CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter presents the review of literature relevant to the study. This study is concerned with answering the following research questions:

1. Do students of differing English proficiency levels perform differently in an Internet information gathering activity?
2. What are some of the possible factors that influenced their performance?

As such, the literature review will encompass a brief history and background of the Internet, language and the Internet, hypertext reading and hypermedia learning, learning styles and strategies and individual differences. The main constraint in the review of literature was the limited body of related journals and publications, particularly on language and information gathering via the Internet.

2.2 The Internet

In order to better understand the focus or aim of this study, it is imperative that one first understands the medium in question, that is, the Internet.

The term "internet" is derived from the phrase "interconnected networks". It is also known today as the Net, cyberspace, the information superhighway, the online community, the electronic library and the digital revolution. The Internet

was born out of two basic needs – defence and academic needs. The Internet is also referred to as the information superhighway, the Web, cyberspace or simply, the Net. It evolved from two major network projects in the United States – the ARPAnet in the 1960s and the NSFnet in the 1980s. The ARPAnet was developed by the US Defence Department with the main aim of linking several radio and satellite networks. It was essentially a defence department network. ARPAnet was first linked to the United Kingdom and Norway in 1973. The NSFnet linked up colleges and universities in the US and is considered the origin of the modern day version of the Internet.

Today, however, the Internet is a web of different computer networks that use fixed rules to send and receive information. It is part of an information highway which consists of thousands of interconnected logical networks linking millions of computers around the world together. It is, according to Singhal (1997), a "confederation of thousands of computers from various sectors of society such as education, business, government and the military".

Kiesler (1992) points out that the computer network enables people to freely create working relationships and groups to communicate across physical, temporal, social and organizational boundaries.

The Internet is a vast source of information, a virtual library which can be accessed at a click of a mouse to retrieve information. It is this particular aspect of the Internet – information retrieval or information gathering – that is being examined in this study.

2.3 Language and the Internet

Since this study concerns language proficiency and information gathering, it is also important to understand the link between language and the Internet. Language is essential for helping people to learn. And English is undeniably the language of science and technology. Since the Internet originated in the West, it is only logical that the main language used is English. Kaplan (1982) and McCrum et al. (1986) both note that 80 – 85% of all information stored in computerized databases in the world is either written in English or abstracted in English. Graddol (1997) cited in Warschauer (2002) estimated that English is used in approximately 50% of web sites whilst Cyberspeech (1996) noted that as of 1996, around 82% of web pages were in English. The statistics may differ and change from year to year but the fact remains that English is "the de facto lingua franca of online communication" (Warschauer, 2002).

Given the fact that English is the lingua franca of the Internet, in today's context, one's pursuit of knowledge and information can be seriously hampered by inadequate English proficiency. Mike (1996) agrees that using the Internet for information retrieval "may be problematic for students with low proficiency because the literacy demands of the Internet may simply be too high." Nevertheless, the Internet has long been recognized as a useful tool in education as a whole as well as for the teaching and learning of a language. Warschauer (2002) poses a very pertinent question: Is technology a tool for language learning, or is language learning a tool so that people can access technology? Answering this question is like trying to solve the "chicken or egg" dilemma. In

reality, both language and technology are inextricably linked in this day and age. Both are essential tools for individual and societal development.

The existence of the Internet has brought radical changes to the field of language learning. Learners can now improve on their language skills or even learn a completely new language via the Internet. Apart from merely being a source of information, the Internet allows language learners to enhance their language skills because it also serves as a means of communication.

The Internet is an excellent learning environment because it has an extensive collection of materials and contexts for meaningful learning. The Internet allows students to interact with language in numerous and novel ways (Kasper, 2002). Today, most educators recognize the tremendous potential of the Internet and, as such, there has been a shift from traditional classroom teaching to a learning environment which attempts to harness the resources of the Internet in order to optimize the teaching and learning process.

2.4 Hypertext Reading and Hypermedia Learning

The process of information gathering via the Internet naturally entails reading. Reading in a second language is considered to be a meaningful language learning activity, be it conventional reading or hypertext reading (De Ridder, 2002). The Internet, although it is a completely unique medium operating in a hypermedia environment, is an entity which is related to literacy simply because users interact with it mainly through reading and writing (Singhal, 1997). The literature about reading patterns that readers display during conventional text

reading is well documented and tremendously vast. Unfortunately, the same cannot be said for hypertext reading. Altun (2000) defines hypertext as text that is non-linear, electronic, multimedia, hypermedia and interactive in nature. Hypertext is presented in different forms accompanied by various other media such as video clips, sounds and pictures. Internet hypertext allows and encourages students to access a wide range of topics via the click of a mouse.

The reading process via electronic means is a relatively new domain for researchers to investigate further. And as it is a new medium, how readers approach it is still little understood and should be explored for better understanding of the process.

Mike (1996) notes that using the Internet has been shown to promote higher order thinking skills. Searching the Internet requires logic skills which help the user to scan, discard, evaluate and synthesise the vast body of information that is obtained. In other words, information gathering via the Internet is very much an avenue for students to practise their reading skills and strategies in a hypermedia environment.

Jonassen (1992) and Marchionini (1988) claim that knowledge representations via hypermedia are arguably closer to human associative and schema-based memory structures than text-based representations. In other words, the information that is presented via hypermedia are much more similar to the real-life experiences of the reader as opposed to knowledge presented via conventional text. This is because hypermedia is a medium which incorporates

the use of colour, animation, sound and videos to present the information in a way that is closer to reality.

A study conducted by Liu & Reed (1995) on the effect of hypermedia assisted instruction on second language learning concurred with that of Crosby & Stelovsky (1994) who found superior learning performance associated with hypermedia-based learning. As such, in learning environments in which students are expected to acquire information through hypermedia, their ability to structure and manage their own navigation is becoming a required skill. The beauty of the Internet is that as students use it, their computer and navigation skills as well as technical and conceptual experiences of using a computer will be enhanced.

2.4 Learning Styles and Strategies

Research in the area of language learning styles and strategies began in the 1960s. All language learners use language learning styles and strategies either consciously or unconsciously when processing new information and tasks. The same applies in an online environment where the learner must adopt certain strategies to face new and tremendously abundant input.

According to Keefe (1979, p. 4), learning styles are "cognitive, affective, and physiological traits that are relatively stable indicators of how learners perceive, interact with, and respond to the learning environment." Skehan (1991, p. 288) defines learning styles as "a general predisposition, voluntary or not, toward processing information in a particular way." Wenden and Rubin (1987) define

learner strategies as any groups of operations, steps, plans or routines the learner uses to obtain, store, retrieve, and use information.

Learning styles are affected by how learners internalize their environment. This internalizing process is not only cognitive but it also involves the physical and affective domains.

Ford and Chen (2000), in their study of individual differences, hypermedia navigation and learning, find that the user's learning style is linked to the adoption of different learning strategies, but neither learning quantity nor learning performance. In their study, they find that although differing learning styles lead to different learning or navigational strategies, no significant correlations exist between the learning styles and measure of learning outcome. Their findings echo a number of other studies of learning in hypermedia environments which have also found no significant differences in learning outcome between students who have differing learning styles (Liu & Reed, 1994).

2.6 Prior Experience

Activities carried out via the Internet are, to a large extent, governed by differences between the individuals involved. One of these differences is prior experience in dealing with computers and the Internet.

In carrying out a one-year web-based composition course in Japan, Trokeloshvili and Jost (1997) realized the fundamental importance of prior

experience which leads to computer competence. As most of their students had minimal experience with computers, their course was designed to incorporate a basic introduction to computers and the Internet.

Sufficient prior experience in using the Internet enables users to develop strategies for reading in hypermedia. Altun (2000), who conducted a case study on the patterns in cognitive processes and strategies in hypertext reading, finds that experienced users of the Internet tend to display a pattern of being able to control the outcome based on their prior knowledge and beliefs, which minimized disorientation and "getting lost in cyberspace".

Prior experience also leads to better performance in Internet-related tasks, as reported by Ford and Chen (2000) who conducted an empirical study in which students were asked to construct a homepage using a hypermedia programme. The researchers report that higher prior experience in using computers, the Internet and web page construction correlated with better performance in the task as well as more positive learning behaviour.

The body of research in the area of prior experience seems to point to the fact that the more experienced the user is, the more effectively he or she will be able to function in an online environment. Limited prior experience and Internet skills can lead to a lack of comprehension of the medium and an inability to use it to its fullest potential. Recognizing the importance of prior experience, Lee (2000) suggests that it is highly recommended that students be taught the necessary basic Internet concepts and skills before engaging in any online

activities. Teachers should observe the students to ensure that they are proficient in the necessary skills so that they will not be overwhelmed by the novelty of the medium and the abundance of information available at their fingertips.

2.7 Interface Design

When reading conventional paper documents, readers seek clarity and order. The same applies when one reads to obtain information from a web page. Web pages, however, have a distinct feature which sets it apart from paper documents. Readers of web pages do not merely read the information presented. They interact with it in novel ways that have no precedents in conventional paper documents. Users can interact in countless non-linear ways because web pages are hypertext-linked and multimedia in nature. Nevertheless, as Lee (2002) points out, interactivity, that is, being able to click on links which bring the user to a page with yet more links, can cause the user to suffer from "user disorientation".

Schroeder (1994) notes that the design and layout of a hypermedia page can contribute to disorientation and cognitive overload. Altun (2000) finds that context and personal interests are determining factors for experienced computer users to decide whether to continue reading the page or not. More links and choices provide flexibility to users to navigate for different purposes. However, it should be noted that personal interests play a role in choosing links to follow. Chun and Plass (1997) report that visual information present in hypermedia environments aids text comprehension by helping the reader to build a mental model of what is being read.

The design and layout of a web page has to create visual logic. In other words, there needs to be an optimal balance between visual sensation and graphic information. Well-designed web pages can simplify navigation, reduce user errors and enable users to take advantage of the information and features of the web site (Lynch and Horton, 2002). Carroll (1999) notes that people tend to apply prior knowledge of user interface to new situations. For example, most users will assume that blue underlined text represents a hyperlink and when it does not, they get frustrated because the rules do not apply.

In short, interface design can either have a positive or adverse effect on reading and understanding, two fundamental elements for information gathering via the Internet.

2.8 Conclusion

The literature related to the process of information gathering via the Internet is very limited at this point of time. Nevertheless, this chapter has presented a background for this study in terms of a review of the literature related to the process of information gathering via the Internet.