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**AN EXPLORATORY COMPARISON
OF THE INFERENTIAL ABILITY
OF EFL AND ESL STUDENTS**

**A Thesis Presented in Partial Fulfilment of the
Requirements for the Degree of Master of Management**

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Abstract

The ability to access and interpret information is a very important component in generating knowledge. However, people are not always able to discover information, quickly evaluate the importance of the information and access it (Tichenor, Donohue & Olien, 1970; Chatman, 1991; Sligo & Williams, 2002). Especially in a tertiary academic setting, the ability to access information and integrate information from various sources to infer what is not overtly stated in a text is an essential skill during the reading process (Kintsch, 1994; Barnes, Dennis, & Haefele-Kalvaitis, 1996; Cain, Oakhill, Barnes, & Bryant, 2001).

Because of differences among people's educational background, existing pools of knowledge and communication abilities, the ability to access information will affect their inferential ability in the reading process (Alexander, 1994; Ericsson, 1996; Mckoon & Ratcliff, 1992). Although inferential ability is to be of consequence for academic functioning, very little research has been done on the comparison of inferential ability among students with English as their first language and those with English as their second language.

This study examines the relative extent of text inferential ability among students with English as a first language (EFL) and students to whom English is a second language (ESL), employing the knowledge gap hypothesis, and assesses its implications. Using a procedure to assess inferential ability, this thesis compares the differences in inferential ability demonstrated by EFL and ESL students, employing cloze tests.

This study found that EFL students' performance on the inferential ability and cloze item completion task is significantly better than that of their ESL counterparts via the first two scoring methods (Methods A and B). However, the inferential ability of ESL students is almost as good as their EFL counterparts when assessed by the third scoring method (Method C). The research findings suggest that Sligo and Williams (2002) are right in terming the knowledge gap as an amalgam of knowledge, comprehension and

inference (p.6). Subsidiary analyses of the source of inference failures revealed different underlying sources of difficulty for both EFL and ESL students.

The results of the research provide insights into the nature of gaps in accessing information and inference making. Education in a tertiary institution may or may not reduce gaps. Though both EFL and ESL students improved from their original starting level, the gaps of inferential ability between EFL and ESL students in the two tests, especially via Methods A and B, widened. In the second test, both EFL and ESL students made progress in inferential ability. Yet there still remained a gap between the two groups of students in test two as the knowledge rich individuals improved at a similar rate as the knowledge poor.

The present study supports the contention of Sligo and Williams (2002) that there is an unexamined area at the heart of the knowledge gap hypothesis literature. The findings of the present study suggest the correctness of the proposal by Sligo and Williams (2002) that what knowledge gap hypothesis researchers call knowledge gaps should in fact be better described as some amalgam of gaps in knowledge, and/or inferential ability. This is the most significant finding of the present research.

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CHAPTER ONE:

INTRODUCTION

Purpose and Context of the Research

As the world increasingly becomes a global village at the dawn of the 21st century, its residents are more mobile than ever before. Among the large army of mobile residents of this global village are the students travelling from one country to another for their further education. Each year in New Zealand, thousands of young people enter tertiary institutions for their education as well as international students from other countries.

From the last decade of the 20th century, New Zealand universities have attracted a significant number of international students and in a relatively short period of time New Zealand has become a significant provider of higher education and academic training. New Zealand's small size, its good standard of living and recreational opportunities are attractive selling points for international students, while the quality of its education system, and the fact that it is modelled on the British system, are also favourable factors (Ross, 2002). In 2002, Massey University alone received 2023 international students at its three campuses ("Massey foreign students," 2002). Although no figures for Massey University international student enrolments in 2003 are yet available, the International Student Admissions Office confirms an upward trend.

With the increasing numbers of international students, challenges involving the overseas students' language proficiency are also on the increase in New Zealand tertiary institutions. Another profound challenge for the overseas students is adapting to the culture of learning in a New Zealand university, as many students from overseas are used to authoritarian teaching and memorisation rather than independent interpretation and challenging of texts, when reading and note-taking ("Student challenge," 2002). The nature of students' educational environment suggests the need to understand

potential overseas students' situation, as students from non-English speaking backgrounds may not have all the necessary skills required to participate in the mainstream. One of the issues that has motivated this research is that Massey University has recently had an influx of overseas students, yet New Zealand studies on the learning capability of overseas students are thought to be comparatively rare. In particular, the difficulties that international students have with reading required university material has had little attention in studies of students' success or failure.

Dymock and Nicholson (1999) have argued that reading permeates every aspect of our life and in everything we do. They consider readers the consumers of text. They suggest that the ability to "read to learn" is the key to success not only in school but also in life. They consider this ability a very important predictor of competent readers (1999, p. 18).

Additionally, Saville-Troike (1984) coined the term "academic competence" to refer to the knowledge and abilities students need to possess in an academic environment (p.200). Saville-Troike argued that in addition to English proficiency, two important elements of academic competence are the background knowledge of the students' speciality and effective study skills. She thought that one of the most important skills university students should be equipped with is reading.

Anderson (1971) and Goodman (1970) argued that reading implies comprehension. Contemporary educators also claim that reading should be to understand and that consists of the following abilities: the ability to comprehend the general idea, the ability to make inferences and the ability to perceive causal relationships and to deduce words from context (Goodman, 1970; Anderson, 1971).

In a normal reading situation, good readers absorb and access both information from the text and information from the reader's prior or general knowledge to reach a sound understanding of the text (Garnham & Oakhill, 1985; Garnham & Oakhill, 1996). When the integration of information from

the various sources is not successful, skilled readers generate inferential information to support their understanding. Inference making is considered to be an important part of the reading process: inferences are necessary to link up information from various sources and fill in the details that are not explicitly mentioned in the text (Graesser, Singer & Trabasso, 1994; Johnson-Laird, 1983). Competent readers readily make inferences as, and when, necessary (Singer, 1994; van den Broek, 1994; Haviland & Clark, 1974).

However, Manes and Kintsch (1987) argued that active inference making during reading, if successful, can benefit learning because it results in the connection of more links between incoming information and information in the personal knowledge base. But because of multiple ties to other concepts, well-integrated knowledge is more quickly accessed and available for use when needed, (Manes & Kintsch, 1987).

Research indicates that a person's inferential ability can be significantly improved if a reader accesses and integrates information from various sources, then forms a coherent representation of the text as a whole (Barnes et al., 1996). Comprehending a text requires a reader to have a basic understanding of the explicit text elements as well as the inferential information based upon the collaboration of text elements and the integration of text information with the reader's prior knowledge (Cain et al., 2001; Barnes et al., 1996; Kintsch, 1994).

Knowledge Gap Hypothesis and the Present Research

It is a common phenomenon that differing groups of people within a particular community appear to access information of different quantity or quality. It has been argued that this differing access will produce an enduring distinction between information-rich and information-poor. Tichenor, Donohue and Olien (1970) termed the problem the knowledge gap hypothesis:

As the infusion of mass media information into a social system increases, segments of the population with higher socio-economic status tend to

acquire the information at a faster rate than the lower status segments, so that the gap between these segments tends to increase rather than decrease (1970, pp.159-160).

There are two useful insights from previous studies in the field of the knowledge gap hypothesis. One is that there tend to be enduring gaps between information-rich and information-poor. The second is that attempts to equalize knowledge gaps by releasing information into a community may well increase the gap rather than reduce it. This is because the information rich will acquire new knowledge, given that they are sensitive to the value and power of information, while the information poor may lack the ability and interest to access new information (Viswanath & Finnegan, 1996; Sligo, Comrie, & Williams, 2000; Sligo & Williams, 2002).

The knowledge gap hypothesis is used as part of the theoretical basis for the present study because it appears to be potentially valuable in providing a frame of reference for issues of inferential ability. Originally, the knowledge gap hypothesis emphasized the factor of socio-economic status (SES) as being the main predictor of knowledge. It was based on the assumption that lower SES people are considered to have lower levels of knowledge compared to people with high SES because of their ability to access information (Tichenor, Donohue & Olien, 1970). Since the 1970s, many studies have been done in the field of the knowledge gap hypothesis to investigate the different ways that both low and high SES people seek and access information (Chatman & Pendleton, 1995).

However, with the development of the theory of the knowledge gap hypothesis, subsequent studies have shown that the socio-economic status is not the only predictor of knowledge. Tichenor, Donohue and Olien (1970) argued that besides the SES factor, respondents' ability to command information and the ability to make deductions from the available information are also predictors of knowledge. Childers and Post (1975) argued that the information poor do not have the ability to find information channels and sources. Chatman's (1996) six propositions also highlight that the information

poor lack the ability to access information and the ability to make meaningful use of available information.

Tichenor, Donohue and Olien (1970) outlined four major factors that are related to knowledge. The first is education. They argued that education produces more sophisticated communication abilities, which in turn help people process information more thoroughly and effectively. The second factor is the existing pool of knowledge possessed by higher socio-economic status individuals that helps them make better use of the knowledge they have. Third, the interpersonal communication ability of the high socio-economic status individuals helps them to initiate communication with others and brings them a rewarding experience in the process of gaining knowledge. Last, when high socio-economic status individuals seek information, they are more curious and more ready to discover the potential information around them and access it at the right time and in the proper situation.

Tichenor, Donohue and Olien's (1970) subsequent research explored the estimates by respondents of the educational level of college, high school and grade school as to when there was likely to be a live landing on the moon. They conducted the research over a period of 16 years and found that respondents at the college level were significantly better able to identify the probability of a moon landing in the future, while the high school respondents were significantly better than grade school respondents at identifying the probability of a successful moon landing.

Tichenor, Donohue and Olien characterized this as a knowledge gap. However, Sligo and Williams (2002) have argued that this seems to be more of an inferential gap rather than knowledge gap. In their view, the success of the respondents of college level and high school level seemed to stem from a better command of available information and better ability to infer what is not stated from the existing information. They find it difficult to see this as a knowledge gap as such, simply because the better-educated respondents could not know the date of the first landing on the moon better than their less-educated counterparts. They argue that the reason for the better-educated

respondents' higher achievement is because they possess the ability to explore the existing pool of information and evaluate its importance, and are able to infer a probability from the existing information.

If Sligo and Williams (2002) are correct in their view that "gaps" may be more evident in people's inferential ability than in their possession of knowledge as such, then the nature of those inferential gaps should desirably be explored.

Given that the literature appears to demonstrate differences in use of terminology, in Table 1 (on page 7) presents some basic definitions of the terms used. These are derived from the literature and are in accordance with the assumptions used in the present study.

TABLE 1: SOME BASIC DEFINITIONS

Term	Definition
Information	Data that are processed directly via human senses; it is essentially a human preserve and may be collective (Sligo & Williams, 2002).
Knowledge	"Knowledge includes information in any form but also includes know-how and know-why and involves the way we interact, as individuals and as a community" (Buwalda, 1997, p.30).
Information rich	A person who is information rich knows about and makes contact with more sources of factual information, who provides the linkages among acquiring information, disseminating it and making decisions (McClure, 1980).
Information poor	The information poor lack knowledge of the information channels that may be open to them, often view television but seldom read newspapers or books, do not see information as a means of solving their problems, lack the habits of active information seeking, and exist within deficient information networks (Childers & Post, 1975; Chatman, 1996; Dervin, 1980).
Information gap	Refers to two groups of people in a certain community, one group has good access to useful information and the other group does not. It also refers to the way that in which an increased flow of information often increases knowledge within certain more privileged subgroups much more than others (Ettema & Kline, 1977; Galloway, 1977).
Knowledge gap	"As the infusion of mass media information into a social system increases, segments of the population with higher socio-economic status tend to acquire the information at a faster rate than the lower status segments, so that the gap between these segments tends to increase rather than decrease" (Tichenor, Donohue & Olien, 1970, pp.159-160).
Comprehension ability	Can be defined as the ability to construct a mental representation of the situation described in the text. It involves several sub processes, such as the ability to parse the literal linguistic content, to construct micro- and macro-semantic propositions, to generate various kinds of inferences, and to integrate text information with a person's previous knowledge (Kintsch, 1994; Kintsch & van Dijk, 1978).
Inferential ability	Is the ability to draw a conclusion based upon available information (Bloom, Fletcher, van den Broek, Reitz, & Shapiro, 1990).
Comprehension gap	Contemporary educators claim that reading implies comprehension and reading should be to understand. This includes the ability to comprehend the general idea, the ability to make inferences, the ability to perceive causal relationships and to deduce the words from context. As these abilities vary from person to person, the discrepancy between the able readers and less able ones produces a gap (Anderson, 1971; Goodman, 1970).
Inferential gap	The extent to which readers generate inferences depends on the standards for what it means to comprehend a text. Some readers demand a deep comprehension of the material, particularly if they have high subject matter knowledge, high standards, and/or high motivation. Other readers settle for a shallow representation that glosses over potential contradictions within the text and between the text and world knowledge. The process of comprehension monitoring determines the depth of comprehension, whether discrepancies or gaps in understanding are detected (Graesser, Leon & Otero, 2002, p. 11)

While there is clearly some overlap between ability to infer and to comprehend, in the present study, a partial differentiation is made between them by considering inference as micro, and comprehension as macro, so that capability to infer is assessed in the instance of summarizing what may be the particular words missing from a block of text, while comprehension has more to do with capability to take an overview across a given document.

Another means of differentiating comprehension from inference is that comprehension has to do with “what is” present in the text, or the reader’s ability to recount satisfactorily what is already present. In contrast, inferential ability is assessed by an individual’s ability to go somewhat beyond what is present in a text, and surmise what could or might be present or implied. In this way, inference is more open-ended than comprehension, permitting as it does a person to derive meaning or implication from a text that its author did not necessarily intend.

In the present study Tichenor et al.’s (1970) assumptions concerning information acquisition and use will be assessed for their relevance in exploring individuals’ inferential ability. Further, the present study sets out to compare the inferential ability of EFL and ESL first year students, with especial attention to the following potential areas of difference.

First, the education each group received is different, given that EFL students were mainly raised in New Zealand, while most current ESL students in the particular sample at Massey University were born in China. Differences such as in education may produce different communication abilities across groups. Further, there may be differences in the way that both groups process information. It is assumed that because of the differences in childhood experience, in education and related communication abilities, EFL students will have stronger communication abilities in English than the ESL group students.

A second factor is that the extent of knowledge possessed by EFL and ESL students is likely to be different. It is assumed that EFL students’ subject

knowledge could help them make better use of the knowledge they have, in comparison to their ESL group counterparts. The existing body of knowledge they bring to their first year at university is based on their education received from an English-speaking country and is rooted in a western culture and civilization. ESL students' subject knowledge, however, is based on their education received mainly from China, a non-western culture and civilization, which may influence both their ability to receive and access new data, their quantum of subject knowledge and their assumptions about how they may acquire new information.

Third, the interpersonal communication ability in English of the EFL group would generally help them to initiate communication in English with others more easily, providing the opportunity to gain more knowledge in the process. In contrast, because of the generally lower level of interpersonal communication ability in English of the ESL group, they are less able to initiate communication in English with other people such as lecturers or tutors, particularly in group situations.

It is assumed that the above-mentioned factors are likely to affect the inferential ability for both EFL and ESL students. Deficiencies in each of these listed factors may create barriers, adding to any inferential deficit for both groups.

Research Question

The overall research aim is to undertake a comparison of inferential ability of EFL and ESL students, using different methods of scoring. The research question is: Is there any inferential gap between EFL and ESL students, and if so, what are its nature and dimensions?

Research Objectives

It is argued here that the knowledge gap hypothesis may contain ambiguities in respect to knowledge and inference and that there is an unexamined area

implicit within the knowledge gap hypothesis literature. What knowledge gap hypothesis researchers call knowledge gaps may in fact be better described as some amalgam of gaps in knowledge and comprehension or inferential ability (Sligo & Williams, 2002).

The aim of the present research is to explore the inferential ability of EFL and ESL students with the purpose of:

- 1) Obtaining a measure of EFL and ESL students' inferential capability as indicated by their responses to cloze tests.
- 2) Determining the difference in the inferential ability between EFL and ESL students.
- 3) Assessing whether these findings serve to help clarify what may be some areas of current ambiguity in the knowledge gap literature.

Importance of the Research

The value of this study lies in its contribution to the growing body of research on the knowledge gap hypothesis. Studies investigating the existence of knowledge gaps were initially mainly within the mass communication field. However, writers such as Gaziano (1995) have argued that with the increased interest in concepts underlying the hypothesis, research in this area should be extended to include the effects of interpersonal or intrapersonal communication. If this research generally supports the hypothesis, by illustrating the difference of the inferential ability of EFL and ESL students, then a case can be made for using this type of research as a foundation for future knowledge-based educational studies.

It is also desirable that knowledge gap studies should become broader in orientation than a primary focus on socio-economic status. Gaziano (1995) suggests the research field should be expanded to other fields such as attitude gaps, behaviour gaps, value gaps and their relationship with knowledge gaps.

Sligo and Williams (2002) suggest a further move to the inferential gap and its relationship with knowledge gaps. The current study is based on the findings of Sligo and Williams (2002) and builds on their research.

Research into knowledge gap questions in New Zealand has largely been absent, with few studies on the subject of inferential ability of university students in this context. The literature has long suggested that inferential ability in the reading process is a very important factor of academic success in tertiary education (Cornoldi & Oakhill, 1996; Otero, Leon & Graesser, 2002). However, accelerating globalisation is now making this kind of research more urgent.

While studies have examined the inferential ability of people from English-speaking countries (Bloom et al., 1990; Fletcher & van den Broek, 1990; McKoon & Ratcliff, 1992; Barnes et al., 1996; Cain et al., 2001), little research has been found that assesses the factors supporting or reducing inferential ability of EFL and ESL students who are studying in a cross-cultural context.

This research also grew out of a conviction that a comparison of inferential ability for both EFL and ESL readers is an important, albeit relatively neglected, area. The present research should contribute to filling this hole in the literature on the inferential ability. To build bridges between the various perspectives of the research (knowledge gap plus inferential ability) is another purpose of this research. As such, it is of interest to revisit the question of the inferential ability of both international and New Zealand students.

This study also makes a contribution to the literature by utilizing a longitudinal and vertical design. Most often, a cross-sectional design has been used to study a same-ethnic population, such that the level of inference-making ability has been researched for a particular population. In contrast, this longitudinal and vertical design reveals the comparison of the inference-making ability of New Zealand students and other international students with an interval of three months between surveys. The identification of any

differences holds important implications for researching inference making ability in a cross-cultural academic community.

Structure of the Thesis

The thesis is divided into five parts. First, Chapter One has provided a general overview of the topic and outlines the objectives of the research. Chapter Two discusses and critiques the literature relating to inferential ability.

Chapter Three addresses the objectives and methodology of the project. Chapter Four presents the results of the research. Chapter Five provides a more in-depth discussion of the research results. The participants' inferential ability is examined in the light of the knowledge gap hypothesis. Key barriers to successful inference making are investigated and channels and sources of information relevant to inference making are discussed. Finally, the thesis concludes with an account of the major findings and their implications. The limitations of the present study together with directions for future research are identified.

CHAPTER TWO:

LITERATURE REVIEW

Introduction

The present study looks at the nature of the inferential ability of first year EFL and ESL students. It seeks to identify the level of their inferential ability and how information is gained to support inference making. The study also examines the barriers to obtaining and accessing information in the light of the knowledge gap hypothesis.

The literature review will discuss and critique the literature relating to inferential ability. It examines five areas of research: First, the knowledge gap hypothesis and its use as a framework for exploring the nature of inferential ability. Second, it investigates the perspective of communication through reading and inference making. Third, studies that are devoted to examining inferential ability from different perspectives are summarized. This is followed fourth, by a review of the related methodology concerning this research. Finally, there is a closing summary of the studies on inferential ability.

1. The Knowledge Gap Hypothesis

In this electronic information age, information is infused into every aspect of people's lives. It seems that people are drowning in a sea of information. Yet, although information is everywhere, not everyone can access the information that would benefit them (Chatman, 1991; Sligo & Williams, 2002). As early as the 1940s, a group of investigators attempted to explore why people from different segments of society could not access information at the same rate. They found the reasons for the differences in accessing information included such factors as inequitable access to information, psychological and educational barriers, and social systems. These factors make individuals of certain social status less able than others in accessing information (Chatman & Pendleton, 1995).

As time passed, researchers started to pay more attention to the issue of which segments of society are information-rich, which are information-poor, and the gap between them often found in US urban communities (Ettema & Kline, 1977; Galloway, 1977). From the 1970s, the term “Knowledge Gap Hypothesis” came into being and knowledge gap investigators began to explore why an increased flow of information often increased knowledge within certain more privileged subgroups much more than in others. People studied this phenomenon from the perspectives of socio-economic status, education and existing pool of knowledge, that may deprive people from certain social status of access to information (Ettema & Kline, 1977; Ettema, Brown & Luepker, 1983; Wanta & Elliot, 1995).

From that time on, experts and scholars from different research fields have approached the topic from different perspectives to explain various situations. For the purposes of this literature review, the knowledge gap hypothesis will be examined by using several current widely-used approaches in the research and one alternative approach. First, socio-economic status (SES) as a factor to determine the knowledge gap will be explored. This is considered to be the original basis of the knowledge gap hypothesis. Second, education level as a factor to determine knowledge gap will be explored. Third, the use of one’s existing pool of knowledge is considered. Fourth, interpersonal communication abilities will be considered. These factors have further developed the theory from the original knowledge gap hypothesis and have been widely used in subsequent studies ever since. Finally, an alternative approach to the knowledge gap is discussed. Dervin’s (1980, 1989) analyses of information poor are discussed. This alternative approach moves away from the link between information poverty and economic poverty and turns to the characteristics of the information receiver. This approach has been adopted by several recent studies (Sligo & Jameson, 1998; Sligo, Comrie & Williams, 2000; Sligo & Williams, 2002).

The Original Hypothesis

The knowledge gap hypothesis was originated by Tichenor, Donohue and Olien (1970) who undertook research concerning public affairs. They discovered that individuals with high SES are more likely to acquire information than individuals of lower SES.

Tichenor et al. also found that the unequal distribution of information makes the knowledge-rich get richer and knowledge-poor get poorer, “as the infusion of mass information into social system increases, segments of the population with higher socio-economic status tend to acquire the information at a faster rate than the lower status segments, so that the gap between these segments tends to increase rather than decrease” (1970, pp. 159-160).

This hypothesis implied that the knowledge-rich individuals are not only rich materially, but that their material status also helps them to access information of a kind which in turn helps them strengthen their social status (Bishop, Oldedick & Tuchfaber, 1978; Tichenor, Donohue & Olien, 1970).

Ettema and Kline (1977) also argued that when new information is released into a social system, the higher SES individuals tend to acquire that knowledge faster than their lower SES counterparts. As a result there is a gap between the people in these two different segments of society. From the literature of the knowledge gap hypothesis, it is not hard to see the differences between individuals from different segments of the social and economic structure. Obviously there are individuals who are less able and less willing to absorb information than other people.

Studies generally support the notion that lower SES individuals are “less likely to be information seekers, be informed generally, have formed interpersonal contacts, be aware of informational sources, have organisational ties, have information processing skills and have sufficient background information that would allow them to become aware of and understand informational messages” (Dervin, 1980, p.78).

The Development of the Knowledge Gap Hypothesis

However, as the definition evolved, the knowledge gap hypothesis came to have a wider meaning than the economic advantage of the affluent who can afford access to all the sources of information they need. Tichenor, Donohue and Olien (1970) suggested that SES is linked to knowledge through four different factors: an individual's education, existing pool of knowledge, interpersonal communication abilities, and an individual's motivation to access information. Though these four factors are all related to knowledge acquisition, the first three factors are more relevant to the present study. Therefore, we focus on the first three factors and leave the last factor for future study.

The first of the four major factors that is linked to knowledge is education. Tichenor, Donohue and Olien (1970) argued that education produces more sophisticated communication abilities, which in turn helps people process information more thoroughly and effectively. Second is the existing pool of knowledge possessed by higher SES individuals that helps them make better use of the knowledge they acquire. Third, the interpersonal communication ability of the high SES individuals helps them to initiate communication with others and brings them a rewarding experience in the process of gaining knowledge. Last, when high SES individuals seek information, they are more curious and more ready to discover the potential information around them and access it at the right time and in the proper situation.

In a study on information gaps, Childers and Post (1975) also found similar variables. They included factors such as low education, failure to use expert information sources, fewer informed interpersonal contacts, poor exposure to high information-content print media, low awareness of information sources, an absence of organisational ties and a lack of information handling skills.

Despite the fact that SES is an indicator of knowledge acquisition, knowledge gaps are not always bound to occur or be widened (Gaziano, 1983). For 30 years, scholars from various research fields have attempted to find out the

conditions in which knowledge gaps do occur. There are many different opinions and points of view and no universal agreement has been reached as to under what conditions the knowledge gap might be reduced or eliminated (Donohue, Tichenor, Olien, 1975; Ettema & Kline, 1977; Viswanath, Kahn, Finnegan, Hertog & Poter, 1993; Wanta & Elliot, 1995). Some research findings revealed that the knowledge gap widened under some circumstances and reduced under others (Donohue et al., 1975; Wanta & Elliot, 1995).

Viswanath and Finnegan (1996) found that there tends to be a lasting gap between information-rich and information-poor. Their research indicated that people's efforts to spread knowledge equally well into a community may not decrease the gap but, on the contrary, may widen the gap. This is simply because when information-rich individuals approach new knowledge, they are sensitive to the value and power of the knowledge and can make maximum use of it; while the information-poor individuals are not as quick discovering the value of new knowledge.

McClure (1980) conducted a study investigating people defined as information-rich and information-poor in a business context. He found that a person who is information-rich knows about and makes contact with more sources of factual information than do information-poor employees. McClure argued that it is the information-rich person who provides the linkages among information of various sources, disseminating it, and making decisions. Such a person connects the business with its outside environment and also liaises among the members of the business as an opinion leader. Both these functions help to obtain the information that the enterprise needs, then pass it on to other people who particularly need it.

The knowledge gap hypothesis then becomes a way to examine significant differences in the ways that the information-affluent and information-poor in society seek, access and share information (Chatman & Pendleton, 1995). Earlier studies on the knowledge gap hypothesis tended to advocate a more equitable distribution of knowledge in society. Later people discovered that it was necessary to analyse the process by which the message is transmitted

from the resource sender to receiver as well as the characteristics of the receiver (Gaziano, 1983). Gaziano thought that “The knowledge gap reflects disparities in information as one among many resources which are less available to lower socio-economic status groups in society” (Gaziano, 1983, p.479).

Although Gaziano (1997) defined knowledge gaps as “differentials in information acquired and retained by people through a learning process” (p.238), the distinction between knowledge and information is very blurred in the literature. Up till recently, people have been using information and knowledge as reasonably acceptable synonymous words. As people’s interests in a variety of fields developed, the precise nature of knowledge and information has needed to be clarified. Buwalda (1997) argued that knowledge includes more than one form of information, such as the know-how, know-why, and the way people interact as individuals and as a community.

Sligo and Williams (2002) made a more precise comparison of the two definitions by pointing out that information is data that are processed directly via the human senses while knowledge is a personal understanding or interpretation of some information. They further argue that since information is essentially a collective human preserve and knowledge is the individual preserve of the human, some knowledge gap is inevitable. However, because people’s ability to interpret new information varies, Sligo and Williams (2002) find it easier to defend the concept of an information gap rather than a knowledge gap.

In addition to the disadvantages that lower socio-economic status individuals appear to face regarding information access is their comparative education level, which is closely related to their information access (Caplovitz, 1963; Tichenor et al., 1970; Ettema & Kline, 1977).

Gaziano’s (1983) review of the knowledge gap hypothesis revealed that there is a consistent relationship between an individual’s education level and knowledge level. Donohue et al. (1975) found that with the input of

information, which is intended to improve the distribution of knowledge, a knowledge gap inevitably appears. They found that individuals with higher education were more ready and willing to access the information than their less educated counterparts. As a result, the knowledge gap between these two segments of society tended to widen rather than narrow.

In a study designed to investigate why this should be so, Hyman, Wright and Reed (1975) proposed that “the process of education creates an enduring receptivity to knowledge which gives highly educated individuals the capacity to respond to and assimilate incoming information” (p.56). Therefore, education is considered to be a very important factor that influences knowledge gaps.

What the knowledge gap does not hold is that idea that low SES individuals will be totally devoid of information (Tichenor et al., 1970). On the other hand, however, because of the educational achievement of the higher SES individuals, their knowledge acquisition and growth are relatively greater than their lower SES counterparts (Tichenor et al., 1970).

In a more recent study, Griffin (1990) explicitly stated that “education can be said to influence the rate of knowledge gain since it is associated with better comprehension, retention and communication capabilities, higher levels of previously stored knowledge, and increased numbers of relevant social contacts” (p.517).

As earlier discussed, Tichenor, Donohue and Olien’s (1970) research explored the estimates by respondents from the educational level of college, high school and grade school as to when there was likely to be a live landing on the moon. They found that respondents at college level were significantly better able to identify the probability of a moon landing in the future, while high school respondents were significantly better than grade school respondents at identifying the probability of a successful moon landing.

Tichenor, Donohue and Olien characterized this as a knowledge gap. However, Sligo and Williams (2002) consider this more of an inferential gap rather than knowledge gap. They argue that the success of the respondents of college and high school level seemed to stem from a better command of available information and better ability to infer what is unstated from the existing information. They find it difficult to see this as a knowledge gap as such, simply because the better-educated could not know the date of the first landing on the moon better than the less educated. They argued that the reason the better-educated respondents won out was because they possessed the ability to access the existing pool of information and evaluate the importance of the information and were therefore able to infer a probability from the existing information.

In relation to education as a factor, Viswanath and Finnegan (1996) share the same point of view as that of Sligo and Williams about the benefit of knowledge acquisition that higher SES individuals enjoy. They argue that higher SES individuals usually have received more formal education which provides them with more skills to value, interpret and comprehend information. Higher SES individuals are also considered to have far-reaching social networks and access to information through their organised system.

Other studies in the field of knowledge gap hypothesis have been constantly supporting the notion that the existing pool of knowledge of an individual is an important factor that influences an individual's knowledge acquisition. Tichenor et al. (1970) argued that because of the difference in the amount of stored information, or previously acquired background knowledge, higher SES persons might already know a topic through education, or they might know more about it through previous media exposure.

Tichenor et al. (1970) also argued that the increasing gap between educational levels is readily apparent, with the acceptance of belief going up much more rapidly for college-educated respondents than for persons with less education. The existing pool of knowledge strengthens the better educated respondents' ability to access their knowledge and process more information, while the

existing pool of the less educated could contain less knowledge to support them in processing information.

Dervin's (1980, 1989) alternative approach examined the knowledge gap from the perspective of individuals being information-rich and information-poor, focusing on the conditions in which individuals seek information. Traditionally, the sender and receiver are regarded as two ends of a communication channel along which information flows in various forms. The receiver is mainly responsible for the receipt of information.

In her study, Dervin (1989) summarized the characteristics of individuals who are known as the information-rich. She argued that these individuals have the resources, time and skills to access the information. People from this higher socio-economic status segment are often information senders with higher education. They are affluent in a material way and have appropriate social networks. Dervin also suggested that even with the development of communication technology, this situation will not change much. One solution she suggested to overcome this situation, is for the information-poor to become "culturally homogenized" to reach what she calls the "communication fast lane" (1989, p.220).

Tichenor (1970) also argued that because of the difference in communication skills between those high and low in SES, there is a difference in education, and education prepares an individual for such basic information tasks such as reading, comprehending, and remembering. He also argued that because of the better communication abilities of higher SES individuals, they have more relevant social contact with information from various sources. That is they might associate with people who are also exposed to similar topics and find it easy to engage in a conversation and enter into a discussion.

Despite the fact that the knowledge gap hypothesis is a useful framework from which to examine the inferential ability, an alternative approach such as Dervin's (1980, 1989) examines an individual's need for information and tries to specify the conditions in which a person approaches information sources

rather than just linking the SES of an individual to their ability to access information. This ability is strongly connected to a person's communication habits.

Frey, Botan and Kreps (2000) argued that communication research tends to emphasize one of two different concerns. They argued that the earliest definitions originated from the scientific study of how information could be transferred from one place to another, thus representing an information-based view. Because it was derived from a behavioural perspective, communication was seen as behaviour, the intentional act of getting information from one person (a source) to another (a receiver).

In contrast, later definitions originated from the phenomenological study of how communication produces meaning and leads to developing effective interpersonal relationships, thus representing a meaning-based view. Though proponents of the meaning-based view did not deny the characteristics of communication advocated by the information-based view, they argued that communication was more than the intentional attempt to get a message from a source to a receiver. Communication was also seen as a process of attributing meaning to people's actions and developing a relationship between people. Dervin's (1989) approach from this perspective is an effective way of examining messages being sent instead of unrealistically expecting the message receivers to change their communication behaviour.

2. Communication through Reading

Frey, Botan and Kreps (2000) argued that the effectiveness of our communication is related directly to our level of success in interpreting our world and accomplishing our goals. More specifically, they stated that "communication is the management of messages for the purpose of creating meaning" (p.28). Their definition of communication captures key elements of both behavioural, information-based and the phenomenological, meaning-based perspectives. They argue that by combining these two key elements

from both perspectives, the human scientific study of communication recognizes the complex nature of communication.

Another characteristic of Frey, Botan and Kreps' (2000) definition of communication is that it recognizes both verbal and nonverbal messages. They also think verbal message systems include the use of words and language, both spoken and written. They consider that communication is transactional and it is a process containing many interrelated components. Some of these components are the messages to which people react; the meanings people create; the context of interaction; the relationship established between the communicators; the purpose people have for communicating and the effects of human communication on people and situations.

At the same time, communication is an activity in which two parties participate, the sender and the receiver of information. Generally speaking, the sender could be a speaker or a writer while the receiver could be a listener or a reader. During the reading process, the information travels from the end of the transmitter, the writer, to the other end of receiver, the reader (Frey et al., 2000).

Smith (1978) argued that reading is a very important component of communication. Canady and Krantz (1996) suggested that one important aspect of reading and communication is that of recognizing the social interactiveness of written materials, and similarly Hoskins (1990) stated "reading can be seen as listening or engaging in a conversation with an author" (p.50). This means reading is an active processing act and that information is acted upon as it is encountered, and then integrated with other information. It is through this cumulative process that comprehension is achieved (Clark, 1979, 1980; Haviland & Clark, 1974; van Dijk & Kintsch, 1983).

Dennis and Barnes (2001) argue that language conveys meaning in multiple ways; some involve the literal meaning of words, others require the understanding of nonliteral meaning. The range of communication is

extended by nonliteral meaning, which allows texts to be enriched with this inferential information. They argue that these nonliteral meanings are essential to a full comprehension of any text, and need to be accessed if the reader is to receive the total message.

As Manes and Kintsch (1987) argued, active inferencing during reading, if successful, can benefit learning because it results in information from more links between incoming information and information in the personal knowledge base.

Frey, Botan and Kreps (2000) argued that human beings also have an insatiable appetite for creating meanings and making sense of information they receive. This leads to people striving to know what is not being said explicitly, attempting to understand the people with whom they interact, and to comprehend the situation in which they find themselves. They emphasized that human communication is the basic means by which people make inferences about all their concerns.

Further, Rosenblatt (1978) explained the relationship between reader and text as: "reading is always a particular event involving a particular reader at a particular time under particular circumstances" (1978, p.128). People read the messages available to them and interpret these messages to help them cope more effectively with the complex situations of modern life (Rosenblatt, 1978).

Other scholars also support the same notion. They think that while some information is contained in the message, meanings are in people (Just & Carpenter, 1992a, 1992b). Human beings create meanings for words and objects for the purpose of relating to one another. People are bound to assign different meanings to the messages they receive and thus derive different information from them. Because individuals perceive and create meaning selectively, inferential gaps are inevitable, as meaning is constructed by the reader (Frey, Botan & Kreps, 2000).

Spiro (1980) argued that meaning does not reside in text but rather comes into being as a result of interaction between text and language user; producers of text do not simply capture meaning in the sounds and written symbols of language, there to be held until released by the user of the text. Rather language users employ written text as a set of guidelines to the active recreation of meaning.

Others refer to this interaction between the characteristics of the text and the internal construction processes of comprehension as “top-down” and “bottom-up” (Anderson, 1991; Oller, 1983b). They think comprehension is active and forward moving. Meaning is not simply a feature of the text but rather comes into existence within the individual as the features of text activate, in a bottom-up manner, the potential organizational schemata within those structural parameters, and meaningful interpretation of text is made possible in a top-down manner (Anderson, 1991; Oller, 1983b).

3. Studies of Inferential Ability

There are many ways in which a text can be understood, ranging from the most superficial to deep understanding (Kintsch, 1979). Experts and scholars have studied the variable of inferential ability from different perspectives and in different fields. The most simplistic explanation of poor readers is that poor readers do not have the basic linguistic abilities. For example, understanding problems due to inefficient decoding of words (Perfetti, 1985; Cromer, 1970), limited semantic and syntactic skills, (Kobayashi, 2002a, 2002b), and limited memory capacity (Just & Carpenter, 1992a; Oakhill et al., 1988) may all inhibit readers’ ability to generate inferences.

However, there is some evidence that poor readers’ problems are not caused by deficits in basic linguistic processes alone. Readers’ educational level also can affect the extent that readers comprehend a text and the kinds of inferences that readers generate (Zwaan, Magliano, & Graesser 1995).

In their review on inferential ability, Graesser, Singer, and Trabasso (1994) proposed an enriched definition of inference by adopting a systematic perspective that appears to be based on the notion of harmony.

They listed several kinds of harmony during the reading process. First, one sense of harmony addresses the global coherence of the text. They argued that this harmony leads to successful inference making when there is harmony among the explicit ideas within the text (Britton & Eisenhart, 1993). The second harmony comes from compatibility among three major components of the communication system: the author, the text, and the reader (Rosenblatt, 1978; Tierney & Cunningham, 1984). Third, Graesser, Singer, and Trabasso (1994) further pointed out that successful inference requires the harmony of the following three conditions: (i) the author's intended meaning of the text, (ii) the explicit text, and (iii) the reader's constructed meaning of text.

Graesser, Singer, and Trabasso (1994) also argued that although it is true that writers compose the content and wording of the text in service of their communication goals, whereas readers attempt to recover the writer's goals during reading, the effort the reader contributes to the communication process is no less than that of the writer.

Anderson (1971) argued that comprehension implies inference making and contemporary educators claim that reading should be to understand. This includes the ability to comprehend the general idea, the ability to make inferences, the ability to perceive causal relationships and to deduce the words from context.

Haberlandt and Graesser (1994) reviewed the ways the reading process has been studied. In a normal reading situation, good readers absorb and access both information from the text and information from the reader's prior or general knowledge to reach a sound understanding of the text. When the integration of the information from these two sources is not successful, skilled readers generate inferential information to support their comprehension. Inference making is considered to be an important part of the reading process:

inferences are necessary to link up the information from various sources and fill in the details that are not explicitly mentioned in the text. Competent readers readily make inferences as, and when, necessary (Garnham, 1982; Garnham & Oakhill, 1985; Graesser, Singer & Trabasso, 1994; Johnson-Laird, 1983; Singer, 1994; van den Broek, 1994).

Sources and Constraints

To make good inferences from a text, therefore, several sources of information need to be available. Generally speaking, there are three main sources that readers can access for information. First of all, the education that people received affects their reading and inferential ability. Second, the existing pool of an individual's knowledge will affect inferential ability. Third, interpersonal communication abilities will affect a person's inferential ability.

The education an individual received from childhood onwards will determine their first language and knowledge about the language, which consists of graphemes, phonemes, syntax, lexical items, propositions, and clauses. Second, the relevant background knowledge provides structures that are both specific and generic. Third, there is the pragmatic context of the message about the author, reader, setting, and purposes of the exchange.

Thurlow and van den Broek (1997) outlined several constraints that can impose on a reader and can influence their ability to generate inferences. The first constraint is the information provided by the text. They argued that any relevant information not stated in the text, including implied relations between adjacent as well as distant sentences, must be inferred by the reader. The difficulty of doing so will vary with the amount of information that is missing. The second constraint is the reader's possession of an existing pool of background knowledge relevant to the text material. They pointed out that, in order to fill in the missing information, readers must have that information available in their memory. Furthermore, any inferred information needs to be compatible with the information in the text. A third constraint on a reader is the limited cognitive resources available. They argue that readers cannot hold

the entire text in their attention at one time to examine how each sentence relates to all the others. Instead, they must integrate each new sentence only with adjacent information, unless they retrieve earlier, distant information from memory.

Comparative Studies

It is generally agreed that readers go beyond the information given in their usual process of text comprehension and read between the lines. Nobody will deny the fact that people do not intuitively comprehend and remember information in isolation (Bransford & Franks, 1972). There is a growing body of research indicating that people spontaneously draw inferences and include this information in memory (Loftus & Palmer, 1974), from previously given and contextual relevant information (Johnson, Bransford & Solomon, 1973; Haviland & Clark, 1974; Paris & Mahoney, 1974), and from general knowledge (Bransford & Mccarrell, 1974; Harris, 1974).

Many studies have been conducted to elucidate the features which affect inference making. Some studies have shown that readers with difficulties are poor at inference making (Cain & Oakhill, 1999; Oakhill, 1982; 1984; Garnham, Oakhill & Johnson-Laird, 1982; Long, Oppy, & Seely, 1994). Other studies suggest that poor readers are not able to construct a complete representation of the text; they are often able to integrate information at a local level but are unable to produce a coherent integrated model of the text as a whole (Oakhill, 1983, 1984, 1993; Oakhill, Yuill & Donaldson, 1990; Oakhill, Yuill, & Parkin, 1988).

Educational Factors

A good reader is capable of choosing the most relevant information in the context within which that person is reading (Brown Armbruster & Baker, 1986). A good reader is also able to access that particular information at the right moment in order to interpret a certain part of the text. On the other hand, the amount of information kept available in the working memory system could not become too broad or even irrelevant. A good reader must,

therefore, update the available information contained in working memory. Various researchers (Glenberg & Langston, 1992; Morrow, Bower & Greenspan, 1989) have observed that the participant updates the representation of the text in order to understand the new information supplied by the text.

Oakhill et al., (2001) undertook an experiment on two groups of readers, good and poor readers. In their study they found that poor readers failed to generate inferences because they could not retrieve the relevant textual premise. The primary source for good readers' inference failures occurred at different stages in the reading process. Often they recalled both the relevant textual premise and the knowledge-based item but failed to integrate the two kinds of information.

It is well established that background knowledge is important for reading (Voss, Fincher-Kiefer, Greene & Post, 1986). Kintsch (1994) conducted research comparing high-knowledge readers and low-knowledge readers. They found that for the high-knowledge reader, the episodic text memory constructed was solidly connected with the prior knowledge base, whereas the knowledge base for the lower knowledge reader had only a single link with the episodic text structure. The consequences of this fact for retrievability are noteworthy. For the low knowledge reader, the episodic text memory is retrievable only through episodic context cues or the single link of text. Although the low-knowledge reader remembers the text approximately as well as the high-knowledge reader, in new situations where the context retrieval cue is absent, this knowledge remains largely unavailable. The low-knowledge reader has learned very little. In contrast, the high-knowledge reader has several effective retrieval routes even when the contextual retrieval cue is absent.

Specifically, for high-knowledge subjects, the nodes of their knowledge net are linked to the text structure, and hence that structure is no longer inert knowledge but is retrievable and usable in new contexts. It has become part of the readers' knowledge, whereas for the low-knowledge reader it remains

largely a separate structure that cannot be accessed in new contexts requiring information about defects. The high-knowledge subjects' more detailed understanding of the structure and information from the context enables them to make the necessary inferences to support the understanding of the text and the information unstated by the writer. The low-knowledge subjects cannot make this inference, even though they remember the particular information from the text (Kintsch, 1994). This model predicts that high- and low-knowledge subjects should be equally able to reproduce the text but that high-knowledge readers do this somewhat better than low-knowledge readers.

Long, Oppy and Seely (1997) conducted an experiment among 160 undergraduate students, testing readers who systematically fail to make inferences even though they have adequate reading ability and sufficient knowledge. They found the text level comprehension of both groups of good readers and poor readers, with differences in their ability to integrate information from different parts of the text and their ability to elaborate their representations with topic-related information. Good readers can make connections between the set-up and conclusions of a story. In addition, good readers made topic-related sentences in response to brief passages that poor readers did not make. Poor readers did not incorporate their general knowledge with the text information.

Perfetti (1985) argued that inefficient verbal skills in combination with working memory limitations give rise to a processing bottleneck that results from inefficient processes at the word-level. Long, Oppy and Seely (1997) concluded that inefficient word recognition processes alone do not appear to explain the comprehension problem by college-level poor readers. Long et al. argue that, although they may have less efficient word recognition skills than good readers, this does not influence their ability to perform tasks that were sensitive to the underlying structure of their prepositional representation. Differences between the group of good readers and group of poor readers were observed only on tasks that were sensitive to more elaborative processing. They suggested that an important bottleneck among poor readers occurs at the discourse level. These readers have word- and sentence-level skills that are

sufficient to construct fairly accurate propositional representations of sentences. However, they failed to execute processes necessary to integrate ideas from different parts of the text and to make inferences to elaborate their text representations.

As suggested by some studies, to construct a coherent representation, the reader must interpret each element of the text and identify meaningful connections to other elements in the text and in semantic and knowledge. The resulting representation consists of nodes, which capture the semantic relations between in or related to text, and connections, which capture the semantic relations between two elements. Together these nodes and connections form a network. The more interconnected the representation, the more coherent it is (Kobayashi, 2002a, b).

Vocabulary knowledge has come to be recognized as a critical feature of reading ability (Nagy et al., 1985; Stanovich, 1986; Strother & Ulijn, 1987). In first language reading, researchers have estimated recognition vocabularies of fluent readers to range from 10,000 words to 100,000 words (Anderson & Freebody, 1981; Chall, 1987; Nagy et al., 1985). Vocabulary discussions in second language reading argue for far lower total numbers of words, often positing 2,000 to 7,000 words (Kyongho & Nation, 1989). Anderson and Freebody (1981) found that ESL readers' need to read fluently, in a manner similar to good EFL reader, would seem to require a knowledge of vocabulary more in line with the larger estimates for first language readers (Beck, McKeown, & Omanson, 1984, 1987; Goulden, Nation, & Read, 1990). The consequence of these arguments is that fluent readers need a sound knowledge of language structure and a large recognition of vocabulary.

Besides the vocabulary knowledge, EFL students' knowledge of grammar is different than that of ESL students. Because of the fundamental education of EFL students, they have formed a more sound understanding of English grammar than ESL students. Kavan and Wilkinson (2003) discuss the differences between the structures of English and Chinese languages. They note that Li (2003) describes Chinese as a pragmatic language because it has

no unnecessary grammar rules and no plurals, articles or tenses. Instead these are derived from the context by the reader. Other differences are that English is noun prominent with many verbal nouns being used in academic English, whereas Chinese is verb prominent. They cite Li's (2003) example of "*I won't participate in the negotiate,*" to show how verbs and nouns are often the same in Chinese (p.3). A third difference is the order of words in the sentence. English sentences follow SVO order subject-verb-object order, while Chinese sentences follow topic command order.

Another difference is the knowledge of formal discourse. The inferential gap in the reading process between EFL and ESL students suggests that EFL students and ESL students have different knowledge of discourse structure. It can be argued that readers need a good knowledge of formal discourse structure (formal schemata). There is considerable evidence that knowing how a text is organized influences the comprehension of the text. For example, good readers appear to make better use of text organization than do poor readers, write better recalls by recognizing and using the same organizational structure as the text studied, and, generally recall information better from certain types of text organization such as comparison-contrast (Nist & Mealey, 1991; Richgels, McGee, Lomax, & Sheard, 1987). This might be another of ESL students' obstacles in inferential process.

In both EFL and ESL contexts, formal and content knowledge play important if somewhat different roles in reading comprehension. One major obstacle is the content and background knowledge (content schemata) as this has a major influence on inference making. A large body of literature has argued that prior knowledge of text-related information strongly affects inferential ability (Anderson & Pearson, 1984; Bransford, Stein, & Shelton, 1984; Kintsch & van Dijk, 1978).

On the other hand, available knowledge stored in memory does not necessarily guarantee that readers will access such knowledge to generate necessary inferences to support their comprehension of the text. Ackerman and colleagues (1990) found that when readers accessing an object concept in sentences before an outcome sentence is a very important factor determining

whether the children can generate an inference about that object. McKoon and Ratcliff (1989, 1992) conducted two experiments on adult readers. Their experiments proved that when information from a text is easily accessible and readers can retrieve it within a short period of time, readers can generate inferences automatically. When readers use their general knowledge to make inferences, the knowledge the reader possesses is not from the text but from the semantic memory of the readers.

Connected with a person's knowledge, the cultural background is also important in the inference making process. Hetch et al. (1992) developed a model of cross-cultural communication where specific ethnic groups are identified, their communication issues are identified and conversational improvement strategies are developed to promote communication satisfaction. This is of potential relevance to this study, because it emphasises the importance of actually allowing ethnic groups to specify their communication needs in their cultural context.

A number of researchers have studied the factors that affect ESL students' inference making ability. Studies by Fu (1995), Johnson (1982) and Spack (1997) shed light on ESL students' situations and cause of their difficulties in their academic subjects because of a) the influence of cultural and personal prior knowledge, b) the processes of education that students learned from their native home and c) linguistic characteristics.

Unskilled and skilled readers differ in their ability to negotiate the constraints detailed. In general, skilled readers are more likely to make inferences than are unskilled readers. Better readers will slow down and spend more time reading and re-reading passages when such implicit relations are unfamiliar (Bransford, Stein, Vye, Franks, Auble, Mezinsky & Perfetto, 1982). In contrast, poor readers are often unaware that there are implicit connections among sentences, and so they fail to make even the simple inferences of relations that are required to create coherent representations. Thus, skilled readers are better able to monitor their understanding as they read a text and are more likely to take time to resolve problems. Poor readers can read quickly through

a difficult passage and believe that they understand it quite well, even when they do not.

Ideally, readers should form mental representations of texts because this level of understanding is conducive to long-term retention (Graesser, 1981; van Dijk & Kintsch, 1983; van Oostendorp & Zwaan, 1994) and to accessibility of textual information (Singer & Richot, 1996). One way to ensure that readers form coherent representations of texts is to facilitate the inferential process. Inferences help readers connect text information with other text information as well as their background knowledge and this, in turn, increases the likelihood that coherent mental representations will be formed (van Dijk & Kintsch, 1983).

4. Methodological Issues and Cloze Testing

The cloze test is the most-used method in reading studies. Cloze readability test scores are used as indices of individual differences in comprehension and aptitude (Rye, 1982). Ever since Wilson Taylor invented it in 1953, cloze studies have been carried out which have either sought to shed light on the test itself, or which have used it as a tool for understanding what takes place when an individual reads a text.

Using a cloze test as a measurement of inferential ability can help explain the following: the psychology of the reading process; the measurement of readability; the development of reading; the diagnosis of reading failure; the testing of subject knowledge; the reading for learning in the subject area (Rye, 1982). Rye argues that many other tests examine a very limited range of reading behaviours, but the cloze test examines a wide range of abilities.

Introduction

Reading has been described as “a psycholinguistic guessing game” (Goodman, 1967, p.128), and “a constructive language process” (Ryan & Semmel, 1969, p.62). The writers argued that the competent reader is able to use the factors

in language which makes letters and words predictable to construct hypotheses about what may be coming subsequently in the text in any language sequence. These hypotheses can then be confirmed or modified as the eyes scan the ensuing context information. Not all the information from a text is useful, so the readers have to evaluate and integrate the information from one part of the text with another, or with information from outside of the text, to form a coherent representation of the text as a whole. Ryan & Semmel (1969) argued that students' performance in filling in the gaps is a very important factor in their reading comprehension. The use of the surrounding context to help the reader infer the missing word is essential to the concept of cloze test as a meaningful way of helping reading.

Reading is often defined as "obtaining meaning in a language through its written representation" (Anderson, 1971, p.180). However, Anderson argues this definition is not operational. Later Lado (1964) developed the theory of foreign language testing. He stated that "language is a system of habits of communication" (1964, cited in Anderson, 1971, p.180). Anderson argued that cloze procedure is based on the assumption that language is a system of habits of communication. Anderson concluded that readers' cloze scores represent the degree of correspondence between readers' habits of communication and those of the sender of the message.

Goodman (1967) argued that reading is a process of sampling possible cues in the printed message, conducting a probable message and then matching it to the output. He argued that while completing a cloze deletion the reader samples the contextual information, constructs a response and then checks this response with the available context information. When these alternatives are matched or checked with the context, further information is found which suggests that most of them would be inappropriate. All the information available is then used to select the most appropriate response.

Rye (1982) argued that the cloze test is essentially a cognitive task during which readers have to reason and construct suggestions to fill in the gap on the basis of evidence derived from the context. He argued that despite the fact

that there are grammatical patterns in language, the reader's innate ability to produce grammatically appropriate sentences will help determine the grammatical class of the word to be produced.

Strengths & Weakness of the Tool

During the past 30 years that cloze tests have been used in research and teaching, it has been demonstrated repeatedly that an examinee must bring a wide range of language-related abilities to bear on responding to a cloze-test item. Among these abilities are a language-specific syntactic capacity, a set of rhetorically based expectations, and, minimally, schematic knowledge related to the perceived topic of discourse.

Bachman (1985) argued that items on a standard every-nth-word or fixed-ratio cloze procedure can be divided into four categories, depending upon the level of context required for successful closure. According to this research, in response to a cloze test, an examinee must apply (a) clausal-level (syntactic) knowledge, (b) sentence-level knowledge that would cross clausal boundaries, (c) intersentential knowledge constrained by textual features of the discourse, (d) extratextual knowledge (p.539). Rye (1982) argued that the interaction between the reader and the cloze passage can be used to gauge the readability and the reading ability—to indicate the advantages cloze passages have over some assessment methods and instruments.

Others consider the cloze test a better tool for measuring readability than any readability formula, simply because it measures the interaction between a reader and a text, instead of simply concentrating on features in the text. Taylor (1953) argued that cloze tests showed differences in the readability of texts which were not apparent when their readability was measured using a respected formula. Cloze tests have been substantially researched and validated as measures of global language proficiency, among other things (Darnell, 1970; Oller & Conrad, 1971; Oller, 1973; Oller, 1975a, 1975b).

By deleting every *n*th word in a sample of meaningful text, a linguistic random sample of language is tested when the subject fills in the blanks. This task calls into play what has been termed as the listener-speaker's "grammar of expectancy" (Oller & Steriff, 1975, p.28). This is one way of labelling the constant role which prediction plays as one comprehends language, written or spoken (Goodman, 1969; Oller, 1975).

Cloze tests have been considered a useful tool for test readability (Helfeldt, Henk & Fotos, 1986; Klare, 1984), intrasentence and intersentence comprehension (McKenna & Layton, 1990; Shanahan, Kamil & Tobin, 1982), and local comprehension (Kintsch & Yarbrough, 1982). The test has been used as a measurement diagnosing reading skill deficits, because it is easy to construct and administer. There is some evidence that the cloze test is a good proxy for intersentential understanding even though it does not directly measure intersentential comprehension (McKenna & Layton, 1990). The cloze test attempts to differentiate readers' higher level of inference from lower level reading skill. In addition, the cloze test may be motivating to reluctant readers.

Anderson (1971) argued although the cloze procedure is a very simple technique, it is a very effective measurement for assessing reader's inferential ability. He outlined three characteristics of the tool: (a) the cloze procedure can be used as an index of a passage's readability or reading difficulty, (b) the cloze procedure can be used as an index of a reader's ability to infer a missing word in a given passage, (c) the measurement can be used at different educational levels whether it is primary, secondary or tertiary level and can be used in different languages.

In his review of the cloze test, Rye (1982) outlined several characteristics of the measurement. One of the most apparent benefits of the cloze test is its ease of construction. He also argued that another advantage of the tool is its unambiguity. When wishing to assess a reader's inferential ability, it is usual to ask questions of various kinds to gauge inference making. The cloze test avoids many of the difficulties when setting questions. Apart from avoiding

the need to worry about setting questions which are easily understandable and unambiguous, the cloze test also helps to ensure the attention is fixed on a wide sample of the passage. Cloze tests supply a context for the 'questions' and require the reader to use that context to discover meaning (Rye, 1982). Another advantage of the tool is that the cloze test allows readers to access semantic, syntactic and at times stylistic information to infer and predict the information subsequently available. It also allows readers to draw meanings from outside the context of the immediate sentence of the text and to skim to recap what has been read. By scanning the text information, readers are in the process of searching for unspecified information that may help the inference making. The cloze test uses whole passages rather than isolated sentences, thus making information available from a wide context (Rye, 1982).

If the usefulness of cloze test as a means of assessing inferential ability is to be fully appreciated, then it is necessary to understand the potential weakness of any reading test. Some experts in the field of language testing have long argued that cloze tests cannot assess the processing abilities beyond clausal level (Alderson, 1979; Shanahan et al., 1982; Markman, 1985).

Jonz and Oller (1994) contended that some of these studies tended to suffer from design flaws such as the small sample sizes and uncontrolled proficiency level of the participants or the use of tests with little coherence (encyclopaedic articles). They argued that with more rigorous designs using coherent texts, it appears that empirical research has consistently demonstrated that cloze tests can measure both lower (e.g., clause-level) and higher level (e.g., intersentential) inferential ability depending on the particular word deleted (Bachman, 1982, 1985; Chavez-Oller et al., 1994).

It is important to be able to assess the validity and reliability of any cloze test. With the use of rigorous design features, cloze tests can be valid and reliable. It must be pointed out that care needs to be taken in order to avoid obvious pitfalls.

All reading tests are limited in what they can do. Cloze tests do at least test a range of reading skills, and home-made cloze tests are known to be reasonably valid and reliable.

Sources and Constraints

Bachman (1985) developed a classification system of test item types. This classification was originally developed for the purposes of examining the amount of text information required for successful completion of the blanks in cloze tests. In the original classification, Bachman divided the cloze items into four categories: a) within clause; b) across clause, within sentences; c) across sentences, within a text; d) extratextual.

When the emphasis is on meaning rather than linguistic accuracy, cloze items seem to become more valid as a measure of inference making. One of the problems with cloze tests is that they require not only reading ability but also productive skill. If it is the reading comprehension that cloze tests are to measure, examiners may well be justified in accepting a different policy concerning answers that are syntactically incorrect, but nevertheless show that the reader has understood the meaning.

Content words convey meanings, and each individual meaning contributes to a complicated semantic network in the text. At the same time, the meaning also acts on the reader's schemata. It may be possible to restore deleted words by reading only one clause or sentence containing the blank, but other factors such as co-textual knowledge – knowledge acquired by reading the preceding or following text or both- and general knowledge, also work together in the case of content words, requires more than one type of knowledge or amount of context. In the process of reading, this complicated interaction may occur automatically, but it is difficult to identify exactly what knowledge or how much context is required to fill in the blank correctly. To that extent, content word items in a cloze test appear to require more integrative ability than do function words such as prepositions, articles and link verb (Oller, 1975a).

Comparative Studies

The fluent reader is able to anticipate what is coming next in a language sequence on the basis of clues in the text. The processes involved in fluent reading are similar, in some respects, to those required in the completion of cloze deletions. Both activities involve the sampling of information from the context followed by the formation of and checking of hypotheses. However, the cloze test is a more conscious activity requiring a different kind of sampling and matching. Readers' inferential ability depends on their ability to make use of certain clues in the context to help them infer the meaning of the text (Rye, 1982).

When faced with a blank space to fill in, readers are not simply faced with blank paper, but with blank paper that is surrounded by syntactic and semantic clues to help them guess. Readers are trained to look for information instead of guessing in an apparent vacuum and will inevitably be employing the reading skills outlined above. They will be searching, not necessarily following the order of the author's sequence, looking for clues that their memory tells them are present, and looking for information that may provide a basis for inference making. If they attempt to look for information by re-reading the whole passage at the normal rate each time, following the precise order of the text, the process would become extremely tedious and would soon be abandoned (Rye, 1982).

The purpose of setting of inferential questions on any text, whether it is in an English lesson or in any other subject area, is to direct the readers back into the text, to help them think through some of the implications of what has been written and able to help them understand the full meaning of what has been read. Whatever one believes about whether or not comprehension is a multiplicity of aptitudes, it seems essential that readers should get beyond asking questions which demand a simple literal understanding of what the writer has written. Situations need to be created where readers are asked to make inferences about the implications and value of whole argument and passages. In this way, perceptive and reflective readers could be developed

(Rye, 1982). The cloze test is one way in which ability to infer implicit meaning could be developed.

Language is perceived in relatively short linguistic segments (Fodor et al., 1965). When a word is missing, it is only natural that the immediate context should provide the first source for help. Other studies (McGinitie, 1961; & Alderson, 1979) have shown that the ability to fill in a cloze deletion correctly does not improve significantly as the amount of immediate context increases, once a context of five words is given. It would seem that the strongest constraint on word choice is supplied by the immediate context. It should be remembered that cloze test in these studies involved individuals filling in cloze passages in silence. Although the results show where the strongest constraint lies they do not necessarily prove that readers cannot be trained to use a wider context.

When seeking to develop inference, all the inferential questions (which are difficult to set) can supposedly be left unformulated and can be replaced with uniform-size blanks. There are a number of reasons why some readers find it difficult to correctly fill in these blanks: a) inability to use context clues. The reader has difficulty in using the information given in the text to anticipate the meaning of new and unfamiliar words. b) inadequate comprehension skill. The reader has difficulty in gaining meaning from what is read and in thinking through the ideas in the text. c) insufficient rates of reading. The reader lacks the understanding of the need to adopt his or her reading style to suit his or her particular purpose for reading and the particular text being read.

With respect to the use of the cloze test as a measure of inference making, one criticism of the procedure has been that it may depend more upon general knowledge of the language than upon special knowledge of the material being read (Klare, 1984). Klare also noted that a chief criticism of the cloze test is that "it may depend upon short-range constraints, that is, almost entirely on the four or five words on each side of the blank" (p.83). However, Oller (1975b) and Chihara et al. (1977) have demonstrated that cloze items are sensitive to constraints ranging across sentences. Further, Oller (1983b) has

suggested that the operation of memory and verbal processing over such segments of discourse is “an aspect of the underlying competence of second language speakers, the sort of competence measured by cloze tests” (p.116).

While much of the cloze research to date has been with native speakers of English, several studies have indicated that the cloze test is also a useful measure among non-native speakers of a language for assessing both language proficiency and inferential skill (Anderson, 1971; Oller & Conrad, 1971; Oller 1975; Oller, 1973).

Educational Issues and Cloze

Chihara et al. (1977) investigated the effects of scrambling sentences in the cloze texts. In the experiment, 41 native speakers of English and 201 Japanese adult English as a foreign language students randomly read one scrambled version and one normal version of either of the two types of English cloze texts. The result showed that the participants' average scores, except the beginning English as a foreign language students who found the tests too difficult, significantly increased when the scrambled sentences in the two texts were put back in their original propositions, and that the score increase rate became larger as the participants' proficiency level rose. These results suggested that the participants needed information beyond sentence level to perform better on cloze tests, and the ability to utilize such information became greater as their English proficiency increased. Their studies also found that because of the different fundamental education their participants produced different language proficiency and different abilities to infer the words of the cloze tasks.

Kobayashi (2002a) undertook a study concerning the amount of information used for solving the cloze items. Her research findings indicated that the more proficient students used all types of information both for right and wrong answers more often than the less proficient groups. The proficient students used 'within clause' and 'across clause, within sentence' information for both right and wrong answers and 'extratextual' information for wrong answers,

significantly more often than the less proficient students. One puzzling aspect of this result is that the proficient group utilized within-sentence information for correct answers significantly more often than the less proficient group, whereas there was not such a difference beyond the sentence level. It is true that the proficient group also used other more extensive information more frequently than the less proficient group, but the major portion of the proficient group's better performance resulted from using information that could be located within the sentence. This means that the proficient group successfully solved more items for which they needed within sentence information when they were provided extra aids that might better facilitate their 'top-down' schema level processing. The results also indicated that this is due to the fact that the proficient group might have felt more motivated to solve any given items, including the ones that required within sentence information. They also tried to solve items requiring more extensive information. But there were relatively few of these items. One of the implications for second language testing is that the finding suggesting participants sometimes did use information beyond sentence level for solving items confirms the claim that the cloze test can measure higher-order processing skills.

Oller (1983a) argued that cloze scores could be interpreted as indicators of "a general language proficiency factor" (p.3) which could be used for a variety of language testing purposes. Jonz (1985) conducted a study comparing native users of English and non-native users of English with a cloze test to measure the language-based comprehension of the two groups. His research findings suggested that non-native speakers of English are far less capable of coping with the loss of redundant cohesive data than are native speakers of English. When these data are available, however, non-native speakers employ them in inference making to a comparatively greater extent than do native speakers. Non-native speakers appear to be far more reliant on text in the comprehension process (text-bound) than are native speakers.

Jonz (1985) argued that the practice of requiring examinees to restore deleted words to text, is well suited to the study of the interaction between text and

individual comprehension processes precisely because it is an integrative, interactive testing procedure. It requires examinees to apply knowledge at varying levels of generality, ranging from the knowledge of set phrases to broad concepts and systems of belief. He chose an expository text suitable for first year university students. He found that native speakers and non-native speakers access the information from different sources. Non-native speakers tend to expend the cognitive resource that native speakers might devote to processing text message on syntactic parsing. In his study, non-native speakers' ability to provide a locally acceptable lexical item in response to the demands of a cloze test was dramatically more strongly affected by recall for cohesive (intersentential) as compared to other (heavily intersentential) lexical items. This suggested that in processing uninterrupted text, non native speakers devoted resources to building intersentential memory structures populated by lexically and referential cohesive items. And they did this sort of processing to a greater extent than did native speakers. He also found that when the students' prior knowledge includes the recent experience of having had access to the intact passage, that experience had a significantly greater impact on cloze scores that emphasize intersentential ties than it had on students' ability to reconstruct the broader sample of linguistic patterns not numerically dominated by such ties.

Alderson (1979) also conducted a comparative study of native speakers and non native speakers. His research indicated that native speakers' greater experience of and ease with the bones of the language - the lexis and syntax- enable them to see distant relationships among ideas in the text more easily than non native speakers, who might be held up to a greater extent by difficulties with the language at the sentence level.

Abraham and Chapelle (1992) stated that one of the extrinsic factors in inference tests are the abilities that test takers bring to the testing situation – abilities which affect performance on items and are therefore reflected in empirical item difficulty. In keeping with psychologists' conception of abilities (Taylor, 1957; Abraham & Chapelle, 1992; Ackerman, Beier and Bowen, 2001), these can be divided into two basic types: knowledge and strategic. Cloze item

performance is affected by examinees' linguistic and world knowledge, which in part, enables them to read and infer.

According to Taylor (1957), "an individual's cloze performance appears to depend heavily on how well the reader understands the meaning of the materials administered – hence on the factors that affect reading, such as general knowledge facility, specific knowledge, and the vocabulary relevant to the materials at hand, native ability to learn, attention, motivation, and so on" (Taylor, 1957, p.19). Ackerman, Beier and Bowen (2001) also argued that the cloze test could be a useful additions to the assessment of broad abilities such as verbal, educational and knowledge components.

Conclusion

The literature review has given an outline of the knowledge gap hypothesis and explained how it can be used as a framework to explore inferential ability. Different theories of communication have been explored from various perspectives. Finally, the cloze test and ways of currently providing information to support inferential ability have been discussed.

The next chapter, methodology, will discuss the research design and research processes used to examine inferential ability. Procedures for selecting participants, data collection methods and data analysis are also outlined.

CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

Introduction

This chapter will discuss the setting of the study and the rationale behind selecting first year students in the College of Business as the subjects of the research. It will then outline the research design, the research processes and discuss ethical considerations in the research. A rationale for using the cloze test technique is given and finally, the procedures for selecting participants, the data collection methods and data analysis are outlined.

Setting for the Study

The setting chosen for this study was the College of Business, Massey University in Palmerston North, the site of the main campus of Massey University. Participants were selected from the College of Business and it was decided to base the two iterations of the test here because of constraints of travel, cost and time.

Research Design

The present study has used a quantitative approach, permitting the research to explore responses from large samples of respondents and providing ease of administration, response, coding, and analysis. Quantitative survey measurement techniques also provide researchers with horizontal data, data with great breadth, covering a broad range of respondents (Frey et al., 2000, p.202). Frey et al., (2000) argue that using quantitative approaches in educational research has been enhanced with computer technology in that quantitative research involves smaller sampling errors, greater reliability and increases the power of a statistical test applied to the data.

Research Process

This research focuses on comparison of the inferential ability of EFL and ESL students when comprehension is held to refer more particularly to an understanding of a whole piece of writing or an overview of the document as an entire piece. In contrast to this, inference is considered as referring to single items on a one at a time basis, and the individual's ability to infer what may be the words.

The objective of the study was to investigate differences in the inference making ability of EFL and ESL students, in the light of the desirability of this kind of research described earlier in this thesis.

Reliability problems were considered to be minor for the background information questions as the concepts involved were relatively concrete. The reliability of a measure pertains to the degree to which an instrument measures the same variable consistently over time (Frey et al., 2000). Questions on each respondent's age, gender, and first language can be deemed to be stable in that concepts should be measured accurately, no matter when they are measured.

Sample and Procedure

The raw data for this research were collected by means of two cloze tests. The tests were administered to two samples of students, overseas students with English as second language (hereafter abbreviated as ESL students) and students with English as first language (hereafter abbreviated as EFL students). Both were enrolled in a stage one course Introduction to Business Communication. The first survey was administered in August 2003 when the students had their first tutorial. The second survey was conducted 3 months later in October 2003 at the last lecture of semester two, with the researcher responsible for administering the tests on both occasions.

Longitudinal survey designs help to overcome many of the limitations of a single survey. By gathering data from respondents at more than one point in time, survey researchers can assess the impact of unusual or unique environmental events on a population as well as a population's enduring behaviours. Therefore, longitudinal survey designs are much more effective at capturing the processual nature of human communication (Frey et al., 2002. p.189).

Materials and Procedures

The texts used in the study were specifically prepared to maximize control over the variables. Topic areas were first chosen and model texts were selected from several educational sources. Care was taken to minimize the potential effects of cultural bias or student familiarity with the topic (Alderson & Urquhart, 1983,1985; Clapham, 1996). Two sets of texts were finally selected for use in the study on the basis of expert judgement regarding their suitability and their previous use (Kobayashi, 2002a, 2002b). Test one had 352 words while test two had 384 words. Twenty-five test items were developed for each text in cloze format. The deletion rate (every 13th word) and starting points for deletion were decided on the basis of extensive analysis of potential cloze items. It was also decided to avoid deleting proper nouns and numbers, as this might provide further obstacles for the performance of the students' inference making and break the coherence of the entire passages. When a deletion fell on these words, the subsequent word was deleted instead.

Ethical Considerations

It is important to approach a cross-cultural research topic with caution. When researching another culture, and not being a member of that culture, it is necessary to gain a thorough understanding of the implications of researching the topic before developing the research design. The researcher spent time talking with students and teachers from the Department of Communication and Journalism when designing the present study. This was necessary to ensure that the study was developed and carried out in a culturally

appropriate way. Through these discussions it was decided that using a quantitative questionnaire approach would be appropriate for all the participants concerned because this technique could provide a descriptive analysis of the entire student population in the particular stage one class.

Participation was voluntary. The respondents were assured that their individual responses were confidential and this assurance was printed on the information sheet of the questionnaires. The fact that responses would not affect their grades in this or any other papers and that they had the right to answer or refuse to answer any questions on the survey were also clearly communicated to the respondents. Students were instructed that completion and the return of the questionnaire implied consent and that they had the right to decline to answer any particular question.

The course coordinators and the Head of the Department of Communication and Journalism were contacted for permission to hand out a survey to students in the last 15 minutes of the first tutorial and the last lecture in semester two, 2003. They were anticipated to take the students between 10 and 15 minutes to complete.

Permission was given by the Massey University Human Ethics Committee for the research project, with the normal arrangements and protocols for advice to students applying, such as freedom to decline to take part, and freedom not to answer any particular question.

Preliminary Data Collection

Frey et al. (2000) suggest that a pilot study often provides the researcher with ideas, approaches, and clues not foreseen prior to the pilot study. They suggest that such ideas and clues greatly increase the chances of obtaining clear-cut findings in the main study. Belson (1986) suggested the use of a pilot study as one technique for assessing the validity of the data collection procedure.

In order to determine face validity in this research, and to ensure there were no problems for the respondents in answering the questions, a pilot study was conducted. The research procedure was carried out with a group of 32 first year business students from overseas prior to conducting the full-scale research. Based on the finding of the pilot study, no changes were needed to the initial instrument, it was decided to set out to conduct the two tests as planned.

The researcher aimed to establish the feasibility of the study and to identify potential pitfalls in the proposed methodology. To this end, the influence of a number of relevant variables was explored, including: topic areas of the passage, text length, text readability, students' language proficiency, deletion ratio, the nature of words to be restored (especially ratio between content words and function words), and the number of occurrences of content words. The thirty-two participants from the pilot study group were not part of the two tests, as they had finished the course Introduction to Business Communication the previous semester. Two native English-speaking scholars from the Department of Communication and Journalism of Massey University assisted with the preliminary and two main studies.

Main Study Data Collection

Test one was conducted in the beginning of semester two 2003, the second test was conducted three months later at the end of semester two 2003. Five hundred and three students took part in test one, of whom, 173 were EFL students, and 330 were ESL students. For Test two, 399 students participated, 148 EFL and 251 ESL. Copies of the cloze tests for the main study are attached as appendix two and four. Instructions were also prepared for students. Both sets of instructions were written in English and piloted to minimize the risk of misunderstanding and confusion. The respondents were required to finish the test within 15 minutes.

Test one was adapted from the study from Kobayashi (2002a) and test two from Kobayashi (2002b). Both tests are on the subject of international aid.

These two tests were chosen simply because the content of both tests was neutral, not requiring much cultural background or specific knowledge and scientific jargon for first year students, either EFL or ESL. Both tests covered similar content but had different cloze items to complete. Two native English-speaking scholars were consulted about the content and language level of both tests and the cloze items were suggested and approved by these two English-speaking scholars.

Structural Measures

As previously stated, the literature that this exploratory research is based on postulates that several factors are related to the knowledge gap. Education is considered to produce more sophisticated communication abilities, which in turn helps people process information more thoroughly and effectively. Second, the existing pool of knowledge possessed by higher SES individuals helps them make better use of the knowledge they have. Third, the interpersonal communication ability of high SES individuals helps them to initiate communication with others and helps them to gain knowledge. Last, when high SES individuals seek information, they are more curious and more ready to discover the potential information around them and access to it at the right time and in the proper situation.

Data Analysis

All the papers were marked three times by the researcher with the assistance of two educated native English-speaking experts. Following the usual convention, minor orthographical mistakes were ignored. To permit the examination of the interaction between the scoring methods and item characteristics, three scoring methods were employed: (a) the exact scoring method; (b) the semantically and syntactically acceptable word scoring method; (c) the semantically acceptable, but syntactically unacceptable word scoring method. Acceptable alternative answers had been collected in consultation with two English experts prior to scoring.

Table 2 (on page 53) presents a full description of the three scoring methods. Method A, the exact word scoring method (Ex) requires the reader to fill in the exact word employed by the author in the original text. Method B, semantically acceptable and syntactically acceptable word (SASA) requires readers to fill in the synonyms that are acceptable in place of exact word and accurate syntax. Method C, semantically acceptable but syntactically unacceptable word (SABSU) requires readers to fill in synonyms that are accepted in place of exact word but syntax was not accurate.

Expert Judgement

Expert judgement is a fairly recent development in the second language testing field (Zuck & Zuck, 1984; Alderson & Lukmani, 1989; Alderson, 1993; Cohen, 1993). In this study, expert judges were invited to assist at different stages of the research, ranging from text selection and item analysis to establish marker reliability. Both of the judges had PhD degrees and had been engaged in teaching and research in higher education institutions for many years.

The data were analysed using SPSS/PC. The analysis included calculation of means, standard deviation, reliability for the complete set of items, and item-total correlations (used as a means of establishing discrimination indices) for individual items, and correlations with the proficiency test. Statistical analyses also included t-tests and correlation analyses when these were deemed useful, plus two-way analysis of variance. The particular contribution of this analysis is to provide robust information in an intelligent manner about between-groups differences.

The overall reliability of the pilot study was .76. This was slightly lower than the more desirable standard of 0.8, possibly because fewer participants (32) were involved. The survey test was still used in the main study despite the lower reliability as it was suggested that as the number of the participants increased the reliability would also increase, as was later demonstrated. The

reliability of the main study was .81 and the reliability of the follow-up study was .80.

The scoring of answers follows the guidelines often used in readability research (Rankin, 1959; Bormuth, 1968a; Harrison, 1980; Kobayashi, 2002a). In scoring the tests, synonyms or semantic equivalents were accepted as correct.

Accordingly, either the author’s original word or a synonym was accepted as correct, as long as spelling errors did not prevent recognition of the intended word.

TABLE 2
 TYPOLOGY OF ASSESSMENT METHODS EMPLOYED

Method	A. exact scoring	B: semantically acceptable and syntactically acceptable	C: semantically acceptable but syntactically unacceptable
Description	Exact word required	Synonyms acceptable in place of exact word and syntax also accurate	Synonyms accepted in place of exact word but syntax was not accurate

All answers were scored according to the three scoring methods mentioned above, (A) the exact word, (B) semantically and syntactically acceptable and (C) semantically acceptable but syntactically unacceptable. Descriptive statistics were calculated for each scoring method.

This section offers an exploratory comparison of the cloze tests by the three scoring methods. The following section provides a detailed analysis of EFL and ESL students’ performance in relation to inferential ability with the three scoring methods.

CHAPTER FOUR: RESULTS

Introduction

This chapter will examine the information gained from the two cloze tests and compare the inferential ability of EFL and ESL students. Also described here are barriers to inference making for both EFL and ESL students, plus the relationship between the inferential ability of the participants and their knowledge background.

This chapter is in three sections. Section one presents the participants' profile and outlines their background such as age, gender and first language. Section two reports the results of EFL and ESL students' performance on the tests. For each topic area a brief outline of the result is given. Section three compares the results of their performance assessed by each method of scoring.

In this chapter, the intention is to use each of the specific objectives outlined in the previous chapter as a focus for an analysis of the results. This is done for two reasons:

First, to ensure clarity. The research process involved a series of steps, which although not complex in themselves, tend to be difficult to follow if not done in a logical sequence. Each section builds upon the previous one.

Second, linking the research objectives and analysis in this way allows the reader to see the practical usefulness of each form of analysis to a practitioner, and to also see its relevance to the research objectives.

The following discussion will examine in more detail the key trends highlighted in this chapter, with attention to students' means of accessing information to support their inference making.

Description of Sample

The following tables describe the participants who completed the cloze test over two data collection periods 12 weeks apart.

TABLE 3
AGE OF TOTAL PARTICIPANTS ACROSS TESTS ONE & TWO

Tests	n	Age Minimum	Age Maximum	Mean Age
Test One	503	18	58	21.3
Test Two	399	18	50	21.6

n= number of students

As seen in Table 3, two survey tests were conducted to test the participants' inferential ability. Test one was conducted at the beginning of semester two, 2003. Test was conducted at the end of semester 2, 2003, with an interval of twelve weeks. Five hundred and three first year students participated in test one, with the youngest being 18 years old and the oldest one being 58 years in age. The average age for this test 21.3 years old. Three hundred and ninety nine students took part in test two with an average age of 21.6 years, with the youngest 18 and oldest 50. The age distribution of the participants will be shown in Table 4 and Figure 1 on the following page.

TABLE 4
PARTICIPANTS' AGE DISTRIBUTION

Age group	Test One	Test Two
18-19	34%	32%
20-22	38%	37%
23-24	16%	18%
25-26	7%	8%
27-29	3%	3%
30+	2%	2%

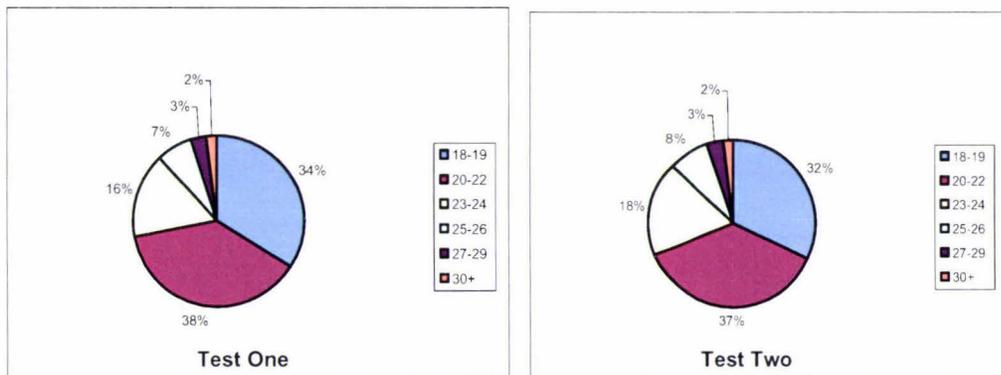


FIGURE 1
PARTICIPANTS' AGE DISTRIBUTION

As can be seen from Table 4 and Figure 1, in both tests one and two, most of our participants are aged between 18-22.

TABLE 5
FREQUENCIES BY GENDER

Test	n	Percent
Test One		
1. Male	223	44.3
2. Female	280	55.7
Total	503	100.0
Test Two		
1. Male	156	39.1
2. Female	243	60.9
Total	399	100.0

n = number of participants

From Table 5, we can see that in both tests one and two, there is a higher proportion of females than males. In test one, 55.7% of the participants were female and 44.3% of the participants were male. In test two, females occupied 60.9% and males made up only 39.1% of the entire participants. This proportion by gender is similar to the gender landscape of this campus.

TABLE 6
FREQUENCIES BY FIRST LANGUAGE

Group	n	Percent
Test One		
English	173	34.4
Chinese	309	61.4
Other first language	21	4.2
Total	503	100.0
Test Two		
English	148	37.1
Chinese	236	59.1
Other first language	15	3.8
Total	399	100.0

From Table 6 on the previous page, we can see that as New Zealand becomes a major provider of tertiary education in the world, there are more and more international students coming here to study, especially students from China. With China's economic reform and opening up to the outside world, people are getting richer financially and can afford to send their children overseas to receive foreign education, which was very rare 15 years ago. However, the number of students from other countries is relatively low compared with the number of students from China. In the first test, there were 21 students from other countries such as Japan, Korea and Malaysia. In the second test there were only 15 such students.

Empirical Results

These results will be grouped under the following three headings: the present level of the inferential ability of the entire study sample, the performance of the inferential ability of the participant groups according to their first languages, and lastly the analysis of the students' performance via three widely accepted scoring methods for the cloze test.

Entire Study Sample

TABLE 7
T-TESTS FOR THE COMPARISON OF THE MEAN
SCORES OF THE ENTIRE STUDY SAMPLE

Test	Mean score Method A	Mean score Method B	Mean score Method C
Test One (n=503)	10.6	20.5	23.7
Test Two (n=399)	15.8	21.4	24.6
Difference between means	5.2*	0.9*	0.9*
Frequency of improvement	21%	4%	3%

*stat. Sig. at $p < .001$

NB: cell counts above refer to score out of a possible 25

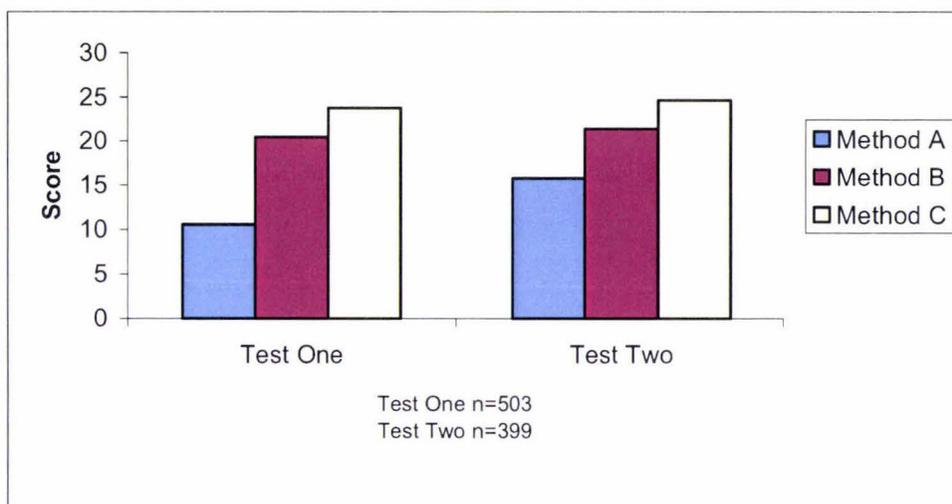


FIGURE 2
COMPARISON OF THE MEAN SCORES
OF THE ENTIRE STUDY SAMPLE

Table 7 and Figure 2 show the inferential ability of the entire study sample in test one and two via the three different scoring methods. Both tests were scored out of 25. Looking at Table 7 and Figure 2, the following trends are clear.

In test one and test two the scores for method A were the lowest of the three ways of scoring the cloze tests, indicating that many students found this task difficult. However, the mean scores via method A rose from 10.6 in test one to 15.8 in test two, a significant change ($p < .001$). This may be related to the fact that after three months' formal education in a tertiary institution, the students' inferential ability improved, possibly due to greater familiarity with passage content, exposure to foreign language in a New Zealand university for the ESL students and changes in other types of knowledge such as language knowledge in general, knowledge about the academic culture and, more specifically, better knowledge of the style of writing found at university level. This significant improvement in inference is of great interest as it is much larger than the increase in score for method B and C.

However, when employing Method B, the mean score in test one was much higher than for Method A but there was only a slight change for the entire

study sample on method B in test two. The mean score rose from 20.5 in test one to 21.4 in test two.

Method C (which was scoring of the insertion of a semantically acceptable but syntactically unacceptable words) produced the highest score in both test one and test two. There was only a small change from 23.7 to 24.6 between the two test times. Respondents felt that as long as they could understand a passage and were able to infer words that made sense in the passage, they either did not need to or could not make the grammar correct.

Although there is some change in tests one and two, the latter two methods (Method B and Method C) did not demonstrate great changes. Although much smaller, these differences were still statistically significant, probably due to the large number of participants.

These trends do not necessarily reflect the performance of EFL students and ESL students as separate groups according to their first language. In order to fully discuss the implications of these trends, it is necessary to now consider how the first language background of the two sub groups are related to their scores on the two tests via the three scoring methods.

TABLE 8
COMPARISON OF MEAN SCORES OF EFL AND ESL
GROUPS VIA THREE SCORING METHODS

Group	Method A Mean Score	Method B Mean Score	Method C Mean Score
Test One (n=503)	10.6	20.5	23.7
EFL (n=173)	13.6	23.1	24.3
ESL (n=330)	8.9	19.1	23.5
Test Two (n=399)	15.8	21.4	24.6
EFL (n=148)	19.3	24.5	24.9
ESL (n=251)	13.6	19.6	24.5

NB: cell counts above refer to score out of a possible 25

Table 8 outlines and compares the performance of EFL and ESL students in tests one and two. These mean scores of both groups of students present a positive picture of their improvement and progress. In the following sections, we will consider outcomes by means of different scoring methods and language presenting in frequencies and percentages.

Results in Test One

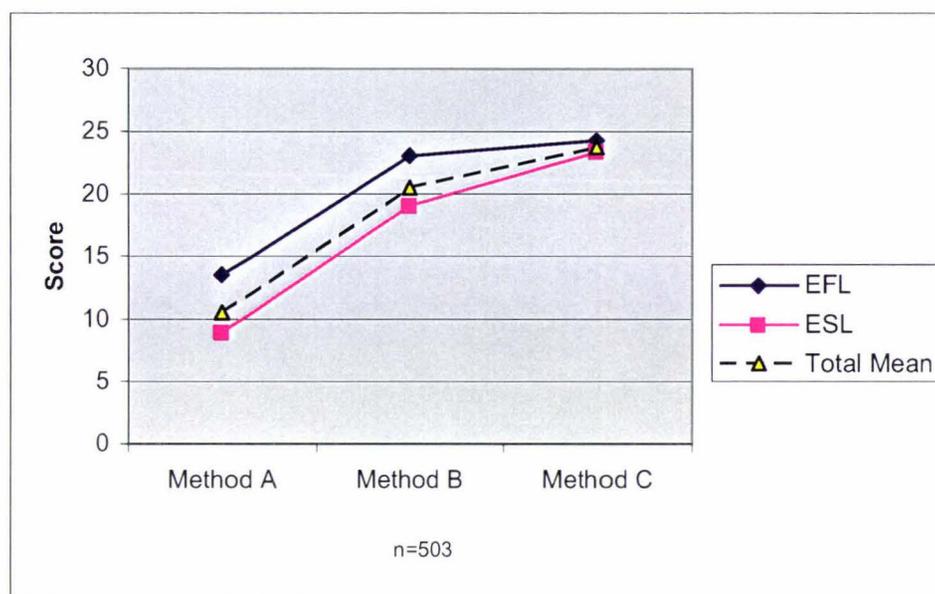


FIGURE 3
COMPARISON OF EFL AND ESL STUDENTS' PERFORMANCE
VIA THREE SCORING METHODS IN TEST ONE

AS seen in Figure 3, by accessing Method A (the exact word scoring method), the average score of EFL students is 13.6 and the average score of ESL is 8.9 and ESL students' mean score is lower than the mean score of the entire population 10.6.

However, via Method B, both EFL and ESL students show better ability. EFL students improved by 38% from the mean score of 13.6 (via Method A) and rose to the mean score of 23.1 (via Method B). Similarly ESL students' inferential level was improved by 40% from the mean score of 8.9 (via Method A) and rose to the mean score of 19.1 (via Method B).

The improvement of both EFL and ESL students is even more evident via Method C. EFL students improved by 43% and ESL students improved by 57% and the overall average score improved by 52% via this method.

Based upon the above analysis, the following trends can be seen:

If it were required for both EFL and ESL students to infer the exact word from the original passage in English, EFL students' skills are superior than those of the ESL students.

If it were required that EFL and ESL students infer a word that makes sense in a cloze passage and still follows good grammar rules, ESL students are able to form a coherent representation of the passage as a whole. Although the mean score of ESL students is lower than that of the entire study sample, they made significant progress compared with their performance when inferring the exact word from the original passage.

ESL students' inferential ability reached a reasonable standard when employing the semantically acceptable but syntactically unacceptable scoring method, with little gap between mean scores of EFL and ESL students when inferential ability was assessed via Method C. The implication of this is evident. Although ESL students' first language and educational background are quite different than those of their EFL counterparts, and these conditions limit their inferential ability, they can employ suitable information from their existing pool of knowledge to infer the words that made sense in the passage, despite their poor grammar standard.

These data represent the inferential level of EFL and ESL students in the first test when first enrolled. However, to assess if the education they received in the following three months would improve their inferential ability, we need to compare their performance in test two.

Results in Test Two

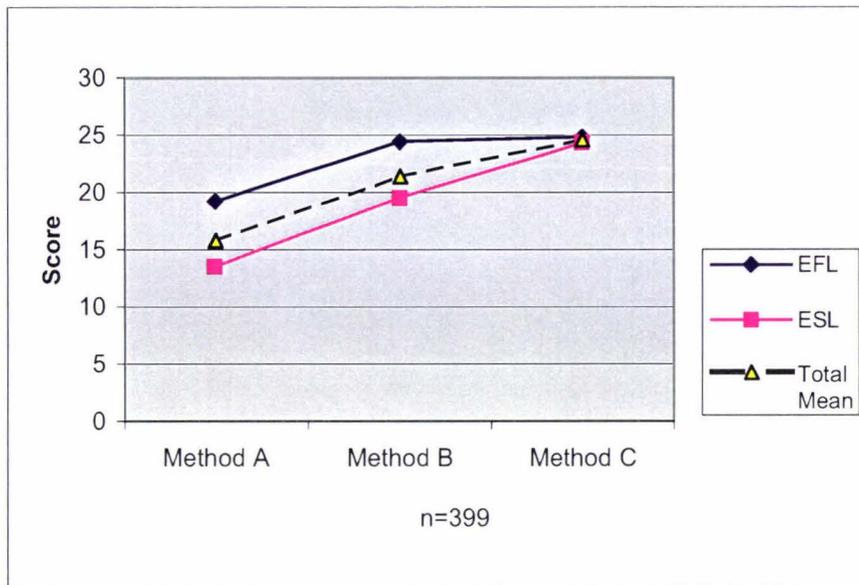


FIGURE 4
COMPARISON OF EFL AND ESL STUDENTS' PERFORMANCE
VIA THREE SCORING METHODS IN TEST TWO

Figure 4 shows the variation in the scores for EFL and ESL students on the second test. There was a slight tendency for EFL students to gain more in Methods B and C. Gains in scores of ESL students were significantly greater via Method C. Despite the fact that the average score of ESL students were lower than the average score of the entire population, ESL students' performance by means of Method B and C greatly improved.

Figure 4 shows a range of mean scores via three different scoring methods of both EFL and ESL students indicating the following trends:

There is a widening gap between the inferential ability of EFL and ESL students when using the exact word scoring method (Method A). It may be implied that a three month university education does not help EFL and ESL to reduce inferential gaps.

The inferential gap is also widened when employing Method B, the semantically and syntactically acceptable scoring method between EFL and ESL students despite the fact their mean scores via Method B were both comparatively increased than their mean scores in their first test.

However, an interesting fact is that ESL students' inferential ability, when assessed by Method C, is almost the same as their EFL peers. There is hardly any gap. Probably due to the large number of the participants, this is still statistically significant ($p < .001$). ESL students were able to use their limited knowledge and found the appropriate information to infer the words as well as their EFL counterparts. The detailed analysis of this finding will be presented in the next chapter.

Having analysed the general picture of EFL and ESL students' inferential ability in tests one and two, it is now necessary to further investigate the inferential level of EFL and ESL students separately according to their first language, as this may help us to trace the sources of factors that would affect inferential ability.

Results by First Language

English as First Language (EFL)

TABLE 9
T-TESTS FOR THE COMPARISON OF EFL STUDENTS'
PERFORMANCE IN TESTS ONE & TWO

	Method A	Method B	Method C
Test One (n=503)	13.6	23.1	24.3
Test Two (n=399)	19.3	24.5	24.9
Difference between means	5.7*	1.4*	0.6*
Percentages of improvement	23%	6%	3%

*stat. sig. p.< .0001

NB: cell counts above refer to score out of a possible 25

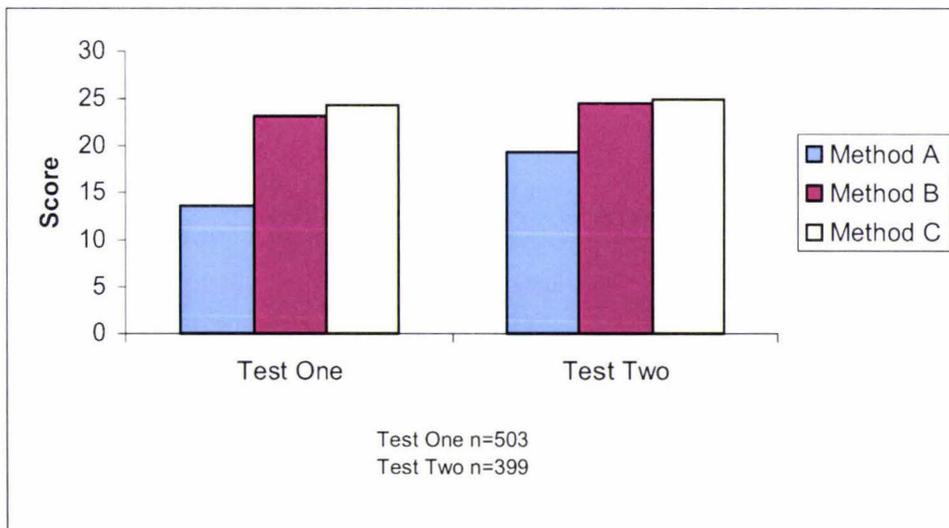


FIGURE 5
COMPARISON OF EFL STUDENTS'
PERFORMANCE IN TESTS ONE & TWO

Three separate t-tests were conducted for Methods A, B, and C to see if the increased mean scores at test two were significant. Table 9 and Figure 5 show a range of mean scores of EFL students via methods A, B and C. It was felt that

as there was not much change via method C from test one or test two, this may be due to the fact that as long as students could comprehend a passage as a whole, they would infer the words of similar meaning and they may not have been concerned if the word inserted made a good or bad grammatical sentence. This lack of precision by students with English as their first language could be due to their focus on meaning when reading, or weak literacy skills.

Students with English as their first language also found it quite easy to enter semantically correct words as shown by the mean scores of 23.1 and 24.5 (out of 25) on both test one and test two. This is probably because even native speakers of English can sometimes have difficulty inferring the exact word used by the author but can use synonyms that appear to make sense and keep a good grammar standard.

The most relevant trend indicated by Table 9 and Figure 5 is the considerable increase between the scores on test one and two for using method A. There is an increase from a mean score of 13.6 in the first test to the mean score of 19.3 in the second test, a mean difference of 5.9 (24%) improvement. This implies that after a period of formal education, the students' inferential ability of figuring out the exact word the author employed in the original passage was improved. T-tests show the increases in score were highly significant at less than $p < .001$.

In this section, we have looked at the mean scores of EFL students in test one and test two via three scoring methods. The next section will continue in a similar vein to analyse the comparison of the mean scores of EFL and ESL students via three scoring methods and their related implications.

English as Second Language (ESL)

The present level of the inferential ability of ESL students in test one and two via three different scoring methods.

TABLE 10
T-TESTS FOR THE COMPARISON OF ESL STUDENTS'
PERFORMANCE IN TESTS ONE & TWO

	Method A	Method B	Method C
Test One mean score	8.9	19.1	23.5
Test Two mean score	13.6	19.6	24.5
Difference between means	4.7*	0.5*	1.0*
Percentages of improvement	18%	2%	5%

*stat.sig. at $p < .001$

NB: cell counts above refer to score out of a possible 25

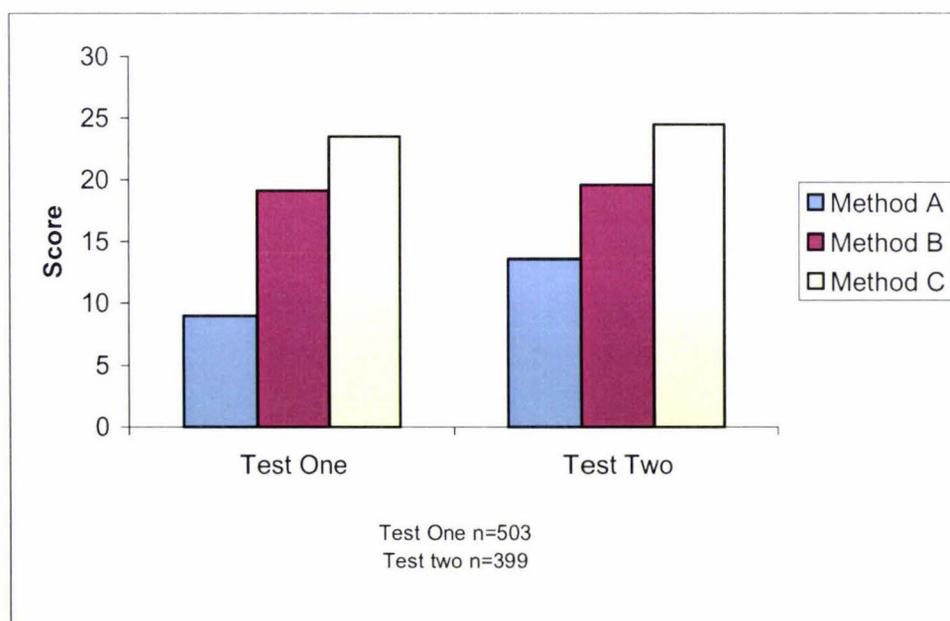


FIGURE 6
COMPARISON OF ESL STUDENTS'
PERFORMANCE IN TESTS ONE & TWO

This section shows a comparison of the ESL students' performance via three scoring methods in test one and test two. Three separate t-tests were conducted with ESL students across three scoring methods.

From Table 10 and Figure 6, the following trends could be found :

The range of mean scores are from 8.9, 19.1, 23.5 via three methods respectively in test one to 13.6, 19.6, 24.5 via three scoring methods in test two, demonstrating that the average inferential ability of the ESL students is lower than that of the entire study sample either in test one and test two. It will be argued in the following chapter that this is probably due to the difference in their first language and previous educational background and their communication abilities compared with their EFL counterparts.

The mean score via method A rose from 9.0 in test one to 13.6 in test two. There is a significant change ($p < .001$) between these two tests. This implies that after a period of three months study in a foreign tertiary institution, the ability of foreign students' ability to infer the exact word the author used was improved. The improvement of ESL students in test two via Method A brings them to the level of their EFL counterparts on the first test.

However, there is not much difference when the tests are scored via Methods B and C. Via Method B, the mean score rose from 19.1 on the first test to the mean score of 19.6 on the second test. Via Method C, the mean score of test one is 23.5 and 24.5 in the second test. On the other hand, this implies that ESL students had difficulty in inferring the exact word used by the author but still could infer words of similar meaning and keep a reasonably good grammar standard. It is even easier for them to infer a word that fits the meaning of the passage but which has not the correct part of speech. A brief analysis and comparison of English and Chinese grammar is found in the following chapter.

However, mean scores via Methods B and C showed a much lower increase (2% and 5% respectively). This means that for ESL students, the three months'

study has had much more effect on inference of exact words than on the inference of synonyms or ungrammatical approximations.

The above sections provide an analytical comparison of the inferential gap of the entire study sample and groups of participants divided by their first language. This information is useful in highlighting areas where improvement is possible in inferential level among EFL and ESL students. The following section will present the results of the two cloze tests by employing three different scoring methods. This technique could provide a more detailed analysis of the inferential gap between EFL and ESL students.

Results by Methods

Cross tabulations were used as a means of plotting the relationship between the inferential gap and perceived level of education, and first language and existing pool of knowledge.

Method A

(Inferred words are the exact ones used by text’s author)

Inferential ability of EFL and ESL students in tests one and two via Method A

TABLE 11
T-TESTS FOR THE COMPARISON OF THE
PERFORMANCE VIA METHOD A

	whole sample	EFL	ESL
Test One mean score	10.6	13.6	8.9
Test Two mean score	15.8	19.3	13.6
Difference between means	5.2*	5.7*	4.7*
Percentage of improvement	21%	23%	18%

*sta.sig at p<.001

NB: cell counts above refer to score out of a possible 25

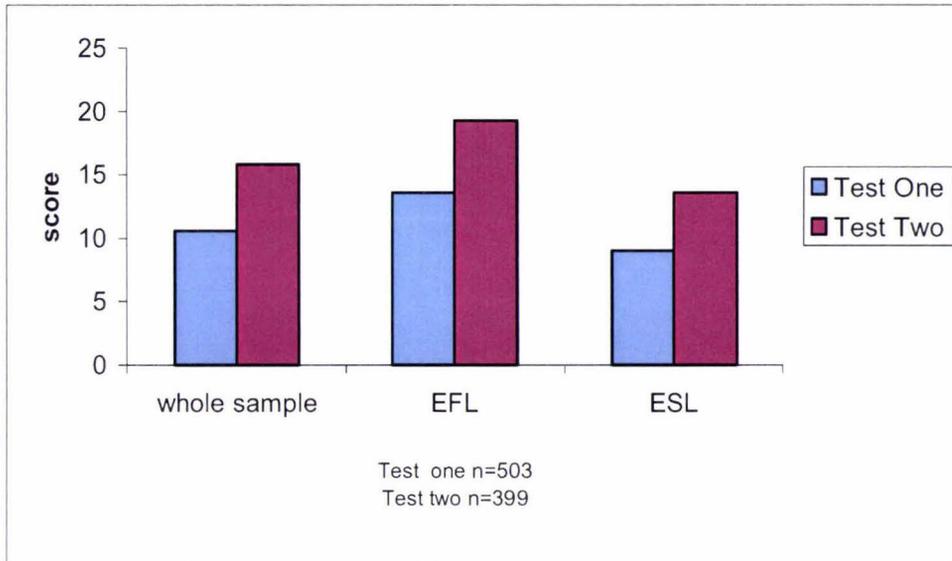


FIGURE 7
COMPARISON OF THE PERFORMANCE VIA METHOD A

Three separate t-tests were conducted across Method A.

As demonstrated in Table 11 and Figure 7, there is a gap for the three groups of students, (the entire study sample, EFL and ESL students), where for the entire sample, the mean score of test is 10.6 and rose to 15.8, demonstrating both a significant gap between the first test and second test, that the entire study sample had difficulty inferring the exact word used by the author.

The EFL students' mean score is higher than both the mean score of the entire population and that of ESL students, which is probably due to their English language background. Via Method A, the ESL students' inferential ability is lower than that of the entire population, also presumably due to their language background.

Figure 7 also shows the large differences that exist within the sample population when the cloze tests are scored with the strictest criterion, Method A. These differences exist on both tests one and two and in fact the difference in achievement between EFL and ESL students via Method A actually increases at test two. The mean score of EFL students improves by 22.8%, in

comparison to 18.4 for ESL students. The more limited English word knowledge of ESL students is likely to reduce their ability to infer a specific word, as is their less practised use of English grammatical structures which means function words could also be wrong.

The improvement that both groups made on test two implies that university study, including listening, reading, writing, formal discussion and informal conversation all have an impact on students' knowledge so that they develop more exact inferential abilities.

Method B

(Inferred words are semantically and syntactically acceptable)

TABLE 12
T-TESTS FOR THE COMPARISON OF
PERFORMANCE VIA METHOD B

	whole sample	EFL	ESL
Test One mean score	20.5	23.1	19.1
Test Two mean score	21.4	24.5	19.6
Difference between means	0.9*	1.4*	0.5*
Percentage of improvement	4%	6%	2%

*sta.sig.at $p < .001$

NB: cell counts above refer to score out of a possible 25

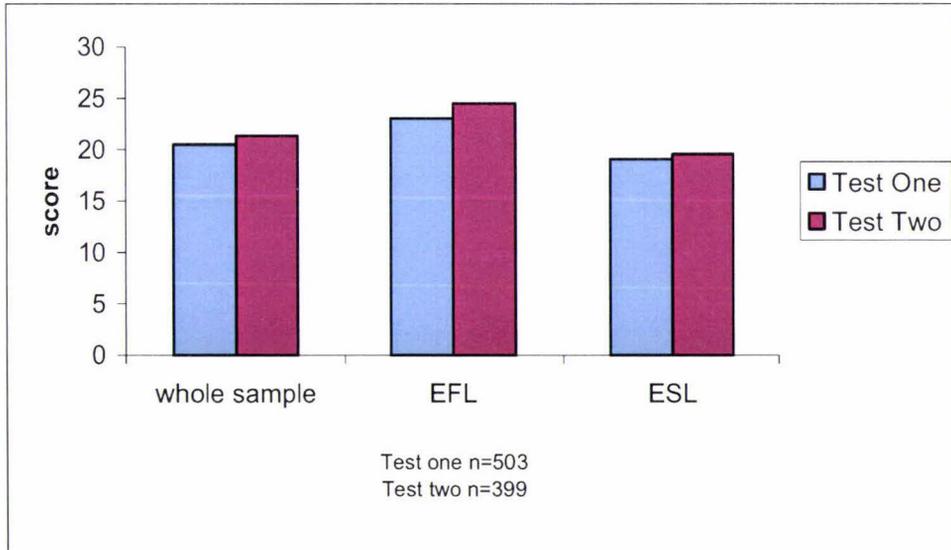


FIGURE 8
COMPARISON OF THE PERFORMANCE VIA METHOD B

Three separate t-tests were conducted across tests one and two and EFL and ESL students to assess the significance of the difference between mean scores. Table 12 shows the data of both the whole sample and the EFL and ESL

groups. For each there is a small but significant mean difference. In particular, the greatest mean difference was for EFL students with a mean difference of 1.4 between their scores on tests one and two.

On the other hand, the ESL students' mean difference was only 0.5. Small as it is, this indicates that ESL students employ their inferential ability to infer accurate vocabulary with an accuracy of nearly 80% in test two. However, the small improvement at test two shows that even at the end of the semester, their level had not reached the level of EFL students. EFL students were already good at using inference to infer and insert grammatically correct synonyms. Their score, after twelve weeks of university study, shows an increase to a mean score of 98.6%. This implies that university education and their expanded pool of knowledge both play a part in their increased inferential ability.

Method C

(Inferred words are semantically acceptable but syntactically unacceptable)

TABLE 13
T-TESTS FOR THE COMPARISON OF
PERFORMANCE VIA METHOD C

	whole sample	EFL	ESL
Test One mean score	23.7	24.3	23.5
Test Two mean score	24.6	24.9	24.5
Difference between means	0.9*	0.6*	1.0*
Percentage of improvement	3%	3%	4%

*sta.sig.at p<.001

NB: cell counts above refer to score out of a possible 25

When the tests were scored using method C, which meant that the words inserted could be the exact word, a synonym or forms of the right word or synonyms that were not grammatically right, all students scored much higher. EFL students at test one already scored 97.2% and made a small but

significant gain during the three months. Under the method C scoring, ESL students scored much higher than method A and B, but still scored a little lower than EFL students. The statistically significant difference, however, may be an artefact of sample size. If ESL students are using their inferential ability to insert a word of correct meaning, Their limited knowledge of grammar etc., on the other hand, implies that they cannot always find the grammatically accurate form of the English word.

Despite this, ESL students made a larger improvement than EFL students via this scoring method showing their inference of meaning from English test was improving as they did university study but their knowledge gap of English was still impeding their ability.

The following chapter will present a detailed discussion based upon the empirical results in this chapter and reach some conclusions.

CHAPTER FIVE:

DISCUSSION AND CONCLUSIONS

This chapter will explore the results of the present study with regard to the literature previously examined. In the first section of this chapter, the participants' educational background, existing pool of knowledge and interpersonal communication abilities will be examined with reference to the knowledge gap hypothesis and other knowledge gap research.

The second section of this chapter will compare the inferential ability of EFL and ESL students and the relevant implications of the inferential gap between them.

This chapter will then address what may have been other possible factors and sources of difficulty that could affect the inferential ability and the possible ways that might be useful to help students to access information to support their inferential ability.

The following section will discuss the knowledge gap hypothesis and employ the data of the present study to examine the notion by Sligo and William (2002) that there is an ambiguity in the literature of the knowledge gap and what some researchers call knowledge gap may actually be an amalgam of knowledge, comprehension and inference. This section will attempt to explore whether what experts call the knowledge gaps may be more evident in people's inferential ability than in their possession of knowledge as such.

The last section will present the conclusions of the present study and summarise the limitations of the present study and directions for future research.

Knowledge Gap Implications

As previously stated, the purpose of this study is to explore if there is an inferential gap between EFL and ESL and to assess if distinctions appear in students' access to information to support their inference making, and if so, to explore the implications of this. Former exploration of the existence of knowledge gaps had involved determination of educational attainment, the existing pool of knowledge and the interpersonal communication abilities of the participants involved in an educational setting. Those participants with a higher education, a sound pool of existing knowledge and better communication abilities would be in an advantageous position within the educational environment.

If EFL and ESL students' performance in the two cloze tests is examined in the light of Tichenor, Donohue and Olien's (1970) original knowledge gap hypothesis, it is interesting to note the three factors which the theorists identify as contributing to widening knowledge gaps are relevant to the present study. The first factor that is related to knowledge is education. Education is argued to produce more sophisticated communication abilities, which in turn helps people process information more thoroughly and effectively. Second, the existing pool of knowledge affects the way people access information from their own knowledge and information from various other sources. Third, the interpersonal communication skills of a person will affect the amount of knowledge held by both EFL and ESL students. In the present study, while these factors influenced the amount of knowledge of both EFL and ESL students possessed, they were not necessarily related to SES factors.

However, it is too early to say whether the gaps produced by these factors comprise a knowledge gap or a mixture of knowledge, comprehension or inference gaps. The results from the previous chapter seem to suggest the latter, at least to the extent that the present study was designed in such a way as to test people's ability to infer, rather than their knowledge. In the following

sections, the results and the data of the present study will be discussed section by section.

The Inferential Gap between EFL and ESL Students

The present study found that:

- 1) In both test one and test two, there is a gap between the EFL students and ESL students when they were assessed by Methods A and B;
- 2) The average level of ESL students is lower than that of the entire study sample in both test one and two when assessed via Methods A and B.
- 3) EFL students' inferential level is higher than that of the entire study sample and that of ESL students when assessed via Methods A and B;
- 4) When assessed via Method C, there is nearly no gap between EFL and ESL students in both test one and two.

It could be argued that the education EFL and ESL students received is different, given that the EFL students at Massey University were mainly raised in New Zealand, while most current ESL students at Massey University were born in China. Differences such as these in education and culture may produce different communication abilities across groups.

It is also assumed that because of the differences in early childhood experiences, in education and related communication abilities, EFL students have stronger communication abilities in English than their ESL counterparts. Reading as a part of communication requires a reader to process the information in a written form. The ability to access and information to support their inferential ability in the reading process is considered a very important component of successful reading comprehension. (Barnes, Dennis & Haefele-Kalvaitis, 1996).

The most interesting finding concerns the differences in mean scores. Table 8 shows the variation in the mean scores for EFL and ESL students according to three scoring methods. When employing the exact word scoring method (Method A) and the semantically and syntactically acceptable scoring method (Method B), a gap occurs between the EFL and ESL students. Although there is improvement of different extents for both groups in their second test, there is still a gap between the EFL and ESL students.

Because the education that EFL and ESL students have received is different, their different educational background brings them different abilities of communication and processing information. This in turn affects their inferential ability. Barnes et al. (1996) stated that inferential ability as part of reading comprehension process largely depends on readers' ability to process information from various sources and integrate information from the text and a reader's prior knowledge. With more experiences in reading English and the knowledge of the English language, plus their being more familiar with the English sentence structure, the EFL students scored significantly higher.

The largest inferential gaps via methods A and B suggests that because of the difference of fundamental education, and their different first language, when students are put in the communication process, (completing the cloze tasks in this case), they have different performance. This was reinforced by the results of other studies. This advantage of EFL students over ESL students was similar to that found by Chihara et al. (1997). As previously discussed in the literature review, they also used the cloze technique to compare the comprehension ability of students with differing ability in English. Their results found that because of the different fundamental education their participants produced different language proficiency and different abilities to infer the words of the cloze tasks.

In contrast to the present study, the instance we discussed in the literature review is another study which used cloze test as a technique is that of Kobayashi (2002a). Her participants were slightly younger than the average of the present participants. They had completed at least six years English

instruction at secondary school, and they were fairly homogeneous in their social and educational backgrounds. Their English proficiency differed, however, and she also found considerable gaps similar to the performance of our participants via methods A and B. Our results are similar to hers when employing methods A and B. In her research, she found that the lower the English proficiency, the fewer words they could infer and even though there was improvement over time the gap between proficient English readers and less proficient readers was revealed in the cloze task.

This was reinforced by the result in the second test of the present study. After an interval of twelve weeks tertiary education, both EFL and ESL students made significant progress in getting higher scores, compared with their first test. The average score of the EFL students rose from 13.6 in test one to 19.3 in test two and ESL students' average score rose from 8.9 in test one to 13.6 in test two by using method A. Via method B, the average score of EFL students rose from 23.1 in the first test to the mean score of 24.5 in the second test. Similarly, the ESL students' average score via Method B rose from 19.1 in test one to 19.6 in test two. The better performance that both EFL and ESL students demonstrated via method A and B may partly be due to the education they received in the intervening twelve weeks. However, their inferential gap widened in the second test via both Method A and B, with EFL students able to improve their performance more following their twelve weeks. This result seems to support the underlying principle of the knowledge gap hypothesis that education disproportionately benefits those who know more, relative to those who know less.

In a study designed to investigate why education can widen gaps rather than narrow them, Hyman, Wright and Reed (1975) proposed that "the process of education creates an enduring receptivity to knowledge which gives highly educated individuals the capacity to respond to and assimilate incoming information" (p.56). Therefore, education is considered to be a very important factor that influences knowledge gaps. In a more recent study, Griffin (1990) explicitly stated that "education can be said to influence the rate of knowledge gain since it is associated with better comprehension, retention and

communication capabilities, higher levels of previously stored knowledge, and increased numbers of relevant social contacts” (p.555). The results of the present study appear to support the above-mentioned authors, simply because EFL students were more capable of processing information to support their inference making as far as education is concerned.

Inferential Gap and Its Implications

Based on the earlier analysis the following conclusions can be drawn:

- Significant (positive) relationships exist between levels of inference making in the first and second tests and a person’s first language
- Distinct patterns relating the size of the inferential gap and first language were found via Methods A and B
- Distinct patterns relating the inference making of EFL and ESL students were formed via Method C

Both the correlations and the cross tabulations were used to plot the relationships between the variables indicated that some form of relationship exists between inferential gap and first language. It is, however, appropriate to focus in some detail on the findings which relate to the size and positioning of the inferential gap, as these characteristics were the central focus of the research.

The size of the inferential gap has been measured in several ways in the current research: first, by the exact word score (Method A), second, by the semantically and syntactically acceptable score (Method B), third, by the semantically acceptable but syntactically unacceptable (Method C). Use of the mean allows superficial analysis of the gap to be made but for the purpose of this research, it was important to identify certain characteristics associated with the gap. This required that actual response scores be discussed. A person’s first language was more clearly associated with those gaps which had

a discrepancy of good meaning, bad grammar. Patterns of association were much clearer. The results via methods A and B show a gap between EFL and ESL students, but this is not the case via the third method. The performance of EFL and students via method A and B is consistent with Kobayashi's (2002a) result via the first two scoring methods but not the third scoring method.

In summary, we have seen that at the very least, relationships do exist between inferential ability and a person's first language. Further analysis would be needed before any further conclusions can be drawn.

Via Method C, in both test one and two, there is hardly any gap between EFL and ESL students, the average score of EFL students being 24.3 and 24.9 in tests one and two, and for ESL 23.5 and 24.5 in tests one and two. This is here argued to support what Sligo and Williams (2002) stated as an amalgam of knowledge and inference. Analysis of the data suggests that ESL students' existing knowledge and communication abilities are not as good as their EFL counterparts, but their competent performance via method C implies that they are inferring the meaning correctly, though their grammar and discourse knowledge is not as good as their EFL counterparts. What they can do is to access the information from inside the passage and outside it to infer the words that make sense in the passage despite grammatical mistakes. Whereas the gap between EFL and ESL students widened via Methods A and B, via Method C, it narrowed. However, given the very small nature of such changes, and the large sample size, not too much can be made of this finding. One contribution of the present study is that it can pinpoint areas where gaps in inference occur, which may help to add a perspective to the theory of the knowledge gap hypothesis.

Barriers to Obtaining Information to Support Inference

Successful inference making ability depends on several factors other than an individual's first language. The following discussion will explore the possible barriers that hinder EFL and ESL students making the correct inference.

To successfully complete a cloze task requires a reader to have many skills. As earlier suggested, the inferential gap between EFL and ESL students shows both their difference in inference making and underlying differences in perspectives. Because the fundamental education they each received is different, so is their existing pool of knowledge. Two factors are of special importance. First, knowledge of the context as a whole works as a constraint for interpreting the sentences in a text. Second, knowledge about specific facts, and knowledge about how things usually turn out to be, is normally used to fill in many details that do not figure explicitly in the text (Alderson & Urquhart, 1983).

As previously suggested in the literature review, to construct a coherent representation, the reader must interpret each element of the text and identify meaningful connections to other elements in the text and in semantic knowledge. The resulting representation consists of nodes, which capture the semantic relations between in or related to text, and connections, which capture the semantic relations between two elements. Together these nodes and connections form a network. The more interconnected the representation, the more coherent it is (Kobayashi, 2002a, b).

Another important factor is the vocabulary knowledge. When employing Methods A and B, the tests require the reader to have a large amount of vocabulary knowledge to support their inference making. Because of the education and first language difference, we can confidently say that EFL students possess much more vocabulary knowledge than ESL students. Vocabulary knowledge has similarly come to be recognized as a critical feature of reading ability (Nagy et al., 1985; Stanovich, 1986; Strother & Ulijn, 1987). In first language reading, researchers have estimated recognition vocabularies of fluent readers to range from 10,000 words to 100,000 words (Anderson & Freebody, 1981; Chall, 1987; Nagy et al., 1985). Vocabulary discussions in second language reading argue for far lower total numbers of words, often positing 2,000 to 7,000 words (Coady, 1983; Kyongho & Nation, 1989). The need to read fluently, in a manner similar to good EFL reader, would seem to require a knowledge of vocabulary more in line with the larger estimates for

first language readers (Beck, McKeown, & Omanson, 1984, 1987; Goulden, Nation, & Read, 1990). The consequence of these arguments is that fluent readers need a sound knowledge of language structure and a large recognition of vocabulary.

Besides the vocabulary knowledge, EFL students' knowledge of grammar is different than that of ESL students. Because of the fundamental education of EFL students, they have formed a more sound understanding of English grammar than ESL students. Kavan and Wilkinson (2003) discuss the differences between the structures of English and Chinese languages. They note that Li (2003) describes Chinese as a pragmatic language because it has no unnecessary grammar rules and no plurals, articles or tenses. Instead these are derived from the context by the reader. Other differences are that English is noun prominent with many verbal nouns being used in academic English, whereas Chinese is verb prominent. They cite Li's (2003) example of "*I won't participate in the negotiate,*" to show how verbs and nouns are often the same in Chinese (p.3). A third difference is the order of words in the sentence. English sentences follow SVO order subject-verb-object order, while Chinese sentences follow topic command order.

Another difference is the knowledge of formal discourse. The inferential gap between EFL and ESL students suggests that they have different knowledge of discourse structure. It can be argued that readers need a good knowledge of formal discourse structure (formal schemata). There is considerable evidence that knowing how a text is organized influences the comprehension of the text. For example, good readers appear to make better use of text organization than do poor readers, write better recalls by recognizing and using the same organizational structure as the text studied, and, generally recall information better from certain types of text organization such as comparison-contrast (Nist & Mealey, 1991; Richgels, McGee, Lomax, & Sheard, 1987). This might be another of ESL students' obstacles in inferential process.

In both EFL and ESL contexts, formal and content knowledge play important if somewhat different roles in reading comprehension. One major obstacle is

the content and background knowledge (content schemata) as this has a major influence on inference making. A large body of literature has argued that prior knowledge of text-related information strongly affects inferential ability (Anderson & Pearson, 1984; Bransford, Stein, & Shelton, 1984; Kintsch & van Dijk, 1978). The ESL students unsatisfactory performance via Methods A and B in both tests might suggest that ESL students have less content and background knowledge to support their inference making process. However, further studies need to be conducted to test this notion.

On the other hand, available knowledge stored in memory does not necessarily guarantee that readers will access such knowledge to generate necessary inferences to support their comprehension of the text. Ackerman and colleagues (1990) found that when readers can get the access of an object concept in sentences before an outcome sentence is a very important factor determining whether the children can generate an inference about that object. McKoon and Ratcliff (1989, 1992) conducted two experiments on adult readers. Their experiments proved that when information from a text is easily accessible and readers can retrieve it within a short period of time, readers can generate inferences automatically, particularly elaborative inferences to enhance the adequate comprehension of the text. When readers use their general knowledge to make inferences, the knowledge the reader possesses is not from the text but from the semantic memory of the readers. If readers apply the same principle to make inferences with the same principle as to make use of the text-based knowledge to make inferences. Based upon the findings of the present research, it is hard to say whether this is true in the inferential process of EFL and ESL students in the present study, further studies need to be done to produce more understanding of this.

The present research also directs us to another perspective of inference making research, cross-cultural communication and inference making. Hetch et al. (1992) developed a model of cross-cultural communication where specific ethnic groups are identified, their communication issues are identified and conversational improvement strategies are developed to promote communication satisfaction. This is of potential relevance to this study,

because it emphasises the importance of actually allowing ethnic groups to specify their communication needs in their cultural context.

The alternative models of the knowledge gaps presented by Dervin (1980, 1989) and Chatman (1996) are also relevant when applied to inference. Dervin argued that the only way for lower SES or the information poor to overcome poor information access is to become “culturally homogenized” to reach the communication fast lane. However, when dealing with the topic of inference making, the topic needs to be approached sensitively and with cultural understanding. EFL students live in western civilization and cultural background and most ESL students live in Chinese culture background. These cultural backgrounds offer people different concepts and different ways of approaching information.

A number of researchers have studied the factors that affect ESL students’ inference making ability. Studies by Fu (1995), Johnson (1982) and Spack (1997) shed light on ESL students’ situations and cause of their difficulties in their academic subject because of a) the influence of cultural and personal prior knowledge, b) the processes of education that students learned from their native home and c) linguistic characteristics.

Immense differences separate the cultural experiences and prior knowledge of EFL students and ESL students, probably associated with difficulty in understanding the content of a passage. Our present research supports that view of Tierney and Cunningham (1984) that “there is a causal relationship between background knowledge and comprehension” (p.612). Comprehension is completed through schemata, “an interaction of new information with old knowledge which is stored in an existing mental home” (Anderson & Pearson, 1984, 255).

Cultural background is one of the main factors in successful inference making (Tierney & Cunningham, 1984). One example of the effect of culturally different prior knowledge occurs when ESL students are involved in discussion about kiwi talk shows on rugby or cricket. These are part of kiwi

culture, but conversations about them are hard for Chinese students to comprehend. The students cannot connect these in their backgrounds. Similarly, New Zealand students find it hard to understand what is happening in the Chinese Peking Opera, even though it is an important part of the Chinese cultural heritage. The reason for this difficulty is that most New Zealand students do not have the appropriate schemata. This is just one example among many, highlighting the application of the cultural effect on inference making. Culture background is related to inability to make appropriate inferences. It is therefore difficult for ESL students to access information to make inferences.

Summary of Main Findings

This study set out to investigate the level of the inference making ability among the EFL and ESL students and the following is a summary of the main findings.

There was a significant difference ($p < .001$) in the inference scores from test one and two between EFL and ESL students via methods A and B.

The average inference level of ESL students was lower than that of the entire study sample and that of their EFL counterparts via three methods of scoring and in both tests one and two.

There was a significant difference ($p < .001$) in the inference scores of EFL and ESL students via method A in test one. In test two, the gap between EFL and ESL students got wider via method A.

There was a significant difference ($p < .001$) in the inference scores between EFL and ESL students via method B. However, in the test two, via the same method, the gap between EFL and ESL students also got wider.

Via method C, there is hardly any difference between EFL and ESL students in test one. In test two, there is even narrower gap between the EFL students and ESL students.

The Implications of the Findings

In the present study, the knowledge gap hypothesis was employed to find out if Tichenor et al.'s (1970) assumptions concerning information acquisition and use are relevant in exploring individuals' inferential ability. Overall, is there an inferential gap between EFL and ESL students? On the basis of the findings, the present study suggests that when scored precisely (Method A and B), EFL and ESL students' inferential ability are far apart. This seems to imply that EFL students' inferential ability is better than that of ESL students. However, when scored so that grammar is not a strict standard, the inferential ability of EFL and ESL students is very close.

The present study suggests that that because of the differences in childhood experience, in education and related communication abilities, EFL students have stronger communication abilities in English than the ESL group students when accessed via method A and B; however, when accessed by method C, the ESL students' inferential ability is relatively strong.

The interpersonal communication ability in English of the EFL group presumably helps them to initiate communication in English with others more easily, providing the opportunity to gain more knowledge in the process. In contrast, because of the interpersonal communication ability in English of the ESL group, they are less able to initiate communication in English with other people such as lecturers or tutors.

Tichenor, Donohue and Olien's (1970) research explored the estimates by respondents from the educational level of college, high school and grade school as to when there was likely to be a live landing on the moon. Tichenor, Donohue and Olien characterize this as a knowledge gap. However, Sligo and Williams (2002) have argued that this seems to be more of an inferential gap

rather than knowledge gap. In their review, the success of the respondents of college level and high school level seemed to stem from a better command of available information and better ability to infer what is unstated from the existing information. They find it difficult to see this as a knowledge gap as such, simply because the better-educated respondents could not “know” the date of the first landing on the moon better than their less- educated counterparts. They argue that the reason for the better-educated respondents’ higher achievement is because they possess the ability to explore the existing pool of information and evaluate its importance, and are able to infer a probability from the existing information. The findings of the present study tend to support Sligo and Williams’ (2002) view of the need to research “gaps” in people’s inferential ability.

Another outcome of the present study is some insight into relative abilities of EFL and ESL students. Via methods A and B, EFL students are better than ESL students in inference making. But when we score by method C (where grammar is not a problem), EFL and ESL scores are very close, demonstrating EFL and ESL are both inferring well. So it might therefore be contended that, given their disparity in knowledge of English, ESL students are better at inference than EFL students, given the closeness of the results via method C, and given the lower language base from which the ESL students have to operate. If this assumption is correct, it is very positive for learning of ESL students.

Also the study scoring by Method C gave different results from Kobayashi (2002a) whose lower level proficiency students had significantly weaker results than their higher level proficiency students. This may suggest that ESL students in our present study have a strong ability to infer.

One practical implication of this research for teachers of ESL students is that to enhance their inference making, it is necessary to provide the students with a passage of adequate length so that it provides sufficient details for inference generation. A successful experience at making appropriate inference at the start should be fundamental in the later learning of more difficult tasks.

Limitations of the Study and the Future Directions

The present study had a number of limitations. They include: the number of cloze items, the framework for item categorization such as content word and function word. This prompts the following suggestions for future research.

Replication studies are needed in greater number of cloze items, involving longer texts or more texts. Studies that employ relevant statistical analyses will also be useful in further determining the effects of scoring methods on the test performance of learners at different proficiency levels.

Further studies concerning learners of different first languages and of a wider range of English language proficiency may reveal different effects on cloze performance and the nature of cloze items.

The present study employed only first year business students using narrative texts. Therefore, generalization to other students should be approached with care. Further studies can improve the generalizability by using different student samples and including students of various majors, different types of texts and a variety of learning contexts.

Also, a larger sample including graduate and postgraduate students could be used, so as to increase the generalizability to people of different ages, and to observe for age differences in the development of cognitive ability.

Even though the present study was only exploratory in nature, its findings contribute to an understanding of how cloze items may be employed in the context of studies of inference.

This original and exploratory study sought to gain an understanding of the inferential ability of first year business students of Massey University. It provides a useful frame from which to examine and explore how EFL and ESL students access information to support their inference making. The knowledge gap hypothesis was found to be relevant as a backdrop to the present research.

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APPENDICES

1. Information Sheet for Test One

The purpose of this Master of Management survey is to assess how well your education and training to date have equipped you to infer missing content from a passage of written language. This survey is not an assessment of your individual abilities as all responses will be aggregated, and individual results are strictly confidential. Completion of the questionnaire implies consent. The results from this activity will not in any way affect your grades in this or any other course. However, while completion of this exercise is voluntary, your participation in this activity will be very helpful in aiding us to focus the teaching and learning materials more successfully on student needs.

Please take no more than 15 minutes to finish this survey and return it to the researchers. All the questionnaires will be collected and stored in a locked cabinet in the College of Business and will be disposed after the research by a nominated person in the College of Business, Massey University. The summary of the project findings can be provided when the research is finished. If you have any questions about this activity, you are welcome to contact Associate Professor Frank Sligo or Dr. Margie Comrie, College of Business, who will be able to provide further details of it to you.

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2. Cloze Passage for Test One

In the following passage (Kobayashi, 2002a), every 13th word has been deleted. Please fill in each gap with what you think the missing word may be. (All spaces are the same length, regardless of the length of the missing word.) If you are not sure what is the missing word, feel free to guess – there are, of course, no penalties for guessing!

The industrialised countries between them possess 78% of all existing wealth. This means that the _____ countries, which are usually called 'Third World', have about 22% of _____ wealth, even though their population is about 76% of the world's total. _____ rich industrialised countries give aid to poorer Third World countries. However, this _____ sometimes does more harm than good. This is because Western aid _____ are importing Western technology into the poorer countries. This has brought _____ two problems.

The first is that these Third World countries become dependent on _____ richer countries – they need them more and more. For example, a Third _____ country may be given expensive tractors. When the tractors go wrong, they _____ require skilled mechanics or expensive spare parts. Either way, the poor country _____ to pay money to the richer country.

Secondly, this kind of help _____ largely been based in cities, making life there more attractive. _____ people leave the countryside and move to the cities. As a result _____ have become overcrowded and there are all sorts of problems, from housing _____ to poor health facilities. At the same time the countryside becomes empty, _____ the country can no longer produce enough food for its people.

One _____ to these problems might be to encourage a different kind of technology. _____ technology should be based on what local people really need, and not _____ what people from outside think they need. It should be easy to _____, and it should help people in the countryside as well as the _____. Some countries are already using this kind of technology. Western aid organisations _____ teaching local people how to build simple machines using cheap, easily available _____ which can easily be replaced. They use these machines on their farms, _____ no longer need to go to the cities to get rich.

In _____ way, they learn to become independent of the West and Western technology. _____ the Chinese say: 'Give a man a fish and feed him for a day. Teach him how to fish and he'll feed himself for a lifetime.'

Your age _____

Your are male/female (circle one) Your first language is _____

If English is not your first language, it is your 2nd 3rd or other language (circle one)

Thank you for your help!

This project has been reviewed and approved by the Massey University Human Ethics Committee, PN Protocol 03/33. If you have any concerns about the conduct of this research, please contact Professor Sylvia V Rumball, Chair, Massey University Campus Human Ethics Committee: Palmerston North, telephone 06 350 5249, email S.V.Rumball@massey.ac.nz.

3. Information Sheet for Test Two

The purpose of this Master of Management survey is to assess how well your education and training to date have equipped you to infer missing content from a passage of written language. This survey is not an assessment of your individual abilities as all responses will be aggregated, and individual results are strictly confidential. Completion and the return of the questionnaire implies consent. You have the right to decline to answer any particular question. The results from this activity will not in any way affect your grades in this or any other course. However, while completion of this exercise is voluntary, your participation in this activity will be very helpful in aiding us to focus the teaching and learning materials more successfully on student needs.

Please take no more than 15 minutes to finish this survey and return it to the researchers. All the questionnaires will be collected and stored in a locked cabinet in the College of Business and will be disposed after the research by a nominated person in the College of Business, Massey University. The summary of the project findings can be provided when the research is finished. If you have any questions about this activity, you are welcome to contact Associate Professor Frank Sligo or Dr. Margie Comrie, College of Business, who will be able to provide further details of it to you.

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4. Cloze Passage for Test Two

In the following passage (Kobayashi, 2002b), every 13th word has been deleted. Please fill in each gap with what you think the missing word may be. (All spaces are the same length, regardless of the length of the missing word.) If you are not sure what is the missing word, feel free to guess – there are, of course, no penalties for guessing!

The industrialised countries between them possess 78% of all existing wealth. This means that the other countries, which are usually _____ the 'Third World', have about 22%, even though their population is _____ 76% of the world's total. Many rich industrialised countries give aid to poorer _____ World countries. The intention is simple- giving aid in this way should _____ the poorer countries to improve their situation. Of course they hope that _____ will no longer be necessary in the end, since the Third World _____ will have become able to look after themselves.

However, many people argue _____ much of the aid given to Third World Countries does more harm _____ good. One example of this is 'tied aid'. Money or machinery is _____ to a Third World country, but on certain conditions. These usually mean, _____ example, that the receiving country has to spend the money on what _____ produced in the giving country. As a result, the Third World Country _____ have to buy products it does not need, or at a higher _____.

At the same time Third World countries become dependent on industrialised countries. _____ need them more and more. For example, a Third World country may _____ given expensive tractors. Agricultural productivity may improve enormously, but when the tractors _____ wrong, they will require skilled mechanics or expensive spare parts. Either way, _____ poor country needs to pay money to the richer country to repair _____ tractors.

Moreover, most aid has been used in cities. This makes life _____ look more attractive, offering jobs that are highly paid and which are _____ not available in rural areas. So people leave the countryside and move to _____. As a result, the countryside becomes empty and the country can no _____ produce enough food for its people. At the same time, cities become _____ and there are all sorts of problems, from housing shortages to poor _____ facilities. Worse still, there may not be enough jobs for all the _____ who come to the cities hoping that they will become richer: many of them, in fact, become poorer than before.

Your age _____

Your are male/female (circle one) Your first language is _____

If English is not your first language, it is your 2nd 3rd or other language (circle one)

Thank you for your help!

This project has been reviewed and approved by the Massey University Human Ethics Committee, PN Protocol 03/110. If you have any concerns about the conduct of this research, please contact Professor Sylvia V Rumball, Chair, Massey University Campus Human Ethics Committee: Palmerston North, telephone 06 350 5249, email S.V.Rumball@massey.ac.nz.