, she found that students with TOEFL scores below 500 earned significantly lower grades such as Grade Point Average than students with TOEFL scores of 500 and above. Johnson (1988) states that the lower the language proficiency, the more important the role it plays in academic success. In

this study, therefore, student TOEFL scores were used to screen high and low level of English language competency in the students.

The growing body of research literature which has examined how foreign students adapt to North American universities in terms of their language abilities has been developed through the use of questionnaires, interviews, and classroom observations. Questionnaires are commonly used to obtain faculty members' and students' opinions on their abilities in English as related to academic success. Johns (1981) developed an academic skills questionnaire which was distributed to 200 classroom instructors, a randomly selected ten percent of the entire faculty in an American university. The academic skills were divided into the four major categories of reading, writing, speaking and listening. Each major skill category was then itemized. The survey ascertained faculty's opinions on the most important academic skills such as reading in both undergraduate and graduate work. There was also some agreement that listening was the second most important. However, the percentage of response for the importance of reading and listening were lower on the graduate level than on the undergraduate level. In terms of the demands for speaking and writing there was some difference between undergraduate and graduate work. There was some increase in the demand for writing and speaking on the graduate level (27% and 15% respectively) compared with 19% and 4% respectively on the undergraduate level. Sun (1987) surveyed Chinese students in one Canadian university by providing a five point scale for the importance of using academic language skills such as spoken language, written language, and obtaining information in order to achieve academic success. Ryan and Fleming (1986) used open-ended as well as forced choice questions to survey the Chinese students in the Canada-China Management Education Program in eight Canadian universities. They asked the students to rate

the language training they had received in China and their initial abilities in English in Canadian academic studies on a four point continuum from poor to excellent. The study ascertained the students' opinions on their abilities in English to deal with academic tasks such as reading, writing, speaking, and listening. The open-ended questions, in particular, provided detailed information on the differences between Canadian and Chinese methods of teaching and the difficulties the students had experienced initially in getting used to Canadian academic studies.

Questionnaires are a useful tool in ascertaining objectively students' opinions in the study of foreign students adapting to study in North America. However, questionnaires have some disadvantages. Ryan and Fleming (1986) point out that, in the case of using questionnaires, respondents may interpret questions in different ways, and in doing so, provide answers that are not comparable. The structured interview has been used to remedy the shortcomings of questionnaires. Christison and Krahnke (1986) found that the structured interview was a valuable research tool for investigating questions of belief and opinion, especially cross-culturally. Many foreign students come from cultures where written modes of communication call for a very different type of sincerity and candidness than is displayed in North American culture. The oral mode of data collections is, therefore, much more reliable with some subjects. Christison and Krahnke (1986) used structured interviews with undergraduate students to obtain their opinions on the frequency of language skills used in academic settings. They found that the subjects were quite articulate and willing to discuss their experiences in an open and objective way. They found that the receptive skills of listening and reading were used far more in academic work than the productive skills of speaking and writing.

Walker (1985) believes that the interview permits depth in pursuing the questions but still leaves sufficient latitude to pursue individual concerns or areas of unanticipated concerns. By encouraging subjects to consider their responses at greater length and from different perspectives, the interviewer will not only be able to get to the nature of problems, but also follow up problems immediately as they arise and get information while minds are still fresh. On the other hand, Christison and Krahnke (1986) point out that interviews are less objective than multiple-choice questionnaires. Answering questions in English when English is a second and foreign language introduces some bias itself. To resolve this problem calls for the use of a variety of techniques. Patton (1990) recommends triangulation, or the combination of methodologies, in the study to strengthen a study design. Benson (1989) engaged in the interviews of a student and his course instructor as well as classroom observation to yield a detailed picture of what academic activities confronted a foreign student in the course. Thus, interviews and classroom observation have a lot to compliment each other. Interviews have the potential of discovering what is happening in and on the student's and the instructor's mind and classroom observation is added to find out what really happens to the student, achieving a high degree of objectivity of the study.

This study involves an in-depth look at how Chinese students successfully adapt to Canadian graduate studies; the survey method is, nevertheless, insufficient to reveal the many aspects of students' experiences and the dynamics of the adaptation process. Moreover, the quantitative method such as the survey makes it difficult to determine the importance of learning from the participants' point of view what the experiences are like for them. This study employed interviews with Chinese students in Chinese and Canadian professors in English using an interview guide. Classroom observations were also used to record students' classroom behavior with regard to

their academic language skills. The combination of the views from the students, the professors, and those observed helped render a comprehensive and objective picture of how L2 instruction using traditional and contemporary methods of teaching adequately prepare Chinese students to study in Canadian graduate studies and how Chinese students develop compensatory strategies to achieve their academic success in Canadian graduate studies.

CHAPTER 3

RESEARCH DESIGN

This study attempts to determine how Chinese engineering students coped with academic language tasks at the graduate level at a Canadian university as a result of their previous language training in China. More specifically, this study addresses whether selected second language (L2) instructional methods such as the traditional and the contemporary methods of instruction used in some Chinese universities prepared students adequately to achieve academic success at a Canadian university as related to the English language abilities in listening, speaking, reading, and writing. The focus of the study is to find out: 1) whether the previous language training prepared students adequately to listen, speak, read, and write in Canadian universities 2) what initial difficulties students had in listening, speaking, reading, and writing and 3) what compensatory strategies, if any, were developed to cope with demands in listening, speaking, reading, and writing. A data triangulation of Chinese students' opinions, Canadian professors' opinions, and case studies was designed to have an in-depth and multidimensional look at the initial adaptation processes of Chinese students and, thereby, address the research questions of this study.

3.1 Setting

This study took place at the University of Calgary, which is situated in the city of Calgary, the head office stronghold of Canada's oil, gas, and sulphur industries. The city has a sister relationship with the oil city of Haerbin in China. The university is a provincial one offering a variety of programs leading to the Bachelor degree, the Master degree, and the PhD degree. Its Faculty of Engineering consists of five departments:

Electrical Engineering, Chemical and Petroleum Engineering, Civil Engineering, Mechanical Engineering, and Survey Engineering. All these departments host large groups of Chinese students doing post-graduate work.

3.2 Subjects

There were three groups of subjects in this study. The first group was twenty Chinese students in the Faculty of Engineering at the University of Calgary, fifteen male and five female students whose averaged age was thirty years.

In July 1991, a list of Chinese engineering students doing graduate studies was obtained from the faculty administrators. Meanwhile, the chairman of the Chinese students' and scholars' association at the university was contacted, which led to a circle of many other Chinese students. From a word of mouth about whether students had either difficulty or not much difficulty in English during their initial study, twenty subjects were chosen, 10 from electrical engineering, 2 from chemical and petroleum engineering, 3 from civil engineering, 2 from survey engineering, and 3 from mechanical engineering, in proportion to the total number of Chinese students in each faculty.

At the time of this study, all the subjects had been in Canada for an average of two years, ranging from six months to five years. Sixteen subjects were working towards a PhD degree and four towards a Master degree.

All except one pursued the same engineering disciplines in Canada as in China, although some stated that they had deviated from their previous research focuses while studying at University of Calgary. Key universities in China such as China Science and Technology University, East China Chemical Engineering University, and Haerbin Shipbuilding University, were the training ground for all of them holding a

Bachelor's degree and for sixteen of them holding a Master's degree. One subject was already enrolled in a PhD program in China.

In regard to the entire English language learning experience, three subjects received English language instruction in elementary schools in the cosmopolitan city of Shanghai. The other seventeen subjects studied a minimum of two years to a maximum of six years with a mean of two years in their high school English programs. Nineteen subjects received English language instruction at the undergraduate level ranging from one to four years, with a mean of two and a half years. At the graduate level, English language instruction ranged from half a year to three years with a mean of about one year.

Only one subject had an engineering course taught in English. Seven subjects used engineering textbooks in English and four subjects had experience with engineering examples presented in English.

In this study, two types of methods of English language instruction were loosely categorized: 1) The traditional methods of instruction focusing on the teaching of reading, grammar and translation; and 2) The contemporary methods of instruction featuring native speakers (called foreign experts in China) to interact with students in class in addition to the teaching of speaking and cultural knowledge. The traditional methods of instruction were predominant in elementary schools, high schools, and at the undergraduate level in universities. Fourteen subjects experienced the contemporary methods of instruction at the graduate level, ranging from three to ten months. Foreign experts offered conversational classes, listening comprehension classes, and occasionally lectures and seminars. In preparation for coming to study in Canada, all the subjects had completed the TOEFL tests. Their TOEFL scores

ranged from 540 to 633 with a mean of 582. The University of Calgary sets the minimum score for entry at 550.

Five subjects had attended orientation programs in China. Four of them went through less than six months orientation, which focused on listening, reading, and vocabulary for passing TOEFL and English Proficiency Test (EPT), a Chinese developed TOEFL test. Only one went through a one year orientation program for training in listening, speaking, reading, and writing, as well as acquiring information about common teaching practices at the graduate level in North American University. Most of the subjects had no idea of common teaching practices in Canadian graduate studies. One subject heard about the credit system and two heard a few sketchy remarks regarding teaching methods in Canadian graduate studies.

The second group of subjects in this study was six Canadian professors in the Faculty of Engineering at the University of Calgary: two from electrical engineering and one each from the rest of the four engineering departments. Professors' names were supplied by students. Six professors were chosen at random based on the criterion that they were supervisors of Chinese students or they taught Chinese students in class. Among the six professors, two spoke with a Canadian accent, one with a Scottish accent, one with a Latin American accent, one with a Middle Eastern accent, and one with a Greek accent.

The third group of subjects was four newly arrived Chinese engineering students. The criterion for the subject selection was that they must be fresh from China, rather than having any exposure to English speaking countries. Originally, this writer planned to recruit two male and two female subjects. Names of prospective Chinese students were obtained from each department in the faculty. After initial contacts, four

male subjects were chosen because they were the ones who had just arrived directly from China. Two were from electrical engineering and the other two were survey engineering students. Their background information was presented in the four case studies.

3.3 Instruments

This study was designed as a triangulation of research methods using a semi-structured interview technique as well as case studies involving a combination of semi-structured interviews, field observations, and journal recording techniques. The purpose was to discover how Chinese students adapted to Canadian graduate studies as related to their English language abilities. The emphasis was on how students, who were both already engaged in and just initiated into graduate studies in a Canadian university, viewed their previous English language learning experience and their current academic language adaptation experience, since the perspective of time and experience would make their viewpoints more valuable. To achieve a degree of objectivity, this writer also gathered data from professors and from participant observations to look at the students' adaptation process from a different angle.

An interview guide (Appendix A) was developed containing four sets of questions. The first set contained questions about subjects' background information: their age, sex, previous university education, previous English language learning experience, current study in Canada, and preparation procedures for coming to study in Canada. The background information provided for a sense of relevance between students' responses and the previous education that they came from.

The second set of questions focused on whether previous English language instruction had any positive effect on students' language abilities in listening,

speaking, reading, and writing. The third set dealt with the academic language abilities in listening, speaking, reading, and writing that were not well addressed in previous language instruction and that had presented problems to students. The fourth set ascertained some study strategies that students developed to compensate for some insufficient academic language abilities in listening, speaking, reading, and writing. The extent of preparation in English language abilities received in China in relation to the dimensions of academic language skill problems confronted in Canada, and the scope of compensatory strategies developed to overcome problems (see appendix A) determined the degree of the adaptation to academic language tasks at a Canadian university.

The interview with professors settled on one general question: "What do you think of Chinese students' English language abilities in listening, speaking, reading, and writing?" Professors' viewpoints functioned as a point of reference to students' actual English language abilities.

To enhance the credibility of students' reflections on their initial adaptation to academic language tasks at a Canadian university, field observations were done on four newly arrived Chinese students. An observation list (see appendix B) was developed to obtain students' classroom performance as related to language abilities. Observations focused on 1) preparation for the class; 2) setting; 3) subject's non-verbal behavior such as facial expression, sitting posture, and eye direction to see if the subject was frustrated, anxious, or at ease with classroom activities; and 4) communication patterns which sought to find out the amount of instructor talk, classmate talk, and the subject talk, and how the three parties reacted to each other, such as questioning, answering in one or more than one sentences, summarizing

lectures or discussions, stating own opinions, and relating own experiences. The above categories were synthesized from the studies by Benson (1989) and Wood (1986).

To provide anecdotes for the description of the four case studies, a journal entry was developed based on the analysis of the responses from the interviews with the twenty Chinese students in the first stage. The journal consisted of two categories. The first category listed all the factors in initial difficulties in listening, speaking, reading, and writing and the second category indicated all the factors in compensatory strategies in listening, speaking, reading, and writing in the adaptation to Canadian academic language tasks, all of which were mentioned by the twenty Chinese students. Spaces for check marks and additional comment (see appendix C) were provided for in the journal.

The three types of research instruments were employed to produce converging data on one issue (i.e., the English language abilities,) and consequently to render a truthful account of the progress of Chinese students as related to the degree of English language abilities.

3.4 Procedure

There were two stages of the data collection in this study. Twenty Chinese engineering students and six Canadian engineering professors were interviewed in the first stage. After a list of students' names was obtained, subjects were contacted first on the phone, stating the purpose and methods of this study. If subjects agreed to participate in this study, an appointment was immediately set up and the interview took place in a place designated by subjects.

During the interview, subjects were first asked to sign a letter of consent to participate in this study (see appendix D) and then interviewed according to the interview guide. Their background information was obtained first. Subjects were then asked open-ended questions, in terms of listening, speaking, reading, and writing, about whether their previous language learning experiences prepared them adequately to study at the university, what initial language problems confronted them, and what compensatory strategies, if any, were developed to cope with insufficient academic language skills.

The questions were presented in both English and Chinese to make sure subjects understood them clearly. Subjects were then asked to respond to questions in Chinese, so as to guarantee a detailed and rich description of their experiences and opinions. After giving an initial response, subjects were encouraged to discuss the topic further, explore alternatives, and think of possibilities they had not considered. At some point, subjects were reminded of types of academic language tasks that might be involved in their initial period of study such as presentations and classroom participation. Sometimes, questions for clarification were posed and any issues were pursued during the interview which seemed to have a bearing on the overall concerns of this study. For instance, if a subject naturally mentioned the cultural differences in the teaching styles between the two countries, the subject was encouraged to elaborate on the issue.

The same approach applied to interviews with professors, except that questions were formulated in English and there was only one general question with regard to their opinions about Chinese students' English language abilities in listening, speaking, reading, and writing in the university environment. Precautions were taken

to ensure that the interview information was accurate, complete, and consistent. All interviews were audio-taped, then transcribed and translated into English with an effort to retain as much original and cultural information as possible. In some cases, literal translation was used.

The interview data were subject to content analysis to perceive emerging themes of students' and professors' perceptions. Subjects' responses were evaluated to determine what specific factors were mentioned and then grouped into general categories of 1) the previous academic language skills preparation; 2) the initial problems in academic language skills; and 3) the compensatory strategies in academic language skills. The language skills were classified into listening, speaking, reading, and writing. First of all, each subject's responses were carefully read through to record all the factors mentioned under the three general categories in the areas of listening, speaking, reading, and writing. Then, each factor was tallied if it was mentioned by several subjects. Additional themes emerged such as cultural differences in the teaching styles in Canadian and Chinese graduate studies and future improvements for English as a second language (ESL) and orientation programs for foreign university-bound students in China. There was a remarkable consistency in the views of students and professors, despite the differences in their background, interest, and emphasis.

The second stage of the data collection involved four case studies. Four new subjects were interviewed once a month from September to December 1991 in the same manner as described in the first stage of the data collection. Likewise, their supervisors and instructors were interviewed informally. In addition, subjects were supplied with journal entry forms in English to record weekly their reflections on their

initial experience and compensatory strategies in listening, speaking, reading, and writing in the academic setting. Subjects were instructed to give a check off once a week to the only items that were correlated with their real experiences. They were also requested to write down additional comments that had occurred to them.

Another method involved observations of the four subjects in their classes once a month from September to December of 1991 to see, from a participant's point of view, how subjects used their academic language skills in engineering classes. The focal observation was the interaction between the instructor, the subject, and the classmates, according to the observation list (see appendix B). Field notes of subjects' classroom behaviors were taken that were deemed to be indicative of the subjects' attitude, anxiety level, and communication patterns. Data from the four case studies were presented in chronological descriptions of four Chinese students who engaged in the initial adaptation to academic language tasks. Data from the interviews, the weekly journals, as well as field observations formed the basis of a detailed description of the adaptation process of Chinese students to the graduate studies at University of Calgary as related to the degree of their English language abilities. At the end of the second stage of the data collection, both sets of the first stage and second stage data were synthesized and several categories of common grounds emerged, which were presented in a summary form.

CHAPTER 4

RESULTS

This study was concerned with an in-depth look at how Chinese students adapt to academic language tasks in a Canadian university. This purpose was achieved through a qualitative research design. Twenty Chinese students in engineering who had been studying for at least six months at the University of Calgary were interviewed with an interview guide in the summer of 1991. This writer was able to obtain students' opinions on whether their previous English language training prepared them to listen, speak, read, and write at the University of Calgary; what initial difficulties they had in listening, speaking, reading, and writing; and what compensatory strategies were developed to cope with these initial difficulties. Six Canadian engineering professors were also interviewed to obtain their opinions on the abilities of Chinese students in listening, speaking, reading, and writing. Professors' opinions served as a point of reference to Chinese students' responses. Finally, four newly arrived Chinese students in engineering participated in a four month follow-up studies to see their actual adaptation experience as well as their personal opinions about the adaptation to the academic language tasks in listening, speaking, reading, and writing. The results of the study are reported in three sections: 1) twenty students' responses, 2) Canadian professors' responses, and 3) four case studies.

4.1 Twenty Students' Responses

Although five of the twenty Chinese students were female and the rest were male, there were hardly any sex differences in the students' responses to the interview questions. The twenty Chinese students's responses are summarized in

the following fourteen categories that show their opinions on the previous preparation in the language skills in China, the initial language difficulties in Canada, and the compensatory strategies in the language skills.

4.1.1 Preparation for Listening in China

1) The traditional methods of instruction. This type of instructional method spanned elementary, junior high through senior high schools to undergraduate studies in universities in a period from late 1970s to mid 1980s. In general, students began to receive English language instruction either at junior high or senior high level dependent upon regional variations. Teaching by non-native speakers was inclined to intensive reading, grammar, and translation. There was very little listening comprehension component, except that in the late 1980s, listening comprehension was added to English language programs in some universities. Students were then exposed to language audio tapes produced in Britain and the United States with standard pronunciation and clear enunciation. According to the students, the traditional methods of intensive reading, grammar and translation were the basic modes of instruction for a large part of their language learning experience in English language programs, in which listening comprehension never occupied a recognizable portion of the curriculum. Five students said bluntly that they did not receive any training in listening comprehension from classroom instruction.

2) The contemporary methods of instruction. At the senior university level and in orientation programs for those foreign-university bound, students were introduced to native speakers, called foreign experts in China, who provided a natural language environment in which students interacted with authentic English. Foreign experts brought with them western language training approaches as well as new ideas and

trends in science and technology. Another feature in orientation programs was a heavy emphasis on training for passing TOEFL and EPT (English proficiency test compiled by Chinese), both of which had components of listening comprehension, structure and written expressions, and reading comprehension and vocabulary. Students who had received post-graduate studies in China were exposed to the contemporary methods of instruction with one native speaker conducting a class of over twenty students. Therefore, students spent more time listening to foreign experts than speaking in class. In students' opinions, the entire experience with the contemporary methods of instruction was too short. Five students went through orientation programs. Only one student said: "I feel good about listening comprehension training in the orientation program in China".

3) Self-study. Generated by personal interest and needs, the majority of students revealed that they had persisted in listening to tapes accompanied by language textbooks and radio programs and watching TV programs in English. They started with Special Program on Voice Of America (VOA), which broadcast short stories at a slow speed. They proceeded to normal programs on VOA, British Broadcasting Corporation (BBC), and Radio Beijing. They watched educational TV series such as the popular language programs "Follow Me" and "On We Go" produced by BBC. Most of the students spent hours listening to practice tapes of TOEFL model tests. One of the requirements for admission to graduate studies in North American universities was success in passing TOEFL.

Thus, training in listening comprehension was mainly achieved through self-study by listening to general English on radio, TV, and language tapes outside the

classroom. There was no training in listening in the dominant traditional methods of instruction or the training was too short in the contemporary methods of instruction.

4.1.2 Initial Difficulties in Listening

About half of the students recollected that listening comprehension in Canadian graduate classes did not present a big problem because of the highly specialized content, pre-assigned topics of discussion, and standardized vocabulary and technical expressions used by professors. A few students stated that taking some courses built up and expanded the English language required by the course content which they had already learned in China. Since students were relaxed knowing that they were not forced to verbally respond immediately and had textbooks to fall back on before and after class, lectures were relatively easy to understand. As one student put it: "I could understand most of the general ideas of a lecture, but I may not understand everything I heard".

Another student stated: "Listening is not a problem, except when some teachers have some accent. I find listening comprehension is easy if the course content falls within my specialty. If it is not, then, there will be initial difficulty".

In some cases, students found listening comprehension in class was difficult in the initial stage, particularly in the first month of study. There were three situations that caused minor breakdowns in listening comprehension.

1) One situation was the contrast between formal and natural language (Dulay, Burt, & Krashen, 1982). Nearly half of the students claimed that they were not accustomed initially to native speakers talking fast and naturally. Before coming to Canada, students had ample opportunities to listen to English language tapes, news

on radio, and Chinese teachers talking in English and to watch TV series designed for language learners. The language they heard was formal and artificial rather than idiomatic and colloquial. One student pointed out that foreign experts modified their talk by slowing down, reducing accent, and enunciating clearly to cater to students' language proficiency level rather than talking naturally. Four students mentioned that professors talked fast. Also pointed out were some changes in language usages. For instance, "Come in, please" in their language textbooks was replaced by "Come on in" in their real Canadian life. This apparent gap between formal language heard in a language class and real life situational language in a Canadian university presented a language shock to students in the initial stage. One student emphasized that it was not that he didn't understand the language; it was the transitional time that he needed to learn that an idea could be addressed not only by known phrases, but also by colloquial and popular words in the new region. The response from a student illustrated the point.

"You heard formal English (in China). And English in real life conversation is different. When I first arrived, I felt a lot of out-of-place. But in a short while, you can understand other people's conversation".

2) Another situation was a personal accent. Thirteen students reported: "The problem is understanding professors with an accent". One student observed that the faculty of engineering resembled a small United Nations with professors representing nations like India, China, Russia, Eastern Europe, Britain, the US, Canada, and so on. Because of the diverse countries of origin, their English was tinged with a foreign accent. The English they hear might be spoken with a strong Chinese accent, Indian accent, Greek accent, Yugoslavic accent, British accent, and Scottish accent, just to

name a few. The strong accent loomed so large at the initial stage that a string of common English words sounded foreign to students, who had anticipated hearing pronunciation of standard English as produced by radio and TV announcers. One student vividly described her initial experience in listening comprehension:

“I was petrified after the first class and after listening to office mates talking fast and with an accent. Familiar technical vocabulary sounded strange to me. But my boss was very nice and encouraged me to keep on”.

However, after a month of contact with these professors, the strong accent was no longer a major problem. Some students reported that it took a month to adapt to professors' personal accent. A student recounted:

“In the first semester, I dropped one course because the professor used too much slang and had an accent. He made jokes which made undergraduate students laugh and made me perplexed at what they laughed about. He gave humorous remarks. Although two years later, his accent didn't bother me at all when I took his course again”.

3) A third situation was a lack in prior knowledge. Eight students conceded that the background knowledge of a course was a factor that affected their listening comprehension. If a course covered topics new to students, they had difficulty comprehending professors' talk in class. This often happened when students selected a course because they needed to broaden their scope of research specializations or slightly changed their specializations upon arrival in Canada. One student put it this way: “I have no problem in listening to passages that have contexts. The problem is in listening to an excerpt from news, stories, etc. (which have no contexts)”.

Students also found it difficult to understand jokes cracked in class and questions raised by students due to the lack of contextual knowledge.

In summary, initial difficulties in listening were caused by the differences between the formal language they learned in China and the natural language used in Canada, by the personal style and accent of some speakers, and by the students' lack in the background knowledge.

4.1.3 Compensatory Strategies in Listening

1) Reading. Fifteen students stated that they relied heavily on reading before and after class as a strategy to compensate for difficulties in listening. Reading before class to gain the prior knowledge of a topic facilitated comprehension in class and reading immediately after class made up for information missed in class. Students did not worry very much about understanding every word in class. One student put it bluntly: "I just give up if I can't follow in class". They clearly knew that textbooks and notes were rich resources of information. So long as they managed to understand at what point in the textbook the professor was dealing with, they acquired details through reading textbooks after class. If there were no textbooks, professors would write complete notes on the board, which the students would copy for reviewing afterwards. As one student said: "If I couldn't understand, there were textbooks and notes. If there was not a textbook used, professors usually wrote complete notes on the board. I tried hard to copy notes. So long as I copied down notes, I could read notes after class". Another student said: "As for classes, you can read textbooks ahead of the class in order to understand the ideas in them. Thus, you don't worry about having to understand every word in class".

2) Tackling vocabulary. Three students mentioned that they concentrated on increasing their vocabulary by intensively reading several articles in engineering to get acquainted with technical terminologies or by memorizing specific technical words in the beginning of a course. Some students emphasized the importance of common words used in the daily life which frequently appeared in a specialized context in engineering. When technical vocabulary derives its definitions from the basic meanings of common words, which is especially true in engineering, a firm grasp of basic English vocabulary means a good head start on vocabulary with specialized meanings, which in turn, facilitates listening comprehension. Some students said that if they were familiar with words like “maximum”, “possibility”, or “ultimate” in the general context, then, they would recognize and understand the meanings of these words easily in the engineering context once these words were mentioned in lectures. One student said: “If, at first you have difficulty with some technical words, you will get used to them by reading several articles”.

3) Practice in listening. A few students took time off to listen to radios, watch TV, and interact with Canadian friends such as landlords, secretaries, and office mates to immerse themselves in authentic and natural language. A few students located a quiet place to read aloud articles in order to increase opportunities in listening. They said that practice made perfect. One response from a student illustrated the point: “Every morning I listen to radio, watch television, and often I talk to my landlord who is very patient. Often at some point he talks slowly to make me understand what he has said. Once I get the message, it would become easier to comprehend next time”.

4) Physical adjustment. Some students mentioned that achieving maximum concentration in class enhanced listening comprehension. What they did was to give up their old habit of a nap in the early afternoon so that they would not be sleepy in an early afternoon class. They drank coffee or tea to keep them awake. Once in the classroom, they cleared their minds, sat close to the professor, and focused their attention on the speakers. They tried to follow the train of argument presented by the professor and look at the professor's face in order to tune in to their body language as clues of understanding lectures. As one student put it: "You manage to concentrate once you are in class".

5) Seeking help from language competent classmates. Those students who had been in Canada for a shorter time would ask fellow classmates or Chinese students who had been in Canada for a longer time questions about information they missed in class or clarification regarding difficult points.

In summary, some compensatory strategies for difficulties in listening were reading textbooks and reference materials before and after class, memorizing new words to increase vocabulary, practice in listening to radio, TV, and Canadians talking, adjusting physically by concentrating in class or giving up some old habit, and seeking help from language competent classmates.

4.1.4 Preparation for Speaking in China

Seven students noted specifically that they had fewer opportunities to practice speaking than listening in English before they came to Canada. The predominant traditional methods of instruction left virtually no room for students to engage in dialogues in the classroom. One student said: "Few opportunity to speak in English, except answering questions in class". In addition, the teaching quality of Chinese

teachers was not, in their opinion, high enough to competently manage an English conversation class. Conversation was usually reserved for a foreign expert who provided natural language communications with graduate students. With over twenty students in a class, it was hard for a foreign expert to engage in extensive oral interactions with students. Consequently, there were more listening than speaking activities on the part of students in class. Furthermore, as one student explained: "Even if there was conversation in class, situational dialogues are too artificial and not easy to remember". A few students made an effort to speak in English with foreign experts on campus and occasionally with fellow Chinese at English corners; a volunteer activity happened at a designated place where every participant was expected to chat in English.

4.1.5 Initial Difficulties in Speaking

Seventeen students mentioned that speaking was a problem, which revealed a weak point in their academic performance. Students had low confidence in their speaking abilities, labelling their speech as "poor English". Six students said they survived very well in simple daily conversation, such as shopping for food, and going to the post office. As one student said: "We can talk about simple stuff and express ourselves, maybe, not fluently". Another student further explained:

"There are opportunities to talk with native speakers. But, they know you are nonnative speakers, therefore, they put lower expectations on you. They would understand faster if you didn't speak in a native or standard way. They would help you carry on conversation, e.g., give you encouragement, suggestions, alternatives, choice of words to express. So I am capable of speaking in this way".

However, when it came to expressing complex ideas and opinions, they were hindered by a slow process of constructing accurate words into sentences. As one student said: "Speaking is the worst of all my language abilities". Their problems were exemplified in the following ways.

1) Classroom Participation. Twelve students reported that they remained quiet most of the time in class in the initial stage because of the self-consciousness of poor speaking ability and because classes were conducted in a lecture style. It was clearly understood that classroom participation was not one of the criteria in the final evaluation of student achievement in a course. Students did not feel under pressure to express themselves or answer a question put forward by professors, who would, in no case, single out a student to answer the question either because outgoing classmates would volunteer to solve the problem or it was a lecture style class. One student said: "I didn't engage in classroom participation. You don't need answer questions put forward by professors, because there are others who will answer and professors seldom point to somebody to answer the question. Classroom participation is not important". One student summarized that Chinese students did not like to ask questions in class. They preferred to wait until professors' office hours and solve their problems on a one-to-one basis or read books after class. They considered some questions raised in class were simple and superficial. One student explained: "I don't participate in classroom discussion. Perhaps my personality is a factor. Chinese students don't like to put up questions. If I don't understand, I read books after class". Another student said: "I don't ask questions in class. If I have a question, I wait for professors' office hour". A third student gave a detailed explanation: "I remain quiet in lecture style class, because I want to save face. If I have doubts, I have to struggle to decide if it is really a question, and not a stupid question."

Canadian students may put up the question without thinking ahead. And I am afraid of my poor English”.

2) In-depth communication. In the university environment, graduate students communicate frequently with supervisors, course instructors, and fellow students sharing the same office, lab, and class. A few students described their difficulty in further carrying on conversations. One student stated: “We can say a few opening sentences in English. But if you want to carry on conversation and to engage in discussing complicated topics, then problems arise, e.g., putting forward your ideas using appropriate and accurate words and make yourself very clear and not misunderstood”. Eight students mentioned they could communicate with their supervisors and convey their ideas because of the mutual interest in the topic. They felt that supervisors were sympathetic regarding their language proficiency level, or in some cases, supervisors had to be patient while listening. Conversations were usually carried on when students mentioned some key technical words, and professors responded with encouragement such as suggestions of words and phrases to sharpen students' expressions and description. Quite often, as students admitted, ideas were expressed inaccurately, grammatical mistakes abounded, and wrong use of words occurred. Students also mentioned the difficulty in carrying on further conversation with Canadian classmates and those around in daily life. Two students described their early encounters with Canadian or other international students sharing the same office. After initial simple greeting protocols, students usually stumbled over the correct expressions of their opinions and thoughts, which often cut short an otherwise stimulating conversation.

Moreover, a few students concurred that carrying on a conversation on a simple and short topic was not difficult for the most part. However, it was hard to discuss issues of a multifaceted nature, new ideas and concepts. Then students found themselves troubled by how to express themselves logically and appropriately to reveal the intertwined relationships of issues. Because of the frustration in presenting an excellent research in limited English, it was strenuous for them to get the message across to supervisors. One student said: "I don't know how to express ideas with so many words in my mind, i.e., how to construct vocabulary into sentences. The speech producing process is so slow. I am unable to make correct choice of words. Therefore, plain expressions seem OK, but, when describing feelings and complicated ideas, there are problems".

3) Presentations and seminars. A graduate course usually requires at least one presentation in class in a course to illustrate research projects. In most cases, students could demonstrate their ideas unambiguously because plenty of time was allowed for preparation. However, two students reported that they didn't have any idea of what presentations were like. Doing presentations could become a big problem, because they were never exposed to it before. One student said: "I thought it was just like back in China you drew some diagrams to describe and wrote down your main ideas. That day, I found out many students prepared their presentations beautifully with beautiful printed handouts. I had nothing to give out. It happened that my research topic was suggested by the professor. So he liked what I presented. I got an A-. But my presentation was not good in terms of language. What I did was the preparation of what to speak first and later. I simply don't know the presentation format".

Twelve students disclosed that the preparation process was time and energy consuming. During the presentation, they literally produced from their memory a monologue that was rarely invigorating and dynamic. They regarded their presentation as dull and the ideas covered were fewer in the given time frame than other classmates, whose official or native language was English. Students found it difficult when they were questioned. Under such circumstances, their abilities in English would fail them in clarifying issues impromptu as fluently as they had done in presentation. One student said: "If English is not a problem, we can state the issue clearly by organizing ideas better, but in a certain period of time, we offer fewer information in a presentation or seminar, where Canadians talk fast and cover a lot of information, and yet with less emphasis on the main idea". Another student said: "I think about every sentence I should say, which gives the impression that I am reciting. I prepare transparency sheets and prepare every sentence that goes along with each transparency sheet. There is no impromptu performance. Everything sounds dry, sentence by sentence".

4) Idiomatic expressions. A few students discovered that an idea could not only be expressed by standard words and phrases that they learned from language textbooks, but also by more popular ones prevalent in the real Canadian environment. They found it took time to acquire colloquial English. One student described: "I have lots of problems in speaking, because spoken language is different from written language. Slang and different ways of expressions are difficult to decipher and then to use". Another student said: "I experienced an adaptation process from previous standard English from textbooks to non-standard or colloquial English. It's not that I don't understand. It is the transition which takes time to learn that an idea can be not

only expressed by the phrases and words that I know, but also by more popular phrases and words. The problem is I can't use colloquial English".

In summary, speaking was a problem initially to many students. They were not able to do well in classroom participation, in-depth conversation, classroom presentations or seminars, and using idiomatic expressions or natural English.

4.1.6 Compensatory Strategies in Speaking

1) Prior preparation. The key to initial success in oral English was preparation. Students acknowledged they spent some time, such as ten minutes, formulating a question in mind. By thinking ahead this way, they were able to put forward a question in class. As for presentation, they invariably went through a laborious process. As one student admitted: "It is a complicated process". First, they wrote a paper on a research topic. Second, they condensed the paper into outlines and wrote them on transparencies. Third, they prepared index cards that went along with the transparencies. Fourth, they read the paper several times to commit it to memory. Fifth, they did rehearsal of the presentation by themselves or with a few friends in a quiet room.

The five-step preparation enabled students to present their research smoothly. Some students who had been in Canada for more than a year commented that, with experience, they no longer went through this laborious preparation process. They simply had a research project in mind, prepared a few index cards, and went into presentations according to the index cards.

2) Integration with native speakers. Increasing the chance of interactions with English speaking people improved students' performance in speaking. Four mentioned

they sought opportunities to talk to English speaking fellow students, landlords, secretaries, and friends, thus learning and practising some idiomatic language. One student said: "I talked to fellow students in the office to improve speaking, although they were confused by what I said. My boss corrected my mistakes in a gentle way." Two students mentioned they liked to attend conferences away from their families, which they found, resulted in a significant improvement in the ability to speak English. They were surprised by the effectiveness of this strategy. Another method was to share rooms with Canadians, which offered great potential for close interaction with Canadians. With a high percentage of Chinese students in engineering living exclusively with their Chinese speaking families, which limited their interactions with English speaking Canadians, some students discovered their labs provided an environment where they had English speaking technicians and fellow students to converse with for eight hours a day and five to seven days a week. To highlight the importance of mingling with native speakers, one student mentioned, with tongue in cheek, the positive effect of dating an opposite sex friend. The student demonstrated that dating a Canadian of the opposite sex was the fastest and most effective way to attain a high level of speaking abilities in English.

3) Reading aloud. Two students reported that they did reading aloud every day in the first few months in Canada. They considered reading aloud passages from textbooks and newspapers a useful way of improving their oral English, thus making them speak more fluently.

Hence, to surmount the difficulties in speaking, students spent a lot of time preparing their speech and presentations in class, integrating with native speakers to increase their opportunity to speak in English, and practising reading aloud.

4.1.7 Preparation for Reading in China

Reading was the only area in which all the students agreed that they received adequate training in China, as one student said: "We had a lot of training in reading in China." Many student emphasized the merits of the traditional grammar-translation methods of instruction dominant in many English programs, which laid a solid foundation for essential English that they were expected to have while in Canada. Chinese teachers' devotion to teaching grammatical rules was beneficial in constructing and comprehending sentence meanings. One student said: "This is the strength in language instruction in China, teaching from grammar to meaning. If students have a good knowledge of grammar, they can construct the meaning of a sentence." A great amount of attention to vocabulary accumulation and intensive reading was also necessary for precise reading comprehension in engineering. One student disclosed: "While preparing for TOEFL test and Graduate Record Exams (GRE), We memorized a lot of vocabulary. With regard to intensive reading, one student stated: "Training in intensive reading is good, because it helps accurate understanding. In reading newspaper I might guess and skim. But if it is technical stuff, I dare not. I will look up in the dictionary every time I come across a new word. There is no demand for fast reading in electrical engineering. Even in surveying the literature in my thesis writing stage, there was no need for fast reading." Another student said: "I felt intensive reading in China helps. My reading speed is slow, but there is no need to do fast reading."

Over half of the students who received their postgraduate training in China posited that post-graduate training was helpful in that they were required to read textbooks and papers in English in their specializations. Most of them used to have English textbooks for some of the engineering courses. One student said: "Post-

graduate training in China is helpful in that we are required to read textbooks and papers in English.” Some read and wrote research papers in English. Therefore, they believed they had already acquired an adequate amount of vocabulary and developed good reading skills.

4.1.8 Initial Difficulties in Reading

Training in reading in China contributed to the ease with which students tackled their reading tasks in the initial stage of study in Canada. The highest TOEFL average scores in structure and written expressions, and reading comprehension and vocabulary at (597 and 581 respectively) proved the students’ point. All the students in this study mentioned specifically that they didn’t encounter any problem in reading. Some responses from the students reflected the majority opinions: “Reading was the strength among Chinese students. It compensated for listening. We were required to read references.” Another student said: “We had a great amount of reading in the post-graduate study, such as intensive and extensive reading. I read novels in the simplified and original version. So reading is not a problem. Here, there is no concrete demand or requirements for reading in terms of pages or amount of time of reading that should be covered. It depends on the self-motivation.”

Some students, asserted that reading was not a problem because most of the reading tasks in engineering required intensive reading, rather than skimming, scanning, and guessing. Some students said they dared not venture into any guessing games while reading in their specializations. Nevertheless, there were a few minor difficulties in their reading skills. As one student put it: “Reading presents no problem, especially reading in the specializations, because we had a lot of reading at the post-graduate level. ... The problem area is that I still feel I don’t have enough

vocabulary, especially in other than my specializations. Then I have to do a guessing game.” The following is a brief look at some of the difficulties that students have in reading.

1) Comprehension of exam questions. A few students recounted that questions in examination papers did cause some frustration in comprehension and resulted in the loss of marks. Students found that, in contrast to their textbooks, test questions had almost no context to facilitate comprehension. One student described his experience: “It is sometimes difficult to understand test questions which usually have no context to facilitate comprehension. Textbooks have the context. The feeling for language is different. Canadians have the language feeling so they know what professors want from test questions. We (don’t have that feeling,) have to be careful and use logical deduction. If it sounds reasonable, then I understand the question. Otherwise, just ask the professor who usually doesn’t mind your question.”

2) Lack of prior knowledge. For a few students, they found reading other than their specializations could become a problem, because they lacked sufficient vocabulary and background knowledge of the subject. One student said: “Reading is the least problematic. Technical English is limited in vocabulary and grammar is simple. But reading newspapers and other review articles could sometimes be difficult because of the lack in vocabulary and background knowledge”.

3) Differences in language usages. A minor reading difficulty stemmed from the differences in the language usages students were taught in China and the ones that students encountered in Canada. According to one student, the initial problem was that some vocabulary that was much used in China was seldom used in Canada, whereas some common words and expressions used in Canada were never

encountered before. Another student described that it was difficult to read a paper written by native speakers, especially by British, because students were not familiar with a lot of colloquial expressions. Two students mentioned that this was particularly true when a written section depicted complex ideas in logical sequences, embedded in layers of subordinate clauses. Then students usually got confused and simply skipped the complicated section and focused on the conclusion.

In summary, students found reading comprehension difficult when they were confronted with some test questions, when they lacked the necessary background knowledge, and when the meaning of some words and expressions were different from what they were taught.

4.1.9 Compensatory Strategies in Reading

1) Clarification from instructors. Whenever there were problems in comprehending test questions, students preferred to ask instructors who, in students' opinion, would not mind providing explanations on the spot.

2) Repeated reading . Students also found repeated reading was a key to success. If ever confronted with a passage on complicated matters, they did the reading once or twice; and if information was not completely digested, they did the reading three times until they finally deciphered the meaning. One student said: "Key to success is to do repeated reading. You read once, twice, and three times until you fully understand the text."

3) Vocabulary increase. If ever new words came up in reading, they always consulted a dictionary, and thus, increased their vocabulary. One student put it this way: "I will look up in the dictionary every time I come across a new word."

4) Extensive reading. Another compensatory strategy was to do extensive reading. Reading newspapers and books enhanced their reading comprehension and reading speed. One student said: "To improve reading, I read newspapers, books, and novels. By reading a lot."

In summary, compensatory strategies for difficulties in reading included clarification from instructors especially in reading test questions, repeated reading, increasing their vocabulary by consulting a dictionary quite often, and doing extensive reading to enhance their comprehension and reading speed.

4.1.10 Preparation for Writing in China

As with speaking, writing was the area where the majority of students concurred that English language instruction in China failed to do a good job. The writing component in their language programs was fragmented and artificial. It was comprised of producing grammar related sentences, translating sentences or short paragraphs from Chinese into English and the reverse, as well as occasional personal writing. One student said: "We had some training in writing at the graduate level, such as weekly journal or writing on a topic." There was virtually no systematic teaching of writing research papers as extensively required in graduate studies in Canada. Students felt they were not informed of necessary skills in western logical thinking, sentence and paragraph sequencing, topic sentence writing, and stating objectives and ideas precisely. One student described her experience in learning to write in English: "There was not much training in writing, except that we were involved in personal writing, such as write what you want. There is not much training in writing to state a problem clearly as requested by professors here. Now we are required to state objectives, produce clear and accurate expressions of ideas. But we lack training in

this area.” Another student recalled: “There was not enough training in writing (i.e., how to write.). In China, the teaching emphasis is on sentence structure and grammar, and lacks training in a logical way of thinking, such as sequences in paragraphs and sentences and topic sentence writing.”

4.1.11 Initial Difficulties in Writing

Each and every one of the twenty students upheld the frustration they encountered in technical writing due to the lack of prior training. When asked if it was the writing format that they had trouble with, most students treated it as a trivial issue. Nine students who had received their post-graduate training in China disclosed that they had already been exposed to reading technical papers before they came to Canada. They could easily cope with the writing format problem. With good skills in reading, it took only a short time to intensively read several research papers in their specializations, and they immediately gained the knowledge of the organizational structure of a research report, such as introduction, research design, results, and discussion, to format their writing. One student commented: “The styles of research papers are quick to learn. Through reading different styles of technical papers, you get to know the styles.” Another said: “The organization of research articles presents no problems to Chinese students. Research articles do not call for numerous rhetorical devices. If you read a lot, you will get the idea about the structure of a paper, such as introduction that states what you will do on the basis of some background work and what new things that you did.”

Almost all the students said the stumbling block was their limited ability in writing complicated scientific phenomena in engineering. Four students mentioned that their writing was not formal and technical. One student said: “The problem was

how to accurately express an idea. Our writing was regarded as not natural and technical, although it was not a grammar problem. We haven't reached a high proficiency level. My boss had to correct my writing which had a lot of redundancies. I copied others for the review of literature. The problem is how to accurately describe your own research experiment in detail. If it is my original work, my boss encourages me to describe it using my own words." According to the majority of students, they found it difficult or absolutely impossible to write a paper for a course project entirely on their own. As one student remarked: "There is no way to write everything (a paper) by myself". Another student admitted: "Our writing ability is not adequate. You can write your ideas out in Chinese, but it is difficult to express them in English. Despite the fact that you spend a lot of time and energy doing reading and rewriting, our writing product is awkward." The common weaknesses with writing could be directed to the frustration in the expressions of ideas caused by several factors.

1) Insufficient vocabulary. Seven students specifically described that they had great ideas to put down in Chinese, but they had a hard time to find exact words in English to convey them. One discernible factor was a shortage of vocabulary at their disposal. Words acquired through reading simply did not pop into their mind while in writing. The other was that so many words which appeared similar in meaning made it almost impossible to choose a suitable word. As a result, inaccurate words or expressions were used to label their ideas. One student said: "We lack vocabulary. It is difficult to find a proper word. I check the computer dictionary, find synonyms, and see which one is more appropriate to what I need. But the problem is probably the word that I have in mind is already a wrong choice in the first place. So after a long time you come up with other substitute words."

The lack of productive words also inhibited the power of colorful description. Many students reiterated that their writing was featured by dullness and monotony in sentence patterns. Ideas were put forward with a string of highly repetitive words, whereas English speaking fellow students would vary their expressions. For instance, Canadians used a lot of variations in their expression of cause and effect, such as "A causes B", "B is caused by A", "B is the result of A", "...result in B", "A leads to B", "and "as a result", whereas Chinese students used "A caused B" all the way through their papers.

2) Unnatural presentation of meaning. Seven students stated that they were able to write sentences which were "not bad". They felt they might have conveyed their ideas clearly, but native speakers would not use the same expressions as they would. One student said: "Native speakers can understand what we write, but they will not express the ideas in the way we do." Or as one student described that in many cases, Chinese students resorted to using several sentences in order to elucidate clearly and in detail the idea they had in mind. But Canadians used concise and precise language such as a verb or a phrase which eventually brought out the same meaning.

Many students agreed that the frustration in writing was that they were not able to write in an idiomatic way. Students could detect Canadian and Chinese writing samples. With a glance at the E-mail messages, one perceived the language in messages written by "Lao Wai" (Canadians) as relaxed, natural, casual, and vivid; whereas the one by Chinese students as boring and unnatural. One student considered it difficult to achieve native-like proficiency in English and to produce a high-quality piece of writing with natural and idiomatic language use. They felt they

had not reached the proficient writing level that they could comfortably use the language in a different register.

3) Chinese thinking process. Three students admitted that they could hardly break away from the entrenched Chinese ideology and educational training. Their writing was infused with expressions literally translated from Chinese and the development of ideas along a Chinese line of thinking processes. As one student put it: "My Chinese style and custom of writing show up in the sentence development, although it is not literal translation from Chinese into English." They found they had problems with the flow of ideas in a paper, (i.e., the exposition or argumentation of ideas). To be more specific, they were not familiar with the western patterns of the idea development using chronological sequence, cause and effect, comparison or topic sentence. One student illustrated: "The problem in writing technical papers is: how to organize your ideas. We were never taught the organizational patterns such as chronological, cause and effect, and topic sentence writing."

4) Weaknesses in elaboration. Chinese students were also not used to the technique of elaboration in writing. Two students observed that Canadians write a long paper out of a small topic, whereas Chinese a short paper out of a big topic. In papers written by Canadians, beginnings and endings shaped a long paper. A lengthy introduction did not make it redundant. In contrast, beginnings and endings written by Chinese were usually short. If a paper was prolonged, people would find redundancies in it.

Thus, students usually struggled through writing research papers in English due to the lack of systematic training in technical writing in China. The biggest obstacle was in expressing ideas clearly and appropriately because students didn't have

sufficient vocabulary to use at their disposal, because they were not able to present their ideas in a concise language, because their sentence organization was influenced by a Chinese thinking process, and because they were poor at elaboration in writing.

4.1.12 Compensatory Strategies in Writing

1) Imitation. Ten students stated that they made plentiful use of research papers in their specializations as models for their writing. After initial intensive readings, they followed the format of model papers, copied the introduction which was mostly "universal" in the framework and wording, synthesized the language in the description of research designs in model papers to suit their own purposes, and copied words and phrases to describe the research they had engaged in. In this way, students created their own research papers easily. One student said: "Writing the first paper is the most difficult. Later you get to know the format, so you just choose appropriate words and express your ideas by copying other's words and sentences." Another student gave an example: "In writing an introduction, we use other people's version, even a lot of original words, because introduction is universal. For paragraphs, we entirely imitate other papers. When writing your own words, then it is usually very technical, e.g., equations such as ... is given by. They are very definite examples."

However, students were apparently not satisfied with this writing process. They thought imitating others' writing was temporary. As one student said: "We find ways of expressions in other people's research papers, then throw in our own ideas and formulas and create a new paper. But you can't holistically express your own ideas and show your personality and identity through copying."

2) Computer check. Students invariably subjected their writings to computer dictionary to check spelling errors or to consult a computer thesaurus in order to locate

an appropriate word for description. Using computer printout also enhanced the appearance of the papers.

3) Help from experts in English in the discipline. Three students mentioned they used to ask fellow students to read their papers in order to locate mistakes. Fellow students were those who had higher language proficiency relative to the writers and were familiar with writers' specializations. Eight students disclosed that they relied on their supervisors to smooth the language in their papers. Students simply focused on the content when writing, because they knew they had little time and language proficiency to dwell on the rhetoric. Students would then learn from the corrections made by their supervisors and chances were they would use correct expressions the next time they wrote. This trial and error process was an important way for them in learning technical writing in English. One student said: "My boss correct my papers. He is excellent in language expressions. He can correct my mistakes in articles, tones, punctuations, and flow of ideas. It helped me a lot." Another student said: "My boss corrects my articles. I read them once and come to know the correct way of description, and I will make use of the knowledge seventy to eighty percent next time."

4) Attending technical writing courses. Only one student mentioned that he attended a technical communication course offered in the university. The student highly recommended taking the course by Chinese students for its obvious benefit in increasing the knowledge of how to write a technical paper effectively. He said: "Even lots of Canadians took the course."

In summary, compensatory strategies for difficulties in writing were imitating relevant research papers, using computers to check their spelling and choice of words,

relying on experts in English in the disciplines to edit their papers, and attending a technical writing course to learn how to write technical papers.

4.1.13 Areas of Improvement in Teaching English in China

During the interviews, many students provided some opinions about improvements that might be made for English language programs in China, (i.e., increased opportunities for listening, speaking, reading, and writing).

In the areas of listening and speaking, a few students believed that adequate training in listening/speaking could not be satisfactorily achieved back in China, but a six month period in Canada was sufficient for adapting to Canadian listening/speaking tasks. What then could be done in China was the simulation of Canadian teaching practices in graduate studies, such as listening to lectures and doing presentations in English. As one student remarked, doing presentations was good, because it offered opportunities to practise speaking in public and boosted self-confidence. One student also suggested frequent attendances at English Corner and English Club to practice aural and oral English in order to become immersed in a rich language environment.

In the areas of reading and writing, students hoped that English language programs in China would maintain their level of preparation in reading. One student recommended they should promote reading in the specializations in English. They also saw a continuing effort could be made in extensive reading to increase vocabulary and background knowledge of the countries they were going to stay. They believed such an effort would enhance their performance in reading and writing. They would like to have a technical writing component added to the language programs to learn writing skills. They would like to engage in writing projects in order to provide more frequent practice in writing under the supervision of a high-quality writing teacher. However,

students were pessimistic about the availability of such writing courses because they foresaw the shortage of highly-proficient language teachers in China who would be competent enough to evaluate students' writing products.

With regard to training in taking TOEFL tests which had gradually become another important component in language programs in China, one student pointed out that language programs in China should avoid pursuit in teaching and training test-taking skills merely for its own sake. Some students commented that high test scores sometimes did not translate into high academic performance in the real life situation. Therefore, students should be exposed to listening, speaking, reading, and writing for the sake of enhancing their functional language competence. This would facilitate the real adaptation to academic language tasks in a Canadian university.

4.1.14 Similarities and Differences in the Teaching Style

Students' perceptions of the similarities and differences in Canadian and Chinese teaching styles arose naturally in the interviews. Students saw a striking similarity in teaching at graduate levels. Both Canadian and Chinese professors expected students to gain a thorough understanding of a textbook in a course rather than pursuing extensive knowledge. For instance, students in both countries were expected to read a textbook and master everything in it. However, there were more perceived differences than similarities in graduate studies, as well over half of the students received post-graduate training in both countries. The following is a brief summary of the differences.

- 1) Professors' status-quo. Two students found that it was easier to locate Canadian professors by drop-ins in their designated offices, making appointments during their office hours and by telephone calls. The relationship between professors

and students was casual and equal, which promoted a free academic environment. In contrast, Chinese professors had the aura of distinguished masters, which distanced themselves from students. In China, there were no designated office hours that students could routinely approach them.

2) Research focus. Three students mentioned that Canadian professors had a wider scope of knowledge in their field and always kept themselves in the forefront of research in their disciplines. Having a clear idea of whether or not some current issues had been solved enabled them to inform students of any advances in research in engineering and initiate students into practical research activities. In contrast, because of a lack in energy and up-to-date research materials, Chinese professors were not able to offer information on new theory and technology that were constantly changing.

3) Teaching objectives. Seven students commented that Canadian professors made an effort to nurture independent problem-solving skills. Students were given a problem and they had to find their own solution and prove it by using computers. In contrast, Chinese professors aimed at transferring basic theories and concepts in the specialization and develop computational skills in students.

4) Teaching methods. Ten students described that Canadian professors did not have a strict curriculum guide to their lectures. In class they presented highlights in a sketchy fashion. They often used transparencies to mark the main ideas of lectures or conclusions. They often omitted complicated procedures, leaving room for students to pursue. It was essential for students to participate in class in the form of presentations and seminars, at least one presentation in a course. Presentations allowed students to take initiatives in research and share their knowledge about a

topic covered in the class. By applying that knowledge to solve a practical problem in the area of their interest, they exhibited their understanding of the course. This was especially true with a course concerning new ideas and theories in engineering that were still evolving. Canadian professors would expect students to actively participate in classroom discussion in order to assess students' knowledge and understanding. Chinese professors prepared lectures and conducted solo-type lectures according to lesson plans, paying attention to the step-by-step logical sequence of derivations and conclusions. There was no luxury of transparencies to be used in class nor students' participation in class.

5) Teaching resources. Two students mentioned that textbooks selected for a course in a Canadian university were rich with applied sciences, rather than pure theoretical sciences. Canadian universities were fully equipped with labs and computers to implement their research ideas. One student commented that, even if it was a course on the most advanced research ideas, students could test their research ideas in labs. With a shortage of computers and labs to support research, Chinese professors were limited in the use of textbooks, thereby, focusing on fundamental theory rather than on applications.

It is obvious that students' perceived differences between Canadian and Chinese professors were professors' status-quo, research focus, teaching objectives, teaching methods, and teaching resources.

4.2 Professors' Responses

In order to obtain an objective and realistic picture of how Chinese students adapt to Canadian graduate studies as related to their language abilities in listening, speaking, reading, and writing, six Canadian professors were selected for this study

from five departments in the faculty of engineering at University of Calgary, representing a diversity of ethnic and linguistic background: Scottish, Middle East, European, South American and Canadian. The professors had either supervised or taught Chinese students in class. In one way or another, they had interacted with a very small sample of Chinese engineering students, as some of them stressed at the beginning of interviews. Their reflections on Chinese students' English language abilities converged on several issues.

4.2.1 Chinese Students' Abilities in Listening

Five professors believed that listening comprehension was not a major problem for students, as they were very attentive in class. One professor said: "Students know that listening in class is very important. They are very attentive. ... In general, they understand enough to get by in class, and ask others and get help from reading, coupled with attentiveness. I don't see it as a major problem." Two professors mentioned that students seldom asked a question in class for clarification or reiteration, or for any other reason. One professor speculated that students might have got a complete idea of a lecture either by asking other fellow students or by reading. But some professors wondered if Chinese students would admit that they did not understand lectures because they did not want to show their weaknesses. In general, professors believed that students heard better than they spoke.

4.2.2 Chinese Students' Abilities in Speaking

Although there was a range of ability in general, speaking was believed to be one of the weakest abilities in Chinese students. All the professors concurred that students had a strong accent which normally was an impediment to communication. This occurred especially with some consonants produced by some students, making it

hard for professors to understand what was being said. It usually took a little while, (e.g., two weeks,) for professors to adjust to the way some sounds were pronounced and finally overcame the communication barrier. One professor said: "In speaking, students have accent. It takes me a while to adjust to the way they speak."

An interesting observation came from three professors that this pronunciation problem depended on which part of China students came from. Perhaps, due to the regional differences in the way Chinese was pronounced, students from southern China seemed to be more easily understood than those from northern China in the English pronunciation. The differences in geographical origins as well as the individual personality also accounted for the fact that southern students were more outgoing, therefore, appeared to be more active and open to express themselves and ask questions, than northern ones who might prefer to remain quiet, especially in class.

One professor commented that some of the Chinese students' difficulties in speaking stemmed from cultural differences in rhetorical structures, a point that echoed the research findings by Kaplan (1966). He explained that perhaps students had not yet picked up that Canadian style. He said: "It is difficult to understand Chinese because they have problem phrasing what they want to say." When defining what Canadian style was like, the professor offered that it was the way people say things in North America according to the logical development. Part of the communication problem between Canadian professors and Chinese students was the logical development of ideas. Some students would choose an abstract topic and ramble around it in a circular manner. Professors found this style of speaking difficult to understand. And the initial big hurdle for students to conquer was to establish the

structure of their talk in the Canadian style and follow the logical sequence through the topic. The professor thought this happened in students' writing, too.

Professors agreed that students' presentations and seminars were primarily well thought out and rehearsed, which indicated a great amount of hard work that students put in. One professor said: "Seminars, they managed all right. Professors are most interested in substance and critical on whether the important thing is said." But, if a question was raised, it could throw students off. They would have difficulty in responding in English. And the problem was, again, in phrasing what they wanted to say logically. One professor described: "The important thing is speaking. If speaking ability is poor, then when mental pressures come at presentations in class or at international conferences, students might spoil a very good paper."

One professor offered a few insights into the oral skills of Chinese students. The general speaking abilities had become somewhat better in students arriving in recent years than those three or four years ago. The moment students' families arrived, their speaking abilities declined. Those who improved their speaking abilities in the long run were the ones who made an effort to speak or tried to mingle with English speakers. Newcomers tended to stick together and converse in Chinese.

4.2.3 Chinese Students' Abilities in Reading

All the six professors agreed that Chinese students had the best skills in reading. One professor stated that students' reading abilities were correlated with their high level of intelligence and comparable to the general average level of Canadian students. Another professor explained: "Chinese students are much better in reading and understanding from written materials, because in their undergraduate and Master degree programs they were exposed to written technical literature in English. So they

have experience with foreign literature in English.” Further explanations came from a professor that textbooks had contexts for comprehension; technical publications were limited in the use of vocabulary; and probably, the vocabulary in technical writing was similar to those in Chinese contexts. Even test questions were highly formulaic. Therefore, students had fewer difficulty in reading and understanding written materials.

4.2.4 Chinese Students’ Abilities in Writing

Writing abilities were believed to vary among students. In some cases, the use of vocabulary and grammar and the expression of ideas were much better than the speaking abilities. In other cases, some students who were very conversational in oral language were very weak in their written work. In general, students’ writing was not bad, according to one professor, and consistent with their TOEFL score level. Students made relatively few grammatical errors, although some never seemed to learn the corrections made by professors. Two professors remarked that both Canadian and Chinese students made errors in their writing. Professors looked for scientific talent in students and whether important substance was accurately conveyed. When language became an obstacle, they tried to circumvent the obstacle by focussing on the content rather than the grammatical correctness of its expression.

Three professors recalled that writing could be more difficult with some students, but not all. Students who had problems with English grammar were the ones who usually had also difficulty expressing themselves orally. One of the typical errors made by students was the use of *the* and *a/an*, which had no equivalents in Chinese. Another comment was that major problems in writing would not arise until students began writing their theses. Then, students were more concerned about technical

details and not really concerned about grammar. Professors normally focused on a good piece of research and overlooked minor weaknesses. One professor best described the negotiating process between thesis supervisors and students. A written thesis invariably took a few runs-through: professors asked for the student's intended meanings; they suggested changes in grammar and rephrasing to bring out the meaning that students wanted to express.

One professor recommended that students should take a course in communication, namely technical writing, to improve their technical writing abilities. Chinese students should realize the benefit of such courses and place priority on it in terms of actual time and energy spent on improving writing skills. Otherwise, the student might have good clear thoughts and have conducted a good piece of research, but had problems in adequately expressing those ideas in written English. The professor was obliged to divide his attention between the quality of the content and the way in which it was expressed.

4.2.5 Professors' Miscellaneous Comments

Three professors made remarks about Chinese students' high aptitude towards learning. As students were admitted into the engineering graduate programs at the University of Calgary through a stringent screening process, their TOEFL scores were well above the 550 requirement level. One professor said: "Chinese students' skills and background are exceptionally good, because their intelligence level is high. Vocabulary in engineering is not as rich as in social sciences." Another professor also said: "Chinese students are unusually serious people which is beyond me. ... They have a good study attitude."

One professor pointed out the improvement that could be made in the English language programs in China. As some typical grammatical errors such as the use of the and a/an were indoctrinated, they could be taught in China, so that students would put more emphasis on the correct use of the English language. As one professor rightly said: "Any help before students arrived in Canada would help students develop confidence in listening, speaking, reading, and writing while in Canada."

One professor expressed the concern that the Canadian government funding cuts for education would put financial pressure on professors in reducing the number of students they could take. This would translate into an extremely competitive scenario for Chinese students, driving up the TOEFL score admission level, when the TOEFL scores might not fully reveal students' true academic language skills.

4.2.7 Summary of Interviews with Professors

In general, the six Canadian professors showed satisfaction with Chinese students' language abilities in listening and reading comprehension. The prior preparation in these two language abilities helped students cope well with the essential academic tasks in listening to lectures and supervisors and reading textbooks, notes, research papers, and written instructions. However, some professors believed that some weaknesses did exist in students' abilities in speaking and writing. The problems stemmed from a lack of the clear-cut logical expression of ideas probably caused by a lack of practice in the two aspects of language skills. Overall, the professors were impressed by students' positive attitude toward learning and school.

4.3 Case Studies

While the interviews with twenty Chinese students render a general and retrospective view of students engaged in the process of adaptation to academic language tasks at a Canadian university and the interviews with six Canadian professors give an objective picture of the Chinese students' academic language abilities in listening, speaking, reading, and writing, more insight can be derived from case studies of Chinese students actually engaged in the process of cultural and linguistic adjustment to Canadian graduate studies in relation to their abilities in English.

In September 1991, four newly arrived Chinese engineering students were asked to participate in the four-month case study. During that period of time, the students were interviewed once a month about their adjustment to their graduate studies at the University of Calgary. The students were asked to keep a weekly journal in a journal entry form. Once a month, field observations were done to record what was actually happening in the classroom and especially how the students acted in the environment. There were also casual conversations with the professors and the students. The following is a description of each of the four case studies.

4.3.1 Case Study I

Daling is a twenty-four year old male electrical engineering student, who came to the University of Calgary at the end of August 1991 when he was half way through his Master's degree program in China. He had studied English for more than ten years with the traditional methods of instruction, and yet, received no systematic training in listening, speaking, or writing. He was used to listening to either Chinese teachers speaking English with a Chinese accent or very standard English on BBC and VOA. He read a lot of simple Chinese style writing in English. His TOEFL score was 580,

with listening comprehension at 550, structure and written expressions at 600, and reading comprehension and vocabulary at 590. He used to read electrical engineering textbooks in English in his Master's degree program in China, but he received neither orientation nor information about Canadian graduate studies. He described his training in listening as "very few, in speaking as "terrible because of no opportunity to practice", in reading as "at too simple level", and in writing as "never written technical papers in English".

In spite of that, he appeared optimistic about his English abilities, saying that he would manage to function well in listening, speaking, reading, and writing in survival English and his abilities in the language would improve. He took two courses for the semester, one with which he was quite familiar. Before and after class, he carefully read textbooks. Weekends, holidays, and evenings were his usual study time. He reported in his journal throughout the semester that he had no problem in listening comprehension, often because of the standard language used and sometimes because of the familiar content. His initial language problem was understanding professors with an accent and Canadian fellow students posing questions in class. This listening comprehension difficulty was constantly reiterated in his weekly journal.

Over a month's time, his listening comprehension showed obvious improvement. He understood very well the general ideas of lectures, especially when he had some necessary prior knowledge. Otherwise, comprehension would break down when the topic was beyond him. He gave an example, that it was difficult to read the textbook for one of the courses that was new to him. He stressed: "If the talk is beyond my prediction and prior knowledge, I can not understand it. This happens when there is a sudden change of topic being presented and when the instructor takes us to see how

to operate a new computer system.” Such a situation occurred once when a lab instructor came to the class, explaining a computer operating system according to a manual. The instructor talked fast, leafing through the pages of the manual quickly. I twice found Daling didn't get to the right page. He looked at the manuals of his classmates on both sides of him and caught up with the lab instructor. After class, Daling said that he was used to the course instructor's language, voice, and lecture style. With a new lab instructor who spoke very fast and talked about something that he had no prior knowledge of, listening comprehension was difficult. He felt terrible. He spent a great deal of time and energy during the semester learning the computer system by reading textbooks that other Canadian fellow students had studied in their undergraduate course and by asking Canadian students to help him out with the computer programs in order to finish his project. Often, he abandoned all kinds of social meetings and even sleep to finish his projects before the deadline. He reported in his journal every week that he practised listening.

The class that was being observed had fourteen students, among whom Daling was the only Chinese student. There were three rows of chairs facing the blackboard and Daling usually sat in the middle of the second row. He never put up any questions or comments in class during the observations. He listened attentively to the course instructor who lectured most of the time. Daling frequently took notes that instructor wrote on the board, mostly formulas and matrices. Once or twice each in the first two observations, some Canadian students put up questions for clarification. Daling would turn his head to the speaker, and then immediately back to the instructor who answered the questions. In the informal chat, Daling said that he understood the lectures, but had difficulty in understanding Canadian students' questions. However,

he was able to get some general idea of the questions from the instructor's response to the questions.

He managed very well in simple conversations. His weekly journal in the first two months reported that he had no problem in speaking in English because he slowed down his speech. But in prolonged conversations with Canadians, he felt he didn't succeed very well, because his slow response and lack in vocabulary reduced the interest in the further conversation on both parties. He explained that he had the necessary words in mind, but he could not produce them in a real context or he used some words that Canadians didn't understand. He constantly reported in his weekly journal throughout the four months that his speaking problem was with the in-depth communication. So he watched TV programs and listened to conversations among Canadians to improve his English. His weekly journal constantly showed that he tried to integrate with native speakers by talking and sharing accommodations with them.

Things went on uneventfully until the end of the semester when he felt a great improvement in listening and speaking. His confidence in his language abilities was evident during the final interview. He pinpointed the benefit of immersion in the rich English environment for the past four months. He said he had no problem in understanding lectures and could take notes even when the professor did not write them on the board. He could respond faster in conversation with Canadians and was able to speak fluently a few sentences in a small class.

However, he told me that he read his textbooks as slowly as he did when he was in China, showing no acceleration in reading speed. Due to the different ways of expressions, he would still have some difficulty in comprehending books that were beyond his specializations. He said: "Back in China, I read papers in English written

in a Chinese style. Here in Canada, you have to understand papers written by Canadians from a different angle.” He described Canadian writing structures as different from the ones by Chinese and British. In his journal and during the interviews, he repeatedly said that his compensatory strategy was to do repeated reading. Another strategy was “I recall what I know and relate that knowledge to the reading and suddenly I understand what I am reading”.

As for writing, he didn't start to write papers until November, except taking notes while reading. He said that writing was not difficult for him, because of the formal English being used. His journal in November and December also indicated that he had no problem in writing format. He reasoned that reports were not too difficult to write, because one had to follow a strict pattern of the report structure, such as point one, two, three and conclusion and use a lot of passive voice in description. The difficulty in writing, as he indicated in his weekly journal in the last two months, stemmed from a non-native speaker's proficiency level and Chinese language influence. Since November, he often wrote reports and he felt this practice of writing facilitated his expressions of thoughts in English, although there were traces of Chinese English. He said: “In China, I often got stuck while writing. Now that I often write in English, I feel much better (comfortable in putting down ideas).” He got good marks for the both courses he took. He concluded that Chinese students might be good at the in-depth knowledge of a course, and yet, lack hands-on experience in computer design.

4.3.2 Case Study II

Daming is a twenty-six year old male electrical engineering student, one of the top students in his undergraduate and graduate study from one of the most prestigious

universities in China. He studied English for five and a half years, two years with the traditional methods of instruction and three and a half years with the contemporary methods of instruction. He was required to read extensively electrical engineering papers in English in China. His TOEFL score was 587, with listening comprehension at 550, structure and written expressions at 590, and reading comprehension and vocabulary at 620. He had no orientation nor information about Canadian graduate studies before coming to Canada.

I found Daming to be a quiet young man. He had a great confidence in his all-round language abilities achieved mainly through his pursuit in self study. When school started, he took two courses with which he was familiar. He could understand over ninety percent of the lectures if he concentrated his attention in class, because, he explained, the instructors spoke slowly knowing that there was a new international student in class and because he was extremely familiar with the course content. However, he had difficulty understanding Canadian fellow students when they posed questions and when the professors answered the questions in the natural, casual, and colloquial language. He described that there were times when Canadian students asked questions which he could hardly understand and the instructor answered the questions using fast and colloquial language. Even the tone, intonation, and choice of words seemed to have all been transformed to produce a language that was beyond his comprehension. He said: "I felt sad and hurt about it, and so I just gave up the effort to understand the dialogues at a certain point in class." In November and December, he had a Canadian roommate and felt that this contact resulted in much improvement in understanding lectures and even dialogues among Canadians. He said he now had the courage to request explanations if he didn't understand some of the lectures.

His weekly journal throughout the four months also showed that he had no problem in listening comprehension due to the familiar course content and his low anxiety level. In the last two months, he added two more factors that reduced his difficulty in listening comprehension: the pre-assigned topics and standard language being used. Nevertheless, some of his difficulties in listening comprehension were triggered by language differences and unfamiliar content. He mainly tried to practise listening in English, increasing his vocabulary, and seeking help from competent classmates as his compensatory strategies.

Speaking was the only area that he showed some concern initially. He described his brief experience in learning to speak in English in his third year of university study when foreign experts introduced speaking activities in class. However, the activity was suspended abruptly to save time for the preparation of the qualification exams in the university. Although he could make himself understood, he had to take time to choose words and sentences and to formulate questions in his mind in order to express himself, with the result that he often seemed to have nothing to talk about during conversations with Canadian students. This situation persisted for some time. By November and December, he felt it easier to talk in English with Hong Kong students than with Canadian students who usually could not understand some of the words he used and would often ask him for the clarification of some words he used. He sometimes found it difficult to describe complex matters. His weekly journal constantly reported that he could manage well by speaking slowly, but he had difficulty in communication with his fellow students, in in-depth talk, or in description of complex matters. His coping strategies were to integrate with native speakers by talking and sharing accommodation with them and being fully prepared for presentations.

One of Daming's class being observed had four male students. The instructor was Daming's supervisor. The class was held in the department's meeting room with a big long table in the center. The four students usually sat on both sides of the table facing each other and looking sideways to the blackboard. In class, Daming listened attentively to the instructor, with his notebook and pen in front of him on the table. His eyes often looked at whoever was speaking in the class. The instructor mainly used transparencies, lecturing, notes on the board, and sometimes, dictation to conduct the class. The instructor cracked one joke in each session on average and Daming seemed to understand half of the jokes by smiling as the other classmates did. During the four observations, Daming would not volunteer for answering questions except once when the instructor raised a question to the class. After a few seconds when other students remained quiet, Daming replied in one sentence. When asked by the instructor, he could answer them in one or more sentences clearly. There were altogether eight times when the instructor directed a question at Daming who answered them in several sentences. Canadian students often raised questions towards the end of each session for clarification but Daming never did. After class, Daming said that he was very familiar with the course content as he had studied the course in the graduate program in China. Towards the end of the semester, he had more confidence in speaking and spoke more fluently than when he first came to Canada.

During his undergraduate and post-graduate study in China, Daming read a great quantity of technical papers in English, which put him in a comfortable position while in Canada as far as reading was concerned. He said in September: "I had to do my research by reading a lot of new books and papers in English at that time, which really improved my reading comprehension". His TOEFL score on reading comprehension

at 620 proved his point. He added: "There will be no problem (in reading), and probably, I will increase my reading speed eventually". His weekly journal constantly reported no problem in reading due to his intensive reading and in the first two months, he used repeated reading and dictionary consultation as his compensatory strategies.

He also wrote technical papers in English back in China. His Chinese supervisor, who was a graduate from an English missionary university in China, would revise his papers in order to be published in western journals. He felt it easy to write reports on experiments because he was familiar with the writing format. He put it this way: "(I have) No problem in writing experiment report. It is the same as in China. You present your reports in sections like objectives, procedures, questions, and discussion". His comfort in writing format was reiterated in his weekly journal. However, he often ran into trouble in differentiating whether some words should be used in formal or informal English and in describing his experiment. In the last two interviews, he said that it was difficult to describe his experiments and his language was not appropriately used. He tried to use formal English, but the sentences sounded awkward. In his weekly journal, he attributed his difficulty in writing to several factors: the insufficient vocabulary, the Chinese thinking process, and the unnatural transformation of meaning. His compensatory strategies were to imitate model papers and use computers to check spelling and to find out synonyms. He found it beneficial to write messages on the E-mail system since it enabled him to practise writing and learn good expressions.

4.3.3 Case Study III

Dasheng is a thirty-four year old survey engineering male student who received his Bachelor's and Master's degrees before coming to Canada. He learned Japanese in high school and German in the undergraduate program. He studied English with the traditional methods of instruction in his post-graduate program for just one year. He often listened to radio English. His TOEFL score was 560, with listening comprehension at 510, structure and written expressions at 610, and reading comprehension and vocabulary at 510. He had no prior experience in reading technical English, nor did he have orientation and information about Canadian graduate studies. However, he seemed to have a great desire to improve his English, and surprisingly, he spoke good English according to those around him.

Since he had no adequate formal training in English, he said he was fortunate to have a solid background in his specialization. He took two graduate seminar courses. When school started, he said he could understand eighty to ninety percent of the lectures because the content was familiar to him. Only when professors had a strong accent did he have to do a lot of guessing from the context or check with other Chinese students. His weekly journal in the first two months also indicated his difficulty in adapting to the personal accent. However, in a month's time, he claimed that he had reached an obvious improvement in listening comprehension, especially in adapting to a professor's personal accent. Towards the end of the semester, listening was the skill in which he thought he had made the greatest improvement. He proudly said: "I can now understand most of the dialogues even among Canadians, except when a high level of colloquialism is used in the speech." He reported in his journal every week, that he did pre- and post- reading for a course, intentionally memorized new words to increase his vocabulary, and listened to news on radio every hour if he was at home as his coping strategies.

Living with Chinese students since he arrived in Canada had deprived him of his contact with English speaking people. His constant complaint was "I have no opportunity to speak English except by reading aloud and memorizing new words and reading passages". He could understand colloquial and idiomatic English, but he had difficulty in expressing himself clearly and correctly by using these colloquial and idiomatic expressions he heard. Sometimes, he felt frustrated in choosing the exact words to express his research ideas during discussion. By October, he got used to the class routine, which gave him more confidence in himself and he was no longer afraid to join in the discussion in one class. In the other class, there were fellow students who were very familiar with the course content, and he was usually not able to respond quickly and put forward his opinions. He said: "I have more confidence in myself now than before. If I want to, I can now speak slowly to express myself."

Towards the end of the semester, he said his speaking ability showed very slow improvement. His prepared speech was delivered much better than before. But when engaged in conversation, he felt that he sometimes couldn't find appropriate words to express himself or his expressions were not clear enough to be understood. The frustration with his speaking ability in English was echoed in his journal from September to December. He reported that he had difficulty in in-depth communication and description of complex matters. He tried to set aside time for formulating questions and preparing for presentations. He bought a vocabulary book, hoping to increase his vocabulary so that he could carry on conversation further with English speaking people. He would like to have opportunity to learn speaking skills, such as how to start a conversation and how to speak with different levels of people appropriately.

One of the classes that Dasheng attended had more Chinese than Canadian students. The seminars were conducted in a meeting room with tables in the middle. Dasheng usually sat in an armchair one row behind the table, facing the blackboard. No textbooks were used, so Dasheng usually came to the class without doing any reading on different topics presented by the fellow students.

During the four seminars that the observations happened, Dasheng remained quiet most of the time, without putting up or answering questions. Only twice did he discuss in Chinese with his fellow Chinese students next to him, stating his own opinions about the presentation. He always looked at the presenters or the instructor. Whenever a classmate put up a question, he would lean forward to listen carefully, knitting his eyebrows. Probably he was trying to decipher the questions. He always had his notebook binder on his lap, taking notes whenever the instructor wrote on the board any formulas and diagrams.

Dasheng was going to do his presentation in the second half of the second observation. He ignored what was being presented in class. Instead, he sat down in an armchair and read through twice his transparency sheets for his presentation. He disclosed before the class that he deliberately paired up with an English-competent Chinese fellow student, hoping to receive some assistance. Disappointedly, his partner was too busy to help him, and Dasheng had to work hard towards the last minute before the presentation, overcoming the hurdle of computer illiteracy and making transparency sheets. He said he didn't have enough time to rehearse the presentation.

He appeared nervous. His voice was low. His hands often fumbled with his sheets. He simply read out the outlines he wrote on the transparency sheets.

Occasionally, he would cast his eyes on the audience for a minute as if he was talking to them. At the beginning, he offered his apology for his poor English. During the presentation, a Canadian student questioned him, but the instructor and other students answered it instead. When a second question was raised by a Canadian student, Dasheng apparently didn't understand it, and asked the student to repeat the question. He hesitated for a minute, then Dasheng's partner jumped in to answer the question for him.

During his second presentation a month later, he was relaxed, elaborating on his speech outlines written on the transparencies, often looking at his audience as he talked. He did not offer an apology for his poor English. After the seminar, he said that he had read his notes several times and he felt much more comfortable in doing a prepared speech.

He had no problem in reading and understanding special uses of English, except in reading campus publications which involved a lot of colloquial English. He reiterated that his reading speed had improved little during the four month period. The slow reading speed commonly occurred in science and engineering. He still read slowly, which he claimed was necessary in science and engineering specializations. He underlined words, phrases or sentences that he considered important and useful to him. His weekly journal constantly indicated the mismatch between language usages as his difficulty in reading. He said that the same concept was worded in totally different English in Canada and in China. His early compensatory strategies were to ask for clarification, and later on, he mainly did repeated reading by himself, consulted a dictionary, and made an effort to increase his vocabulary. In December he reported doing extensive reading as a compensatory strategy in reading.

How to write technically was difficult for him since he had never done it before in China. In his journal, he always reported insufficient vocabulary and Chinese thinking process as his major difficulty in writing. In December he also attributed his writing difficulty to the inability to elaborate ideas. He paid attention to good sentence patterns and usages while reading journal papers. He sometimes imitated those expressions, format, and the development of ideas in his own papers. He maintained that the more he read those papers, the easier for him to write papers of his own. Nevertheless, writing remained a very slow process.

4.3.4 Case Study IV

Dajing is a thirty-two year old male survey engineering student, who considered himself getting old compared with those newly arrived Chinese students who were in their twenties. He held a Bachelor's degree before coming to Canada in late August, 1991. He went through four years of English study with the traditional methods of instruction, and without any experience with engineering English in his undergraduate studies. He became an editor of a science journal in China after graduation. His TOEFL score was 580, with listening comprehension at 530, structure and written expressions at 610, and reading comprehension and vocabulary at 600. He did not receive any orientation or information about Canadian graduate studies.

Dajing was special in this case because he was somewhat handicapped by poor listening ability due to tinnitus. After he arrived in Canada, he immediately purchased a hearing aid device, but still, he would miss a lot of information during lectures and classroom discussions. Coupled with insufficient training in listening and speaking back in China, except listening to standard English on VOA and BBC in his spare time, he was not used to professors' personal accents and sometimes fast lecturing

speed. A typical problem would arise when there were interruptions from students during a lecture or when the professor suddenly changed the topic to one for which Dajing had not prepared. In October, he said: "Listening is OK now when I deal with the familiar content, preview handouts and study special vocabulary and their pronunciation. So the next day, I can understand the general idea of what is being discussed, rather than every sentence. I can then follow the pace of the discussion. The comprehension problem still arises when there is an interruption from other classmates and a sudden change of topics that I am not prepared for." His weekly journal throughout the four months showed that he didn't regard listening as a problem when he had a low anxiety level. But, listening could become a difficulty for him when the speaker had an accent and when he was not familiar with the content being talked about. He constantly reported that he used pre-- and post- reading, increasing vocabulary, and practice in listening as his compensatory strategies.

He lived and shared an office with Chinese students, leaving him few avenues to engage in conversations with Canadians to improve his oral and aural English. He repeatedly said; "I realize now that there is less opportunity to learn and improve my spoken English in Canada than in China, because everyone is busy, and therefore, no one is free to talk to you. In China, I invited English competent friends to come to my home and practise speaking in English. Now I need all kinds of opportunities to talk in English". In a desperate effort to improve his English during the first few months, he taped radio programs to listen to, did reading aloud every day in a nearby playground, paired with Canadian fellow students to do presentations, and reserved sufficient time for preparing for the presentations. In his journal, he constantly reported no problem in speaking due to the slow speech, but had difficulty in engaging in in-depth communication with Canadians. He believed that studying the two courses was little

more than learning the English expressions for ideas with which he was already familiar. He said: "I spend more time now studying English than my specialization."

One of Dajing's classes that was observed had fourteen students, over half of them were Chinese. It was a graduate seminar course. Dajing usually sat by the table facing sideways to the blackboard. His notebook binder lay open on the table. He remained quiet most of the time in class except for doing the two presentations.

In the first observation, Dajing didn't take any notes. At one point in class he dozed off with his two hands supporting his head, as if he was reading the notes. During the recess, he said that he didn't sleep well the night before. He refreshed himself with a cup of coffee and listened more attentively, looking at the speakers all the time.

For the first presentation he did, he paired with a Canadian student in order to get some help in English. However, it turned out the Canadian student was either very busy with other courses during the weekdays or on outings during the weekends. Dajing ended up helping his partner with the transparency sheet for the introduction of their presentation. When his partner presented the introduction, Dajing was chewing his fingernails. When Dajing's turn came, he seemed to be overcome by his nervousness. He stood there speechless for almost two minutes, shuffling his transparency sheets and his hands in and out of his pockets. When he spoke, his voice was trembling. As he read his notes and talked about the diagrams from his memory, his nervousness began to fade, but his voice remained low, revealing his lack of confidence in himself. Finally, the professor commented that Dajing's English was moving along nicely. Dajing smiled back.

One striking feature during that observation was that newly arrived Chinese students usually remained quiet, whereas other Chinese students who had been in Canada for more than ten months were able to put up many questions and sometimes challenged the instructors' point of view. But, the common problem was that they were not able to state their issues logically and clearly. That was why the instructor asked twice for the point that one of the Chinese students was getting at.

Dajing's second presentation was done by himself alone in late November, which showed much improvement in his confidence. He spoke more fluently and louder than before. He talked about his research outlined on the transparency sheets and often added his own comments without looking at his notes. At one point he forgot about his point and he searched for his sheet. Later, the instructor put up a why-question slowly to Dajing who answered in one sentence. When the instructor asked another question on a certain page of the transparency sheets, Dajing didn't understand the question and looked around at his classmates. By this time, a Canadian student helped answer the question.

As for reading and writing, he prided himself in having been an editor of a science journal, which gave him opportunity to read and write in English. He didn't report any difficulty in reading in his journal. However, by the middle of the semester, he realized different writing strategies were required to write a paper in North America. He described how Canadians would itemize their introduction, whereas he was used to writing in sentences for the transparencies during the presentation. Likewise, papers written by North Americans required a different perspective to comprehend for a person from a Chinese cultural background. Through repeated reading and consultation of a dictionary, he could attain a lot of new comprehension.

By the end of the semester, he had a great improvement in listening despite the occasional upset caused by his handicap in hearing. He had changed his listening strategies from word-by-word comprehension to understanding the general ideas instead. He was confident enough to raise questions in class. He said: "I might use incorrect sentences and words in my speech but my audience could understand me because we were engaged in a topic specific to our specializations."

His reading strategies had changed, too. Instead of reading the whole textbooks carefully, he now read parts of the textbooks carefully and parts of them briefly according to the professors' requirement. When reading carefully, he always did intensive word-by-word reading, because he was afraid that one word change in a sentence made the whole idea of a sentence different.

It was easy for him to write technical papers, because of the fixed format, simple grammar, and extensive presence of passive voice in description. He emphatically indicated in his weekly journal that he had basically no problem in writing in English. Nevertheless, he reported that his difficulty in writing lay in the weaknesses in inaccurate use of words, his non-native speakers' language proficiency level, and sometimes the Chinese influence in his writing style. During one interview, he pointed out that the difference between Canadian and Chinese writing was the conciseness. Chinese students usually produced dull, lengthy, and unnatural description in their papers, whereas Canadians achieved the same purpose in a more efficient and concise description. He reported that he often imitated model papers in format, expressions and the development of argument, and used a computer to check spelling and synonyms as his compensatory strategies. He conceded that professors

looked for correct ideas in students' papers and, thereby, ignored Chinese students' weaknesses in language.

4.3.5 Summary of the Four Case Studies

The four newly-arrived Chinese students had a TOEFL score well above the requirement set by the University of Calgary. Their prior English language training mostly with the traditional methods of instruction was deemed inadequate in listening, speaking, and writing, while reading adequate.

Through interviews, classroom observations, and weekly journals, it was found that students' initial major difficulties in English were in the abilities of speaking and writing due to the lack in training and their Chinese thinking process. They were not able to speak and write in a natural and technical way as their Canadian counterparts. They mainly kept quiet in class, learned to use the idiomatic and technical expressions, and engaged in intensive and extensive reading to compensate for their weaknesses, which had many resemblances with what the twenty Chinese students had done. The four students felt they made little progress in speaking and writing in the four months period. As for listening, they were initially shocked by some speakers' accent and by the apparently different meanings intended in some expressions used by Canadians. So the students resorted to practice in listening to radio and TV and doing pre- and post-reading to get themselves familiar with new topics. This was exactly what the other twenty students had done to cope with the demand in listening. And after a month, the four students realized a tremendous improvement in their listening skills that they had seldom experienced in the other skills.

4.4 Summary

The information that emerged from the three sets of data in this study is as follows: the twenty Chinese students who had been in Canada for some time, the four Chinese students who had just begun their student life in Canada and progressed for four months, and the six Canadian professors who had taught or supervised Chinese students, formed a rather consistent pattern in their opinions about the adaptation of Chinese students to the academic language tasks in graduate studies in Engineering in the University of Calgary in late 1980s and early 1990s. As seen from the interviews with students and professors, classroom observations, and weekly journals, the result of this study can be summarized in the following categories.

1. Previous language training in China

Despite lengthy English language training in China mostly with the traditional methods of instruction, students were poorly prepared for their language skills in listening, speaking, and writing in their disciplines in a Canadian university. Reading, and sometimes, listening in their specializations were the two skills that students showed a higher proficiency in than speaking and writing skills. All the students had the TOEFL scores higher than the university required. The TOEFL score was, therefore, only a reference to students' general language abilities, but not a good indicator of their language skills in their specializations in a Canadian academic environment.

2. Initial difficulties in listening, speaking, reading, and writing

The responses from the students and professors indicated that the initial language difficulties were in speaking and writing skills which marred the full display

of students' knowledge strength in their specializations. Students needed a rich language environment where they could practise the two skills.

Students had difficulty in understanding Canadians talking in the natural language with an accent and talking about unfamiliar subjects. They had difficulty in carrying on in-depth conversations and describing complex ideas using precise words spontaneously. They had difficulty in reading other than their specializations. They had difficulty in describing experiments and complex ideas in technical reports due to the Chinese thinking process and insufficient working vocabulary.

3. Compensatory strategies to cope with the demands in listening, speaking, reading, and writing

Most students performed well in their course work through unusually hard work, but needed help in hands-on problem-solving skills. A strong background in their specializations, especially some experience with their specializations in any of the four language skills in English, was an indication of students' real language proficiency and, thereby, their successful adaptation to Canadian graduate studies. A high proficiency in listening skills was attained within a short period of time once students were accustomed to routine classroom language in graduate studies in engineering and to professors' personal speech style. Students coped well in speaking skills using different communication strategies, but were frustrated in written expressions of their ideas in technical papers. Reading had frequently been used as a compensatory strategy for improving skills in listening comprehension in class and writing technical papers.

Their compensatory strategies in listening included: 1) reading textbooks before and after class; 2) practice in listening by tuning into radio and TV; 3) reading aloud; 4) seeking help from language competent classmates; and 5) memorizing new words.

Their compensatory strategies in speaking included: 1) integrating with Canadians by sharing accommodations and talking with them; 2) full preparation for making a speech; 3) memorizing new words to increase their vocabulary.

Their compensatory strategies in reading included: 1) repeated reading; 2) recalling their prior knowledge; 3) frequently consulting a dictionary; 4) intensive and extensive reading.

Their compensatory strategies in writing included: 1) imitating expressions in model papers; 2) using computers to check spelling and find appropriate words; 3) practice in writing on E-mail; 4) memorizing good sentences and usages while reading; 5) reading a lot of research papers; 6) attending technical writing courses.

CHAPTER 5

DISCUSSION

Adaptation to Canadian graduate studies from a Chinese background is both culturally and linguistically challenging. This study aimed at studying how Chinese engineering students adapted to academic language tasks at the University of Calgary in Canada. The issue was being explored, in light of the Chinese students' and Canadian professors' opinions described in the previous chapter, by examining the context of language teaching in China in relation to the proficiency of Chinese students' language skills in listening, speaking, reading, and writing that are prevalent in graduate studies in engineering at the University of Calgary and the compensatory strategies in listening, speaking, reading, and writing that Chinese students develop to cope with initial difficulties in listening, speaking, reading, and writing.

The case study approach and the phenomenological data collecting approach used in this study were found to be valuable research tools for investigating questions of opinion and process in cross-cultural settings where affect and candidness can seriously interfere with reliable data collection. Many Chinese students initially showed a modesty in the description of their language abilities, but the oral mode of the data collection and the case study approach eventually opened up their heart and thought in the full delineation of their initial adaptations to graduate studies at University of Calgary. Students were found to be more willing to share their experience in a more open and detailed way than was originally expected.

On the other hand, interviews may be less objective than multiple choice questionnaires. Interviews were used in this study to obtain personal information that was necessary to the study. The consistency in students' responses is indicative of the sincerity in their description. The data triangulation method of collecting opinions from students, professors, and the case studies have provided a degree of objective description of what causes the initial difficulties and what coping strategies are adopted in listening, speaking, reading, and writing.

5.1 Listening

According to the twenty Chinese students and the four students in the case studies, the English language programs in China adopted the traditional methods of instruction with a focus on teaching English grammar, translation, and reading at the expense of listening comprehension. Their opinions were reflected in a lower average Test of English as a Foreign Language (TOEFL) score in listening comprehension (560) among the twenty students than the scores on the other two sections (597 and 581 respectively). The score on listening comprehension was also the lowest compared with the scores on the other TOEFL sections among three students in the case studies. Walters, Daniell, and Trachsel (1987) and Dulay, Burt, and Krashen (1982) noted that the traditional methods of language instruction promoted a formal language competency that fostered ample knowledge in the language rather than functional language competency in using the language in real situations. Clearly the traditional methods of instruction helped develop students' listening skills to a certain extent, but not enough. The following responses from students illustrate this point.

“Intensive training in listening to TOEFL tapes, Voice of America (VOA), Radio Beijing is helpful.”

“No problem in classroom listening comprehension because you can cope with standard English you hear in class. However, there are initial difficulty in everyday life listening comprehension, especially listening to those with an accent.”

The alternatives for students to develop their listening skills were through the massive presence of multimedia teaching of English, which made it possible for them to tune in or to turn on television to watch and listen to English, which had an undoubtedly positive impact on their development in listening comprehension. Half of the students who expressed no problem in listening comprehension seemed to think that their personal interest and actual experience in listening to VOA, British Broadcasting Corporation (BBC) facilitated their listening comprehension in Canada. The following responses illustrated the point.

“I cultivated listening comprehension by myself. I listened to VOA from special speed to normal speed. I listened to English programs on television and radio for three years. I studied scientific English. I went to watch movies at a college next to us. I practised dictating scientific English on VOA’s regular program. This is the most helpful in listening comprehension training, better than anything else. You do repeated listening to the program and check your dictionary.”

“For listening, a language lab was established. English broadcast programs were present on campus, and we had foreign experts. You listen to VOA and BBC. I repeat what is heard, which lays a good foundation.”

While some students claimed that they understood lectures, it should be pointed out that this does not necessarily mean that their level of understanding was adequate. It is not possible to determine from this study the extent to which other

compensatory strategies contributed to their eventual success in the courses in which they were enrolled.

If listening skills are largely trained outside classrooms, what counts is the quality of English programs that are available on TV, radio, and audio tapes. Students have been exposed to general English in standard American and British accent. There are national and international news, stories, movies, and self-study English lessons. Few opportunities exist to listen to English specific to their specializations in a real academic environment by a native or a proficient language speaker. No wonder some students experienced shock when they arrived at University of Calgary to find that the language they heard here was different from the one they used to hear while in China. The following responses illustrated the points.

“Listening was a terrible problem to me. I only understood 20% and got lost in class. Canadian professors talk fast. Listening to VOA is different from listening to technical courses.”

“There are opportunities to listen to tapes, news, and Chinese teacher speaking in English, which is not a real situation. There is a gap between real life situational dialogues and formal language. So at first, I was not used to professors talking in class, unless they write it down. Then I would immediately understand what they have said.”

“Real life situation is so different from intensive training in listening for the test-taking purpose. This difference presents a shock. Listening to seminars presents a big headache in the situation where the topic is not your speciality; there are a lot of

new vocabulary; speakers come from different parts of the world with different accents. I could only get a little general idea, but not much.”

Most students felt that their common difficulty in listening comprehension was due to the language difference they heard in Canada and in China, to the accent that some professors had, and to the unfamiliar content that they were studying. Some of the initial difficulties experienced by Chinese students while in Canada can be traced to a lack in a necessary communicative and functional language environment in Chinese students' language learning experience. Dulay, Burt, and Krashen (1982) stated that "if one is exposed only to classroom drills and dialogues, one may acquire substantial mastery of classroom communication skills but still remain at a loss in other areas of social discourse" (p.13). This is the case with Chinese students who are accustomed to listening to classroom drills and news programs on radio. In fact, they do a good job as manifested in their average TOEFL score of 560 in listening. However, when this language classroom is transformed into an engineering one, some students felt the difficulty in comprehending what was being said, simply because discourse in an engineering classroom had little resemblance to that in a language classroom.

Chinese students doing graduate studies in engineering in Canada not only need to understand general English taught and heard in classrooms and on radio and tapes, but also need to understand specific English, i.e., language that has its own vocabulary and discourse structures related to their subject of study. Back in China, students spend a lot of time listening to VOA, BBC, Radio Beijing, TOEFL test tapes, and TV English programs. None of that part of English is anything like the language they are required to be in control of when they come to study in Canada.

Their current experience of trying to understand and decipher the discipline through the medium of English by experts of different native language background indicates that general English spoken in carefully manipulated pronunciation is simply not enough.

Many students, including the four involved in the case studies, found that it usually took a month while studying in Canada to get used to their professors' personal accent and lecturing style. After the first month, students generally felt better in their abilities in listening comprehension. Perhaps, this is an area that English language programs in China could help Chinese students alleviate the initial burden in listening comprehension before they arrive in Canada to study.

When students have achieved a minimum broad base of proficiency in general English, teaching should shift to technical English in their disciplines, such as specific vocabulary and discourse structures. Teaching and learning in the content area through the medium of English by a variety of English speakers create the necessary communicative environment that is conducive to the development of competence in understanding the social discourse in engineering community. While it may be impossible for all Chinese students to have face-to-face encounters with foreign experts in their disciplines, it should be possible to provide video and audio tapes of native English speaking specialists addressing topics within their disciplines. In this way, students will be able to learn and prepare language that is specific in a way used in their disciplines which they are going to be exposed to and required to function successfully.

It should be mentioned that some of the common compensatory strategies that students use to cope with the demand on listening coincide with Wood's (1986) study skills such as doing readings on the topic before and after class, identifying unfamiliar

words early in the course, listening attentively to the professor as the following responses indicate:

“Therefore, I read textbooks. I memorize specialized vocabulary. I familiarize myself with the course content, and probably I get accustomed to professors’ accent.”

“Getting familiar with your course content. Having prior knowledge facilitates listening comprehension. Reading after the class immediately makes up for what is missed in class.”

5.2 Speaking

According to the majority of the Chinese students in this study, the traditional methods of instruction did not offer them opportunities to practise speaking in English, which led to their concern that they had little high-quality language environment inside and outside classrooms, and thereby, inability to produce fluent speech and engage in in-depth conversation. Dulay, Burt, and Krashen (1982) suggest that a lack in the quality language environment is related to the learner's role in communication. According to the ways learners participate in communication, there are one-way communication and two-way communication (Dulay, Burt, & Krashen, 1982). In one way communication, the learner listens to the target language but does not respond. The communication is one-way, towards the learner, not from the learner. Listening to speeches, radio programs, and teachers, watching films and most TV programs are all examples of one-way communication. Two-way communication involves the learner in speaking the target language, acting as both recipient and sender of verbal messages. One-way communication is beneficial during the early parts of the learning process. However, when the learner is ready to produce the target language, two-way communication should be imposed.

In the case of the Chinese students, there has invariably been one-way communication in their language classrooms, which inhibits the occurrence of learning to speak on the students' part, and thereby, resulted in low functional language competency in a real communication environment. The majority of students in this study and Canadian professors believed that, although Chinese students performed well in prepared speeches and essential everyday conversations, they have difficulty in carrying on spontaneous and in-depth conversations in their specializations. A lot of times in their language programs, students may be engaged in classroom activities such as listening to teachers explaining grammar, reading, and answering questions. However, the mechanical and dull nature of pattern-drill exercises encourage neither the elaboration of complex ideas nor the simultaneous expression of personal opinions. Rather, those activities share the closest resemblance of rote-memory type of teaching that enable students to cope with only a low level of routine conversations such as "Hello," "Where do you come from?" and "What do you think of the weather here?" When faced with a live question from the audience for further explanation or elaboration, students are invariably at a loss, because they are seldom put in a situation where they have to respond in English on the spot and where they have to scramble for correct words to express themselves appropriately. As one professor illustrated the point: "Students' poor speaking abilities may spoil an otherwise very good research paper." A student involved in the case study succinctly put it: "My poor spoken English inhibits me from explaining to my supervisor excellent research ideas that I have."

If English language programs and orientations programs in China intend to prepare Chinese students for their actual educational experience in Canada, there is an urgent necessity to shift to two-way communication in the classroom as soon as

students have acquired the basic skills of the language. Students should have the equal opportunity of practising speaking as of practising listening and reading in order to sharpen their speaking skills.

If English language programs are to prepare students for their adaptation to Canadian graduate studies, there is little point in spending a large amount of time in giving them the general capacity of English. Students have already been initiated into the rudimentary daily life conversation in English. They are seldom trained to express complex ideas and opinions, which are the common practice at the graduate studies in Canada. To accommodate this feature of Canadian graduate studies, students should, as soon as they have grasped essential English, learn to express complex ideas and opinions, especially in their specializations before they come to Canada. That means a drastic change in the teaching methodology. Instead of one conversation at a time in a class, a better way is to engage groups or pairs of students in a series of conversations of problem-solving in general topics or in their specializations at an advanced stage. This may be the closest approximation they can get to face when they come to Canada. Or, as one student indicated: "Listening and speaking should be reinforced. Back in China, teacher quality is not high. I would like to see that free talk be implemented. A topic is given and everybody contributes around the topic and credits should be awarded."

Many students, including the four involved in the case studies, repeatedly stated that they didn't have opportunity to speak with native speakers although they needed and wanted to interact with them. One student illustrated the point: "We need to get opportunity to speak in English. Talking with Canadian friends and practising English for a while is useful. In the department, there are a lot of Chinese students around."

Obviously, the reality is that many Chinese students, for whatever reason it is, tend to stick together. They share the same offices or accommodation, run into each other in the computer rooms or labs, resulting in speaking Chinese all the time. The poor speaking environment is magnified after their families come to join them in Canada. All the four case study students emphatically said: "I experienced very slow improvement in speaking after I arrived in Canada."

The findings of this study suggest that, after students arrive in Canada where they would have a rich language environment, the receiving authority should be aware that students tend to speak Chinese together, which impoverishes their English speaking environment. The school authorities might encourage Chinese students to integrate with native speakers by offering social experiences--parties, field trips, films. A useful strategy is to distribute Chinese students as widely as possible so that they share offices, or even living quarters, with people whose native and official language is English. This arrangement will increase the potential for establishing friendship and the possibility of mentor relationship as far as English is concerned. Likewise, Chinese students themselves should make an effort to mingle with native speakers. One student made the point: "Speaking was a big problem. ... So I practised reading aloud every morning in the early stage of my study in Canada. I made friends with Canadians and lived with them, which were very effective. I was the only Chinese student in the department at the time." These simple concrete devices will make a real difference in benefitting students in speaking English, thus, enhancing their speaking skills. One professor observed: "Those who eventually succeeded in improving speaking were the ones who had tried hard to speak with native speakers."

Some of the good compensatory strategies developed by Chinese students utilize a great deal of preparation before speaking and doing oral reading. However, some of the effective strategies recommended by Wood (1986) such as making brief occasional remarks and summarizing other's comment should be recommended to students or incorporated into language teaching in future. They are effective strategies that exhibit students' critical thinking skills that are much sought after by Canadian professors.

5.3 Reading

The responses from the students on their opinions of reading seemed quite succinct. Both Chinese students and Canadian professors reiterated that English language programs in China did a good job in teaching reading, which featured the intensive reading of texts, the memorization of vocabulary, and the teaching of grammar. The traditional methods of instruction have some benefits for students in developing necessary reading skills. Many students seemed to embrace the traditional methods of instruction whole-heartedly, saying that it was helpful. The following responses from the students illustrated the point. One student stated: "The traditional methods of instruction are helpful in that you can transfer the basic meaning of common vocabulary you learned to specialized meaning in electrical engineering, if you have a good background in the specialization." Another student added: "Our courses included intensive reading and extensive reading. Therefore, we had very adequate and intensive training in reading and acquired a lot of vocabulary."

As for the teaching of grammar, Dulay, Burt, and Krashen (1982) asserted that, when grammatical rules are learned correctly and reinforced in manipulative exercises, conscious rule application may have contributed to increasing their accuracy in reading

comprehension in many situations, such as constructing meaning of a sentence from the analysis of its syntax. The response from a student illustrated the point: "If students have acquired a good knowledge of grammar, they can construct the meaning of a sentence (in reading)."

The findings of this study provide more evidence for the fact that, acquiring a lot of vocabulary through memorization in the traditional methods of instruction helps establish a solid foundation of the general meaning of vocabulary, which may assist in the transferring that knowledge to the specialized or technical meaning of vocabulary in engineering. As one student put it: "Many technical vocabulary in electrical engineering have definitions associated with the general meaning of the words. Once a technical word pops up, students can recognized it and understand it in the electrical engineering context, thereby, remembering it quickly. Not like in chemistry, you never use those technical words. But in electrical engineering, you use a lot of common words in a specialized context, e.g., maximum, likelihood. If you don't know the general meaning of a word, it may be difficult."

However, the findings also indicate that the sole pursuit of accumulating general vocabulary may lead to a discrepancy between the knowledge of some vocabulary in the Chinese context and the actual application of the vocabulary in the Canadian context. As some students in this study found out that some words that were much used and taught in China were seldom used in Canada. This illustrates that language teaching in China should update their teaching materials to teach the most accurate and appropriate language students need in Canadian academic setting.

It should be pointed out that the traditional methods of instruction are not the best methods for training fluent reading. Reading in the content areas or in the

specializations has proved to be a good strategy to focus students on the meaning rather than the form of the language (Mohan, 1986). Reading in the specialization exposes students to the specialized vocabulary, idiomatic ways of expressions, and discourse structures of the technical arena. This type of reading is of paramount importance to preparing students for the actual reading requirement and practices in Canadian graduate studies and is an efficient way of enhancing their overall reading ability. The responses from those who had read their engineering textbooks or reference books in English in their Master degree programs in China exhibited the students' comfort and ease in meeting the reading requirements here. One student's response also made the point: "We need more extensive reading to expose students to many social and academic aspects of Canadian life. Then you will adapt faster to the way people do things here."

The findings suggest that the receptive skill of reading may have a great importance in the academic success of foreign graduate students. The students in this study strongly indicated that they relied heavily on the reading skills to compensate for their listening, speaking, and writing skills. This may sound contradictory between the importance of interaction and speaking and the academic importance of reading in the graduate studies at the University of Calgary, a typical Canadian university. Nevertheless, there is not really a contradiction: the students interviewed and the four students in the case study clearly indicated that, reading was the most important in helping them survive in the academic arena in the initial stage. Reading was an effective compensatory strategy for the other linguistic and academic skills.

Students' compensatory strategies are limited to repeated reading, vocabulary expansion and extensive reading. Probably they are not aware they have been using

other reading skills such as different reading speed and surveying skills, as suggested by Wood (1986). Future research should probably delve into how Chinese students use different reading skills in coping with reading requirements in Canada.

5.4 Writing

Most students in this study felt that the traditional methods of instruction adopted in some English programs in China incorporated few meaningful writing tasks. Teaching focused on mechanical and manipulative oral and written exercises and introduction of new vocabulary at the expense of systematic training in writing, especially technical writing. Because of a lack in real and natural communication, students' writing in English remained at the rudimentary level of general English in China. As one student put it: "We had some training in writing at the graduate level, such as weekly journal or a topic that you want to write on. Writing simple articles is OK. But the problem is our writing is not very good."

The findings of this study suggest that students have difficulty putting down in English their otherwise excellent academic ideas in research papers, which testified that English programs in China, despite many hours of study, included very little on the teaching and learning of writing. Those who had been studying in Canada for some time, the more they were exposed to western research papers, the more they felt the urgent need to improve their technical writing, especially when they came to the stage of thesis writing. Due to insufficient knowledge of English words and Chinese cultural and linguistic influence, they felt handicapped in their expression of ideas and the logical development of thought when it comes to technical writing, an issue echoed by some Canadian professors. The response from a student proved the point: "The problem is how to produce expository and clear ideas. When a pen is picked up, it

weighs heavily on me. It is difficult to write review articles and descriptions of an equipment and a process. It requires the knowledge of vocabulary. If you use a word appropriately, people understand it easily.”

Many students remarked that they were encouraged to memorize vocabulary in their English language programs. This study suggests that the effort to accumulate vocabulary imposed by the traditional methods of instruction or by students themselves does not greatly enhance students’ actual writing abilities. Many students encountered difficulty in using the words they had learned before. They didn’t know how to use their acquired vocabulary appropriately and accurately in the technical writing. The response from a student proved the point: “It is my headache in how to naturally and idiomatically organize your sentences, put forward your ideas, and choose appropriate vocabulary. Reading a lot doesn’t help writing a lot. You get to know a word through reading, but you can hardly apply it when you write. There are so many words that you don’t know which one is appropriate.”

Many students desperately groped for effective ways to attain a higher level of proficiency in writing after they arrived in Canada. Initially, they read western research papers to imitate their styles and ways of expressions, plus resorting to mechanical polish by computers, or to editing by experts in English in the discipline. Some students pointed out they had experience of reading technical English at the graduate level while in China. Many of them tried hard to read extensively and intensively sample papers of technical writing. They think that reading a lot of technical papers should help improve their writing.

The findings illustrate that it was wrong for many Chinese students to think that reading in the specializations would result in good writing in the specializations.

While they could read a research report written in the western style, most notably in that linear and logical format, producing it was quite a different matter. Technical writing needs a great deal of practice in the technical rhetorics and style.

Learning to write from reading is related to and yet different from learning to write from writing. Smith (1972) stated that reading seems to be the essential fundamental source of knowledge about writing, from the conventions of transcription, to the subtle differences of register and discourse structure (p. 177). Nevertheless, the act of writing is critical in the development of writing ability, because practice is required to shape and consolidate the skill of writing. Unless one writes, it is impossible to find out whether one has in fact learned anything about writing from reading. When one writes something, one has the possibility of learning from an informed instructor, who may provide precisely the demonstration that one needs, such as writing in conformity with the conventions of native speakers, the conventions of a particular language use, and composition according to implicit rules that can hardly be taught or even be directly discussed, except by the act of writing. As one student put it: "I think it is a good practice to write a paper everyday and practise dictation which are the most helpful to me. Practice is the only way to improve writing. You have to move from rough to perfect."

There needs to be a revision in some English programs in China. If the aim is to produce engineers who are able to actively participate in international academic circles or to send engineers to study successfully in Canadian graduate studies, an equal amount of time should be allotted to the teaching of writing. As soon as students have mastered narrative writing, expository writing should be introduced to familiarize students with the technical writing, such as description, explanation, argument,

comparison, and contrast. One student rightly said: "To improve writing, we can do projects to simulate the teaching practices in Canadian universities."

At the university level, students should be given ample opportunities to write in English in their disciplines, with demonstrations and guidance from experts in English in the discipline, namely Canadian engineering professors or Chinese engineering professors who have completed their post-graduate degree programs in Canadian universities. In this way Chinese students will be better prepared for the actual writing experience when they arrive in Canadian universities.

5.5 Recapitulation on English language teaching in China

Responses from Chinese students and Canadian professors indicate that reading is the best language skill that Chinese students possess followed by listening. Speaking is believed to be difficult for Chinese students, although they manage to make themselves understood with the aid of the body language, slow speech, and visual aids. Writing is the most difficult or the weakest language skill, because students often have little or no systematic training in writing before coming to study in Canada. In other words, students are well trained at receptive language skills, but not at productive language skills, although both types of skills are equally important in students academic success at the graduate level in a Canadian university. In order for Chinese students to quickly adapt to the modern classroom practices at graduate level in engineering in Canada, the massive teaching on reading in language classrooms and extravagant indulgence in listening outside classrooms in some Chinese universities need to be changed, because the unitary teaching and learning in reading and listening do not develop students' real communicative language abilities in a real communicative environment. As one student expressed his opinion: "I hope there will be more

training in listening and reading in China. I hope Chinese teachers will pay more attention to speaking and writing, and keep up with the level of reading instruction.”

Key to the development of real communicative abilities is the provision of a natural language environment in language classrooms in China that fosters speaking and writing as well as reading and listening in general English and in students' specializations. Simulation of the academic language tasks in engineering at a Canadian university provides a real Canadian classroom atmosphere, in which small groups of students are required to do presentations on their reading assignments, participate in discussions on selected topics, and produce a research report or literature review on an area of their interest. Topics in this simulation may range from general arts and science initially to highly individualized specializations in the student's major. Moreover, educational technology such as video cassette recorders, television sets, audio cassette recorders, and camcorders may be used to offer samples of real classroom activities in a Canadian university and to record the developmental stages of students' language skills. Proficient English language speakers will act as role models and facilitators to guarantee the success of the simulation. In this way, students will be prepared for the real educational life in Canada, alleviated from the double burden of cultural shock when they first arrive in Canada.

Another real language challenge for Chinese students when they arrive in Canada is whether they have mastered technical English particular to their majors in engineering. It seems that all those years of language study in China deals solely with general English, i.e., the everyday conversational English. While students feel comfortable at communication in all the four modes of the language arts, they have

little preparation or orientation in the discourse community of technical English in a university environment, such as: how to actively engage in an engineering class discussion, how to write an effective western style engineering research paper, how to use different reading skills to maximize their reading abilities, and how to get quickly accustomed to listening to English spoken with diverse accents.

This balance between general English and special English requires careful manipulation by language teachers in China to see that, as soon as students are able to communicate in general English and are expected to do advanced study abroad, they are immediately initiated into the discourse community of technical English (Spack, 1988), namely technical vocabulary and discourse structures with the aid of modern educational technology, and best of all, experts who are proficient in English and who have gone through the western advanced education in engineering.

Finally, using TOEFL scores as an indicator of language proficiency needs to be reconsidered in the context of the academic language tasks in Canadian universities. Chinese students' TOEFL scores were used in this study as a point of reference for their English proficiency as related to their perceptions of the degree of initial difficulties in coping with academic language tasks in doing graduate studies in engineering at the University of Calgary. The TOEFL score range from 550 to 620 did not mean that the students were free from language difficulties. (See Chapter 4). In fact, those with a high TOEFL score in the vicinity of 600 and over do not manifest a relief in their opinions of the difficulties in coping with academic language tasks in Canada. In other words, higher TOEFL scores are not a good indicator of the actual language abilities in performing graduate work in engineering in Canada. Therefore, the practice of choosing students with a high TOEFL score may be bureaucratically

necessary, but realistically unsuccessful in measuring the true language proficiency level in Chinese students, especially in the real English abilities required in Canadian universities.

Neither is it justifiable for the overwhelming extent of preparation for TOEFL exams engaged by students and offered by some orientation programs in China. The intensive study of vocabulary and grammatical structures, listening to TOEFL model tests, and reading TOEFL sample texts give students a heavy dose of general English which are sometimes out of the realistic context that Chinese students are going to encounter, therefore, do not prepare for the real language skills required specifically in studying engineering in Canada. As one student put it: "I hope there are ample opportunities to practise reading and writing and to increase vocabulary, which are very important in engineering. Practising for taking TOEFL and GRE force you to read extensively. But the important thing is not to practise test taking skills, but the real reading and writing ability. High TOEFL scores won't help in adapting to study in Canada, because the real abilities in English won't be high."

On the contrary, going through a natural language environment may be a good indicator of the actual language proficiency in performing graduate work in Canada. Whether Chinese students have any experience communicating with native speakers and reading and writing technical papers in the specializations shows a promising sign of the ease with which students will be able to quickly and successfully adapt to academic language tasks in Canada.

5.6 Limitations and Implications

This has been a four month study into how Chinese engineering students adapt to academic language tasks in the University of Calgary, which is just a quick

snapshot of a small group of Chinese students in a Canadian university. It is not able to capture a whole broad picture of the whole population of Chinese students studying in various disciplines in Canadian universities. Therefore, this study points to the need for further research into the adaptation of Chinese students to the academic settings in Canadian universities. There are four areas of research that can be done in future.

Firstly, to further find out how Chinese students are socio-linguistically prepared for their academic study in Canada, there is a need to conduct systematic and scientific examinations into what types of methods of English language instruction are being adopted in various parts of China. At the moment, no hard data are available that surveys the English language teaching in China, which makes it difficult to make generalizations.

Secondly, there is a need to conduct longitudinal studies to see how Chinese students, after the first semester of adaptations to Canadian academic settings, progress to the second and third semester and even to their theses writing stage. In this way, a much more comprehensive picture of Chinese students adapting to academic studies in Canadian universities can be obtained.

Thirdly, there is a need to conduct investigations into how Chinese students adapt to academic language tasks in different specializations in Canadian academic settings which should reveal the actual and realistic types and extent of language skills and abilities that are most relevant to specific specializations in Canadian universities. This information should help Chinese English language teachers incorporate the most accurate and appropriate language skills and survival tactics into

the teaching of commonly idealized language skills in English language programs in China.

Finally, there is a need for doing experimental studies to see how the direct teaching of compensatory strategies identified in this study facilitate Chinese students' adaptation to Canadian academic studies. Both the qualitative and quantitative methods of research should be regarded as one more way to understand the learning process of Chinese students in a cross-cultural setting.

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APPENDIX A

INTERVIEW GUIDE

I. Personal Information

- sex
- age
- length of university training in China
- degrees obtained in China
- types of previous specialization
- years and place of English language study
- number and length of academic courses taught in English
- length of orientation programs
- types of English language instruction
- TOEFL score
 - listening comprehension
 - structure and written expressions
 - reading comprehension and vocabulary
- extent of knowledge about Canadian graduate studies
- length of study in Canada

II. Do you feel your English language study in China prepare you to meet your academic language skills needs in listening, speaking, reading and writing?

- knowledge of the subject
- knowledge of general and special vocabulary
- knowledge of lecture organization

- knowledge of note-taking
- knowledge of classroom participation
- knowledge of rhetorical organization of research papers
- knowledge of reading skills
- knowledge of writing skills
- knowledge of exam-taking skills

III. To the extent that the answer to the question is "Yes", what teaching activities in China contributed to the preparedness for your academic skills in listening, speaking, reading and writing?

- intensive reading
- extensive reading
- listening comprehension
- grammar exercise
- composition
- conversation class
- orientation

IV. To the extent that the answer to the question is "No", what compensatory strategies are developed to cope with your academic skills needs in listening, speaking, reading and writing?

- knowledge of the subject
- knowledge of general and special vocabulary
- knowledge of lecture organization
- knowledge of note-taking
- knowledge of classroom participation
- knowledge of rhetorical organization of research papers
- knowledge of reading skills
- knowledge of writing skills

-knowledge of exam-taking skills

APPENDIX B
OBSERVATION LIST

1. Setting

- number of students
- sex
- seating
- characteristics

2. Preparation for the class (informal talk before and after class)

- reading
- vocabulary
- consultation with instructors

3. Communication patterns

- instructor talk
- classmate talk
- the student talk
- response to instructor
- response to classmates -Yes/No answers
- one sentence answers -several sentence answers
- summarize instructor's main ideas
- summarize discussions
- state own opinions
- relate own experiences -

4. Non-verbal behavior

-facial expression

-sitting posture

-eye direction

APPENDIX C
JOURNAL ENTRY

Initial Experience

Compensatory Strategies

Listening

No problem

----- familiar content
 ----- standard vocabulary
 ----- low anxiety level
 ----- pre-assigned topics

Problem

----- language difference
 ----- accent
 ----- unfamiliar content

----- pre-reading and post-reading
 ----- vocabulary in increase
 ----- practice in listening
 ----- physical adjustment
 ----- seeking help from competent
 ----- classmates

Speaking

No problem

----- slow speech
 ----- presentations

Problem

----- classroom participation
 ----- indepth communication with
 ----- fellow students

----- time set for thinking of a
 ----- question
 ----- preparation for a presentation
 ----- include writing the paper,
 ----- condense it, making
 ----- transparencies, memorizing,
 ----- and rehearsing

-----	description of complex matters	-----	integration with native speakers by talking and sharing accommodation with them
-----	presentations	-----	reading aloud
-----	idiomatic expressions	-----	
-----		-----	

Initial Experience

Compensatory Strategies

Reading

No problem

----- intensive reading

Problem

----- test questions

----- lack in prior knowledge

----- mismatch between language usages

----- request for clarification

----- repeated reading

----- dictionary consultation

----- vocabulary increase

----- extensive reading

Writing

No problem

----- format

Problem

----- insufficient vocabulary

----- unnatural transformation of meaning

----- Chinese thinking process

----- lack in elaboration

----- presentation of ideas

----- imitation of model papers in format, expressions and development of argument

----- computer check in spelling and synonyms

----- experts help from supervisors and fellow students

----- attending writing courses

APPENDIX D
LETTER OF CONSENT

Liping Zhu
#401 624 1 Ave. N.W.
Calgary, Alberta
T2N 0A3
(403) 283-8327
Aug. 2, 1991

Dear Fellow Student and Colleague:

May I ask you to participate in this study regarding the adaptation of Chinese students to academic language tasks at University of Calgary?

This is an ethnographic study in which the researcher will interview you with four general questions. The purpose is to find out the problems Chinese students might have had in the initial study in Canada and the effort Chinese students might have made in order to cope with them. Henceforth, your response will help provide information for the improvement of preparation programs in Canada and China.

You can be rest assured that your name and identity will remain confidential throughout the study and any raw data such as recorded tapes and field notes will be kept on secret file until the study is done and then destroyed. Furthermore, you have the right to withdraw at any time from the study without giving any explanation and notice to the researcher. If you agree to participate in the study, please sign below.

Your participation in this study is much appreciated.

Subject's Signature

Researcher's Signature