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EFFECTS OF THE INTERNET ON STUDENTS' READING COMPREHENSION IN
CLASSROOMS OF ENGLISH AS A FOREIGN LANGUAGE

DISSERTATION

BY

RAPEEPAT SO-IN

2552
BM 17

Presented in Partial Fulfillment of the Requirements for the

Doctor of Philosophy Degree in English

at Srinakharinwirot University

May 2009

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EFFECTS OF THE INTERNET ON STUDENTS' READING COMPREHENSION IN
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AN ABSTRACT

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Rapeepat So-in (2009). *Effects of the Internet on Students' Reading Comprehension in Classrooms of English as a Foreign Language*. Dissertation, Ph.D. (English).
Bangkok: Graduate School, Srinakharinwirot University. Dissertation
Committee: Dr. Saiwaroon Chumpavan, Dr. Sirinan Srinaowaratt, Assoc. Prof.
Dr. Tipa Thep-Ackrapong

The purpose of this study was to investigate the effects of the Internet as a supplementary resource on the students' reading comprehension. Three hypotheses were tested to see (a) if the posttest mean scores of the experimental group experiencing the Internet-based reading as a supplementary resource were significantly higher than those of the control group experiencing the book-based reading as a supplementary resource, (b) if the posttest mean scores of the students rating themselves as being highly proficient in computer knowledge were significantly higher than those students rating themselves as having low computer knowledge, and (c) if a positive relationship between the students' final grades in an English reading course and their posttest mean scores on the reading section of the Chulalongkorn University's Test of General English Proficiency (CU-TEP) existed. There were 51 students participating in this study. They were second year, non-English majors enrolled in an English reading course offered at Srinakharinwirot University in academic year 2006. Twenty one students were assigned into the experimental and thirty students were in the control. The two groups of students were treated for a semester. The CU-TEP was used as the pretest and posttest to measure students' reading performance. The *Students Demographic Survey* had been given to the students to collect their personal information and computer literacy after the pretest. The results revealed that the data derived from statistical analysis (ANCOVA) did not support the Hypotheses I and II. The students in the Internet group did not outperform the

students in the non-Internet group on the posttest, and no significant difference was found on the students rating themselves as having high computer knowledge and those students rating themselves as having low computer knowledge. On the Hypothesis III, an analysis of correlation coefficient indicated that there was a positive relationship between the final grades of both students in the experiment and control in the English reading course and their posttest mean scores on the reading section of the CU-TEP. Additionally, the findings from the *Students Demographic Survey* suggested that although most of the students in the experimental group thought they had not had enough benefits from the CALL environment in terms of vocabulary increase and retention, they and the students in the control group thought that learning through Internet could still help them in their language learning in general.

ผลของอินเทอร์เน็ตต่อการอ่านของนิสิต
ที่ใช้ภาษาอังกฤษเป็นภาษาต่างประเทศ

บทคัดย่อ
ของ
รพีพัฒน์ โสอินทร์

เสนอต่อบัณฑิตวิทยาลัย มหาวิทยาลัยศรีนครินทรวิโรฒ เพื่อเป็นส่วนหนึ่งของการศึกษา
ตามหลักสูตรปริญญาศิลปศาสตรบัณฑิต สาขาวิชาภาษาอังกฤษ
พฤษภาคม 2552

รพีพัฒน์ โสอินทร์ (2551). ผลของอินเทอร์เน็ตต่อการอ่านของนิสิตที่ใช้ภาษาอังกฤษเป็นภาษาต่างประเทศ ปริญญานิพนธ์. ศศ.ด. (ภาษาอังกฤษ). กรุงเทพฯ: บัณฑิตศึกษา มหาวิทยาลัย ศรีนครินทรวิโรฒ คณะกรรมการควบคุม: อาจารย์ ดร.สายวรุณ จำปาวัลย์ อาจารย์ ดร.ศิริพันธ์ ศรีเนาวรัตน์ รองศาสตราจารย์ ดร.ทิพา เทพอักษรพงศ์

การวิจัยครั้งนี้มีจุดมุ่งหมายเพื่อศึกษาผลของอินเทอร์เน็ตต่อการอ่านของนิสิตที่ใช้ภาษาอังกฤษเป็นภาษาต่างประเทศ การวิจัยนี้ได้ดำเนินการขึ้นโดยอาศัยพื้นฐานของข้อสมมติฐาน 3 ข้อ คือ 1) ผลสัมฤทธิ์ด้านการอ่านของกลุ่มนิสิตที่เรียนการอ่านโดยอาศัยอินเทอร์เน็ตเป็นแหล่งความรู้เสริมมีประสิทธิภาพมากกว่าผลสัมฤทธิ์ด้านการอ่านของกลุ่มนิสิตที่เรียนการอ่านโดยไม่อาศัยอินเทอร์เน็ตเป็นแหล่งความรู้เสริม 2) ผลสัมฤทธิ์ด้านการอ่านของกลุ่มนิสิตที่มีความสามารถด้านคอมพิวเตอร์สูงกว่ามีมากกว่าผลสัมฤทธิ์ด้านการอ่านของกลุ่มนิสิตที่มีความสามารถด้านคอมพิวเตอร์ต่ำกว่า 3) มีความสัมพันธ์เกิดขึ้นระหว่างระดับคะแนนของนิสิตที่เรียนวิชาเทคนิคการอ่านกับผลสัมฤทธิ์ด้านการอ่านจากแบบทดสอบศักยภาพทางวิชาการด้านภาษาอังกฤษแห่งจุฬาลงกรณ์มหาวิทยาลัย

ผู้วิจัยได้คัดเลือกนิสิตที่ไม่ได้เรียนวิชาอังกฤษเป็นวิชาเอกจำนวน 51 คนเป็นกลุ่มทดลองในงานวิจัยครั้งนี้ โดยแบ่งกลุ่มนิสิตออกเป็น 2 กลุ่มได้แก่ กลุ่มนิสิตที่ได้รับการเสริมการอ่านจากอินเทอร์เน็ตซึ่งเป็นกลุ่มทดลองและกลุ่มนิสิตที่ได้รับการเสริมการอ่านจากหนังสือเพียงอย่างเดียวซึ่งเป็นกลุ่มควบคุม นิสิตทั้งสองกลุ่มใช้เวลาเรียนวิชาเทคนิคการอ่าน 1 ภาคการศึกษา ผู้วิจัยได้ใช้แบบทดสอบวัดผลสัมฤทธิ์ด้านการอ่านภาษาอังกฤษแห่งจุฬาลงกรณ์มหาวิทยาลัยทั้งก่อนและหลังการเรียนเพื่อวัดความสามารถด้านการอ่านภาษาอังกฤษของนิสิต และใช้แบบสอบถามความคิดเห็นเพื่อเก็บข้อมูลทั่วไปส่วนบุคคลและข้อมูลด้านการใช้คอมพิวเตอร์ของนิสิตทั้งสองกลุ่ม

ผลการทดลองพบว่า

1. ผลสัมฤทธิ์ทางการเรียนของกลุ่มนิสิตที่ได้รับการเสริมการอ่านจากอินเทอร์เน็ตและกลุ่มนิสิตที่ไม่ได้รับการเสริมการอ่านจากอินเทอร์เน็ตไม่แตกต่างกันอย่างมีนัยสำคัญทางสถิติ

2. ผลสัมฤทธิ์ด้านการอ่านของกลุ่มนิสิตที่มีความสามารถด้านคอมพิวเตอร์สูงกว่าและกลุ่มนิสิตที่มีความสามารถด้านคอมพิวเตอร์ต่ำกว่าไม่แตกต่างกันอย่างมีนัยสำคัญทางสถิติ

3. มีความสัมพันธ์ระหว่างระดับคะแนนของนิสิตที่เรียนวิชาเทคนิคการอ่าน กับ ผลสัมฤทธิ์ด้านการอ่านจากแบบทดสอบศักยภาพทางวิชาการด้านภาษาอังกฤษแห่งจุฬาลงกรณ์มหาวิทยาลัย

4. แบบสำรวจความคิดเห็นของนิสิตกลุ่มทดลองต่อการใช้อินเทอร์เน็ตเพื่อเสริมการอ่านภาษาอังกฤษชี้ให้เห็นว่า แม้วานิสิตไม่ได้รับผลดีด้านการจดจำและการเรียนรู้คำศัพท์เพิ่มจากการใช้อินเทอร์เน็ต นิสิตทั้งสองกลุ่มยังมีทัศนคติที่ดีต่อการใช้อินเทอร์เน็ตเพื่อพัฒนาทักษะด้านการเรียนรู้ภาษาอังกฤษโดยทั่วไป

ผลงานวิจัยนี้สรุปได้ว่า ถึงแม้ว่าการเรียนอ่านของนิสิตโดยอาศัยอินเทอร์เน็ตเป็นแหล่งฝึกฝนการอ่านเพิ่มเติมไม่ได้ส่งผลชัดเจนต่อผลสัมฤทธิ์ด้านการอ่านของนิสิต อาทิ ด้านการจดจำ

และเรียนรู้คำศัพท์เพิ่ม แต่การใช้ประโยชน์จากอินเทอร์เน็ตของนิสิตเพื่อการศึกษา เช่น เพื่อการค้นคว้าและการเรียนรู้ทักษะด้านภาษาอังกฤษยังคงได้รับความสนใจจากนิสิต

The dissertation titled
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in Classrooms of English as a Foreign Language"

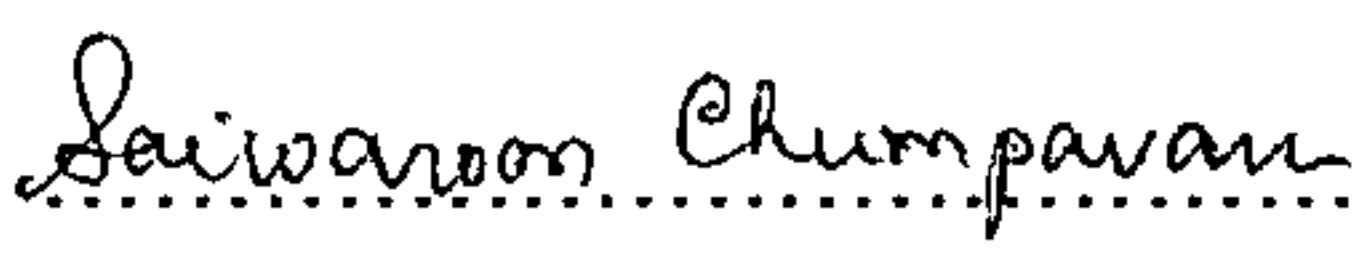
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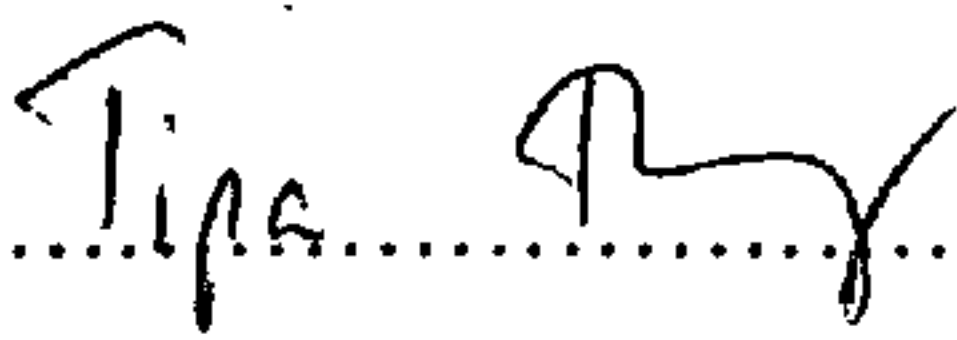
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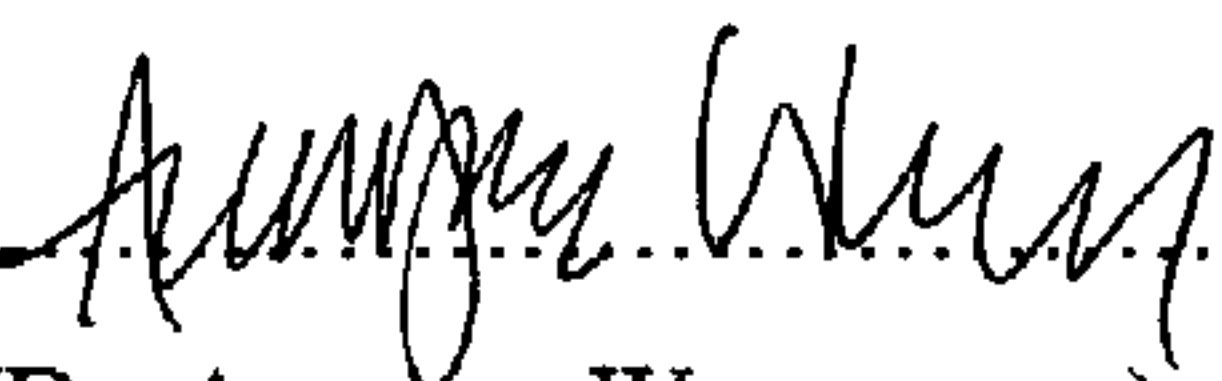
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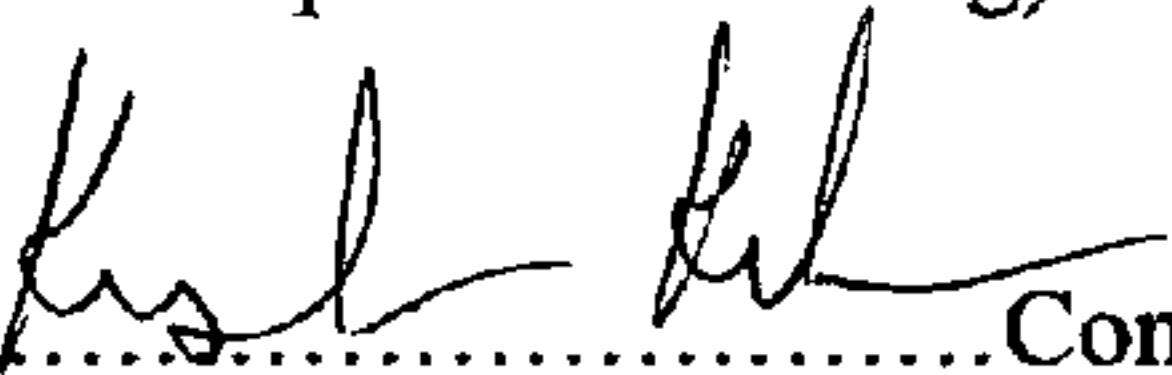
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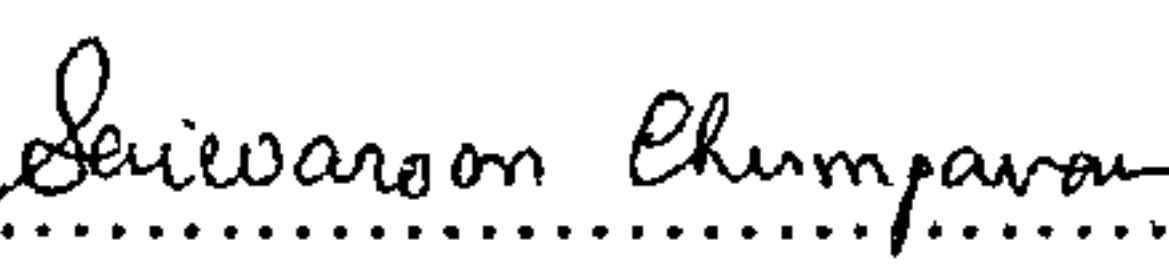
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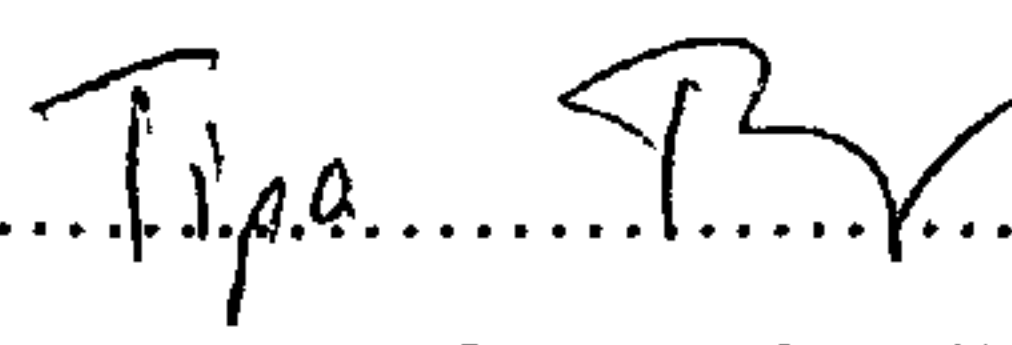
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ACKNOWLEDGEMENTS

The current study would have been nothing without Dr. Saiwaroon Chumpavan, my forever devoted dissertation advisor. I feel overwhelmed with her warm encouragement that she had for me until I finally could obtain my empirical research results. She provided me an outstanding knowledge and elaborations on research doing and helped me find ways out of all difficulties and obstacles along the writing stages with superb suggestions and discussion.

Also, I could produce this quality work because of the help of Dr. Sirinan Srinaowaratt, my co-advisor. She gave me a lot of recommendations and invaluable feedbacks. Without her, my work would not have been possible.

My thanks also go to Assoc. Prof. Dr. Tipa Thep-Ackrapong. To me, Dr. Thep-Ackrapong is beyond a teacher. Her guidance and support kept me alive throughout this ongoing study and my respectful heart goes with her forever.

I would like to extend my faithful thanks to all members of Srinakharinwirot staff for their kindness to help me finish the program. During my studies, they all treated me as one of their family members.

Additionally, special thanks go to Mr. Regent Lamoureux, who helped me edit my English writing anytime I needed him. Besides grammatical editing, he also provided valuable suggestions to help me improve the quality of this study. Therefore, I would like to thank him for getting my work done in time and getting all grammatical errors corrected and eliminated. The assistance I received from him will always be remembered.

Finally, many thanks go to my family, particularly, my father, my mother, and my brothers who always take care of me and support me with sincerity and understanding.

Rapeepat –So-in

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CHAPTER I

INTRODUCTION

Background of the Study

English is widely recognized as a tool for international communication. With the rise of its importance as a global language, the revised national curriculum of Thailand has changed English from an elective to a compulsory course for students at school and university levels (Ministry of Education, 2001). As stated in the current national curriculum, Thai students learning English as a foreign language (EFL) should be able to use English to communicate effectively with foreigners in their daily lives (Ministry of Education, 2001). However, among the four language skills, the most essential one, the one that plays a vital role in academic and professional success for EFL learners, is reading (Hirunburana & Opanon-amata, 2003). Thai students are then expected to master efficient reading skills because a variety of sources of information in many fields such as business, engineering, and economics, is continuously introduced into Thailand from English-speaking countries. Therefore, to understand information carried in English and to become independent lifelong learners, Thai students need to use reading the most (Hirunburana & Opanon-amata, 2003).

Reading Problems of Thai Students

There is a lot of evidence indicating that Thai students of all academic levels still encounter problems in reading (Adunyarittigun, 2002; Chandhavimol, 1998; Changpueng, 2005; Intarasombat, 2002; Jesdapornpun, 2001; Mingsakoon, 2003; Reanjaroenusuk, 1999; Sonsiri, 1999; Tanghirunwat, 2003). For example, they have insufficient vocabulary and poor knowledge of rhetorical structures to be able to understand reading texts adequately. Also, some students do not relate any of their

background knowledge to what they read or are not familiar with the reading topics.

These problems result in poor reading ability for Thai students.

A study on reading skill achievement conducted by Songsiri indicated that the poor reading skills of grade-12 students at Protpittayapayat School stemmed from a lack of vocabulary, poor knowledge of grammatical rules, and poor background knowledge. These problems kept impeding their capacity to read texts, because to understand the meaning of a text, readers need to have enough vocabulary and grammatical knowledge (Songsiri, 1999).

Similarly, it was found in a study conducted by Reanjaroenusuk (1999) that Thai undergraduate students had problems with vocabulary retention and showed an inability to guess the meaning of unknown words. As a result, they could not understand what they were reading. The effect of vocabulary development on the English reading comprehension of 10th grade students was also investigated by Intarasombat (2002). The data collected from a vocabulary test and a reading test revealed the participants' poor performance. The findings indicated that this problem came from their limited vocabulary and their low reading proficiency.

Additionally, Tanghirunwat (2003) examined the reading problems of Thai engineers in reading English manuals and textbooks. Their answers to a questionnaire indicated that they had problems in grammar and vocabulary, so they could not understand the content of the reading. It was found that the new vocabulary created for modern technologies and the technical vocabulary in the field of telecommunication also caused problems to these engineers. Similarly, Mingsakoon (2003) studied the vocabulary learning strategies of 12th grade students in science and arts programs. It was found that, on a vocabulary test, both the science and the arts students earned low scores, which in turn indicated low proficiency in reading.

Added to all that precedes, grammatical structures and poor background knowledge related to a reading text also make reading comprehension more difficult for Thai students. The results of a study conducted by Jesdapornpun (2001) showed that employees working at an information technology company had problems with inadequate knowledge of words, background knowledge, and grammatical structures. These problems had an impact on their understanding of the reading text on the test.

Adunyarittigun (2002) investigating factors affecting success in English language reading also revealed that Thai graduate students in an information technology program at a university in the eastern part of the United States had grammar and vocabulary problems. These problems caused difficulties with their reading while they were studying.

In addition, it was found by EFL teachers and Thai educators that the reading problems of Thai students stem from various factors which include outdated course books or reading materials irrelevant to the student's interests, inappropriate reading skills, and inappropriate teaching methods (Chandavimol, 1998; Changpueng, 2005). According to Chandavimol (1998), the English textbooks used by most Thai students in educational settings have little connection to their daily lives or experiences. She also stated that the plain texts used in schools or universities lack vitality and connection to what the students do or experience or are irrelevant to their interests. Consequently, it is likely that the students do not concentrate on the texts they are reading (Chandavimol, 1998).

Furthermore, Thai students try to rely on word-by-word translation or on a bottom-up process of reading. Doing this creates difficulties in text comprehension and leads them to looking up for words in a dictionary. Finally, they translate each sentence into Thai without recognizing its original English meaning. As a result, they end up reading with little understanding of the intended English meaning, read English texts with

a dictionary in hand, and, fall into a dislike of the English language (Chandavimol, 1998; Jesdapornpun, 2001; Vijchulata & Subphadoongchone, 2000).

According to a study conducted by Piyanukool (2001), the text-based teaching method in a reading class may interfere with the development of the students' reading abilities because students are told to read a text, translate it word by word and answer questions using the information in the text without incorporating the necessary assisting reading activities. This method lessens the role of students as creative thinkers (Chandavimol, 1998).

Furthermore, many Thai teachers begin a reading class with learning new vocabulary and spelling or with explaining some grammar points. A number of Thai teachers act like leaders of a class rather than facilitators of their students' reading performance (Soonthornmanee, 2002). Almost all lessons are planned and oriented merely by the teacher, with students remaining passive thinkers. This situation tends to impede students' individuality and does not allow them to actively get involved with the text being read (Chandavimol, 1998; Piyanukool, 2001).

In sum, the poor reading abilities of Thai students come from their reading problems, from the reading materials which are out of their fields of interest, from an ineffective reading approach, and from inappropriate teaching methods in the reading class. All of these might contribute to the reading problems experienced by Thai students.

Computers in Language Classrooms

Many researchers who have incorporated computer technology into their teaching and learning environment to assist learners to learn a language have agreed that computers could help students learn English. Incorporating computer technology in the language classroom is referred to a computer-assisted language learning or CALL.

The benefits of computer-based learning over book-based learning have been empirically demonstrated in a variety of academic settings with different purposes. According to Clement and Sarama (2003), computers can help learners develop their language skills and abilities in a language learning environment. For example, with regards to the use of a computer to improve a student's writing, they found that the participants who took the advantage of a word processing program were able to write more, were less worried about mistakes, and showed fewer mechanical errors in writing (Clement & Sarama, 2003).

Additionally, the ability of CALL to provide richer, more focused and individualized input than many other types of learning media was evidenced in a study by Lightbown and Spada (1999). They found that when they engaged EFL students in paired interactions through computer-mediated communication (CMC), those students had a more authentic and comprehensible language input than when engaged in teacher-student interactions. When computers were used particularly to scaffold and assist the learners, they helped them develop various techniques to enhance both their verbal and language skills (Shut & Milsad, 1997).

In terms of rich communication, when learners are engaged in an interactive linguistic environment, a computer can contribute to the improvement of information and knowledge transfer (Hoogeveen, 1995). The impact of multimedia messages can lead to many psychological responses such as a high level of sensory stimulation, a high level of involvement, concentration, and attention, a high level of strong recognition effect, and emotional arousal. According to Brett (1998), all language learners are different in terms of needs, interests, strengths, motivations, and learning styles; therefore, to accommodate these differences, the use of a multimedia setting as a self-study resource is necessary.

And the type of multimedia integrated in a computer enable learners to investigate, discover, search, ask, answer, and get feedback.

For example, in their study, Hapeshi and Jones (1992) found that the presence of moving images helped enhance the learning and comprehension of spoken material. In addition, Faber, Meiers, Ruschin, and Seyferth (1991) found that learners enjoyed moving pictures more than non-moving pictures. Similarly, in a study conducted by Nicolson, Pickering, and Fawcett (1991), the participants had more fun and felt more motivated when learning with multimedia courseware, a situation which contributed to a positive learning attitude and an increase in the learners' emotional involvement.

Computers in English Reading Classrooms

Regarding the use of computers as tools to enhance reading comprehension, the systematic presentation of materials and the greater stimulation of background knowledge provided by CALL lead to readers' better comprehension and the improvement of their reading performance. Leffa (1992) agreed that to enhance reading comprehension, a computer is a more important tool than printed materials since it promotes interaction between a text and its readers. That is, a computer-supported text allows readers to participate in linguistic interactions more often than a text without computer support. A high level of interactive multimediality facilitates the readers' vocabulary retention, understanding, and acquisition of knowledge. For example, it was found in a study conducted by Hult et al. (1990) that a combination of text and multimedia provided by a computer enhanced the participants' motivation in reading and helped them to have a better understanding of a reading text. In addition, the computer offered opportunities for the participants to revise, question, and receive feedback in a better way than printed materials did (Hult et al., 1990).

Additionally, Chun and Plass (1996) studied the effect of the CALL program *Cyber Buch* on initiating interaction with 160 German students and on enhancing their overall text comprehension. The findings showed that an annotation of vocabulary items composed of both visual and verbal information, and a dynamic visual advanced organizer helped enhance the learner's global comprehension. This kind of word clarification is parallel to the dual-coding theory contending that to master reading comprehension, a reader utilizes not only textual information but also non-textual information, such as color, shape, movement, and voice, into brain processing based on the interactive bottom-up and top-down operations.

Computer software programs, CD-ROMs, and even Internet resources can be used in language classrooms to enhance the language proficiency of the students. Additionally, the Internet tends to be seen as one of the solutions to language teaching and learning (Srisa-an, 1998; Nakorntam, 2000; Warschauer, 1996).

According to Prapphal (2001), the Internet, which is one form of technological support for language learning, tends to be seen as the solution to maximize learners' language acquisition when compared to the original teaching methods, particularly when used as a supplementary learning resource. Learning via the Internet yields many advantages. For example, for second language learners, it is easy to access, it is affordable, and can replace the English teachers responsible for all language skills because it offers very rich sources of learning materials, plenty of up-to-date information, teaching tips, and instant accessibility for people of all ages (Sukamolson, 2006).

Since Internet can provide learners with an authentic learning environment as computer programs do, this instructional technology tends to be seen as a medium that offers more resources than a teacher does. It is then clear that Internet can be used as a

means to help facilitate many facets of language teaching and learning, including the ability to improve reading skills for Thai learners.

Therefore, to encourage the development of Thai students' reading skills into successful text comprehension, it is advisable that they be assisted with Internet-based reading. It is likely that the rich communication offered by the multimedia features available on the Internet will help make language input more comprehensible and motivating, and will then promote interaction and facilitate greater reading comprehension.

Statement of the Problem

The researcher has found a number of studies focusing on reading and the process of learning how to read, but most of them have been conducted in a non-technologically enhanced environment. Moreover, regarding online instructions, few studies on the effects of the Internet on Thai students' reading comprehension could be found in Thailand. Therefore, this study was conducted to investigate if Thai students experiencing Internet-based reading as a supplementary resource would have higher scores on the reading section of the Chulalongkorn University's Test of General English Proficiency (CU-TEP) than students experiencing book-based reading as a supplementary resource. This study also sought to find if Thai students with high computer knowledge would have higher scores on the reading section of the CU-TEP than those with low computer knowledge. It also sought to see if there was a positive relationship between the participants' final grades in Reading Techniques (EN 221) and their posttest mean scores on the reading section of the CU-TEP.

Research Hypotheses

This study investigates the following hypotheses:

1. On the posttest administration of the reading section of the Chulalongkorn University's Test of General English Proficiency (CU-TEP) controlled for prior English performance, the mean scores of the participants experiencing Internet-based reading as a supplementary resource will be significantly higher than those of the participants experiencing book-based reading as a supplementary resource.
2. On the posttest administration of the reading section of the Chulalongkorn University's Test of General English Proficiency (CU-TEP) controlled for prior English performance, the mean scores of the participants who, on the Students Demographic Survey, rated themselves as proficient in computer knowledge will be significantly higher than the mean scores of those who rated themselves as less knowledgeable.
3. There is a positive relationship between the participants' final grades in the English course Reading Techniques (EN 221) and their posttest mean scores on the reading section of the Chulalongkorn University's Test of General English Proficiency (CU-TEP).

Significance of the Study

If it were found that Internet-based reading could enhance Thai student's reading comprehension, Thai teachers could see the benefits and effectiveness of this kind of learning, and could incorporate it in their English reading classes as a supplementary resource to their instructional method. Their students could get an immediate feedback from the multimedia provided by the Web sites when surfing on the Internet to practice reading by themselves, and this could encourage them to self-study or help them to become independent learners. As for university administrators, if it were found that Web-

based learning was an effective tool in the English reading classrooms, funding could be increased for the purchase of computers with Internet connection to be used by students.

Methodology

Participants

Selection of the university.

The following are the reasons why Srinakharinwirot University (SWU) has been selected as the ideal university for this study.

According to the Office of the National Education Commission (1999), to further studies in a tertiary education, secondary students are given four choices of universities they wish to attend. Each choice is based on their scores on the national examination administered by the Ministry of University Affairs. Of these four, SWU is one of the oldest and most renowned public universities in Thailand that is very often included on the students' lists as a favored university for their undergraduate studies (Thailand's Commission on Higher Education, 2006).

Additionally, with the aim of SWU to produce highly qualified scholars, a variety of English language courses have been developed. As stated by the Srinakharinwirot University Operation Center (2007), the English courses offered at SWU focus on improving the students' four skills of English proficiency, including, a reading course which assists students in developing their academic reading ability and on helping them become lifelong learners. The researcher was also granted permission from the Department of Western Languages and the Department of Political Sciences of Srinakharinwirot University to have these students of the reading course as participants in the study. Therefore, SWU was selected.

Selection of the participants.

The participants in this study were composed of 51 second-year, non English major students and enrolled in Reading Techniques (EN 221) in the second semester of the academic year 2006 at SWU, Bangkok. Convenient sampling was used in the study. The participants were assigned into two treatment groups: 21 were the experimental group and 30 the control group. The experimental group experienced Internet-based reading as a supplementary resource and the control group experienced book-based reading as a supplementary resource.

Instrumentation

The Chulalongkorn University's Test of General English Proficiency (CU-TEP).

The reading section of the CU-TEP was used as pretest and posttest measurements in this study to assess the participants' reading performance in extracting both literal and interpretive meanings from various readings. Because this test is standardized and has been designed to evaluate the skills necessary to pursue a higher education, its reliability is widely accepted in Thai institutes and is considered a valid measurement of a person's proficiency in English. Its coefficient of reliability ranges from .86 to .91 (Hirunburana & Opanon-amata, 2003). Additionally, it was approved, edited, and piloted by specialists and equated with the Test of English as a Foreign Language (TOEFL) (Hirunburana & Opanon-amata, 2003). These are the reasons why the CU-TEP was chosen as a measuring instrument for this study.

Students Demographic Survey.

A questionnaire collecting the participants' data and the details of their computer literacy was employed and given to them one week after the pretest. The questions, taken

from Chumpavan, Lorber, and AL-Bananieh (2005) to investigate the students' computer literacy, were not modified since they were used for the same purpose.

Materials for the Experimental and Control Groups.

Reading Connections, a randomly selected reading textbook, was used as the main text for the two treatment groups. It was selected to correspond to the common objectives shared by the course description of Reading Techniques and the educational objectives of the book. Practice of a variety of skills such as determining the meaning of words from context and word structures, scanning and skimming, recognizing topic sentences, looking for the main idea, the implied main idea and the supporting details, understanding logical transitions, understanding the author's structure, and making inferences, is integrated to enhance the learners' reading comprehension. Additionally, at the time of the research, *Reading Connections* was favored in reading classes by many institutions in Thailand. Therefore, it was used in this study to help students achieve their college studies.

Supplementary Materials for the Experimental Group.

At the time of this study, *BBCworldservice.com* was a resource that provided supplementary reading materials for the experimental group. *BBCworldservice.com* integrated rich communication and language learning, particularly the *Learning English* page which included three sections for reading practice: *News English*, *Business English*, and *Watch and Listen*. This page offered students of English a lot of language learning activities such as multimedia reading drills and vocabulary enhancement, as well as other language learning features that promote reading ability. The page comprised 3 main modes: reading texts, audio-visual presentations, and exercises. More importantly, it gave the learners continuous and free accessibility, flexibility, and autonomy with their

language learning practices. Therefore, the researcher selected this page as a supplementary resource for the participants of the experimental group.

Supplementary Materials for the Control Group.

The course book *For Your Information 2* was selected as the supplementary reading material for the control group because, as the book claimed, it was designed to help college learners of English as a second or foreign language become competent readers by providing them with a variety of contents, lessons, and exercises to help them achieve successful reading (Blanchard & Root, 1996). Additionally, it is recognized and used by many Thai institutions. The topics of interests such as sociology, science and technology, business and economics, wildlife, music, and sport, and such exercises as multiple-choice questions, true-false questions, blanks to be filled, and matching exercises found in this book were selected to correspond to those provided on the Web site for the experimental group. For these reasons, this book was favored by the researcher as a supplementary resource for enhancing the reading comprehension of the participants in the control group.

Data Collection Procedures

This study was conducted in the second semester of the academic year 2006. The students enrolled in Reading Techniques (EN 221) were assigned into two groups: an experimental and a control group. They were first required to take the reading section of the CU-TEP as a pretest to measure their reading proficiency at the beginning of the treatment. The *Students Demographic Survey* which collected the participants' demographic information and level of computer literacy was given one week after the pretest had been administered. At the end of the treatment, after the two groups had experienced their own environment for a semester, they were required to retake the

reading section of the CU-TEP as a posttest measurement, for the researcher to see any significant difference in their level of achievement of English reading proficiency.

Data Analysis.

The data collected for this study were processed according to the three research Hypotheses and analyzed quantitatively using two statistical tools: the Analysis of Covariance (ANCOVA) and Spearman's rho correlation coefficient. ANCOVA was used to investigate any significant differences in the participants' reading proficiency by analyzing their mean scores between the pretest and the posttest; and Spearman's rho correlation coefficient was used to determine the presence of a relationship between two variables. Additionally, these two analyses were supported and illustrated by the percentage of the participants' responses to the questionnaire investigating their computer knowledge and their attitudes towards an Internet-based environment and its learning potential.

Limitations of the Study

This study was limited to the students who were enrolled in Reading Techniques (EN 221) in the second semester of the academic year 2006 at Srinakharinwirot University, Bangkok, Thailand. The study was also limited to those who agreed to participate in the study.

Variables of the Study

Independent Variables

The dependent variables in this study were:

1. The Internet-based reading group, who used *BBCworldservice.com* as a supplementary reading material throughout the semester.

2. The book-based reading group, who used *For Your Information 2* as a supplementary reading material throughout the semester.
3. The computer knowledge of the participants in both groups.

Dependent Variables

The dependent variables in this study were:

1. The mean scores on the reading section of the CU-TEP for the participants of both the control and the experimental groups.
2. The mean scores on the reading section of the CU-TEP for the participants with high computer knowledge and those with low computer knowledge, regardless of the group they belonged to

Organization of the Study

Chapter I of this study introduces its specific problems and background. Chapter II presents a review of the related literature and research relevant to the problem addressed in Chapter I. Chapter III describes the research methodology as it was conducted in the study. Chapter IV presents an analysis of the data and details the results of that analysis. Chapter V discusses these results and offers recommendations for further research studies.

CHAPTER II

REVIEW OF THE RELATED LITERATURE

This chapter reviews the research literature related to the reading problems of Thai students and the one related to computer-assisted language learning, or CALL, in language classes, its theoretical framework as well as its use in foreign language classrooms to help promote students' acquisition of successful reading comprehension. This chapter deals in more details with the following areas of studies:

1. Reading Problems of Thai Students
2. Computers in Language Classrooms
3. Computers in English Reading Classrooms
4. Use of CALL in Foreign Countries
5. Use of CALL in Thailand

Reading Problems of Thai Students

In general, people acquire a language through skill practice. They learn and understand a language through various channels such as television programs, recitations, articles, newspapers, magazines, and textbooks. Some of those channels need reading to retrieve information. The ability to access those sources of information through reading is the skill that plays the most crucial role in academic and professional success, and the reading skill becomes the most essential requirement for a university EFL student (Hirunburana & Opanon-amata, 2003). Thai students are also expected to use this skill the most because it helps them to understand many kinds of reading and prepares them to further their higher education and pursue their careers (Chumpavan, 2000). In addition, in language learning, reading is a major source of input for Thai students who wish to acquire a foreign language (Tang, 2000). Although reading is widely recognized as a tool

that helps Thai students retrieve information, understand reading materials not native to them, and overcome academic difficulties, there have been a lot of evidence and studies indicating that Thai students still have problems in reading (Adunyarittigun, 2002; Chandhavimol, 1998; Changpueng, 2005; Intarasombat, 2002; Jesdapornpun, 2001; Mingsakoon, 2003; Reanjaroensuk, 1999; Sonsiri, 1999; Tanghirunwat, 2003). These reading problems include insufficient vocabulary and an inability to guess unknown words, an inadequate understanding of rhetorical structures, and an important lack of background knowledge.

Songsiri (1999), for example, conducted a study to investigate the English reading ability of 12th grade students at Protpittayapayat School. Twelve participants were selected from six classes. They were given a test to investigate their level of reading proficiency and were interviewed to assess their attitudes towards English reading. The findings from the reading test showed that their performance in reading English was lower than the satisfactory level. Only 1% of them reached a higher level of reading proficiency (80%-87% on the reading test) while most of them stood either below a satisfactory level (67.5%) or at a lower level (23%-47%). The participants' poor reading skills came from their lack of vocabulary, an unclear understanding of grammatical rules, and poor background knowledge. Conversely, the interviews revealed that most of the participants agreed on the need for improvement of their reading abilities and had positive feelings towards English reading.

Vocabulary problems are a major cause of most Thai undergraduate students' poor reading ability. This was evidenced in a study by Reanjaroensuk (1999) who investigated the English vocabulary proficiency of 615 first-year undergraduate students at Mahidol University from three areas of studies: medical science, arts, and pure sciences. A reading test on English vocabulary with multiple-choice questions, a

questionnaire, and in-depth interviews were used as instruments. The findings showed that concerning vocabulary, the medical science students outperformed the students from the other two areas of studies. When compared, the mean scores of the three groups showed that the medical science students scored the highest (38.52). The arts students showed a lower mean score (31.47), and the pure science students earned the lowest (23.68). Regarding the questionnaire investigating the participants' educational background in English, the answers indicated that half of the medical science students received an "A" when in secondary school. Less than half of the arts students received an "A" and a very limited number of the pure science students earned the same. Additionally, based on the in-depth interviews regarding their extra coaching in English, it was found that, surprisingly, the percentage of the arts students taking extra courses was the highest (75%), followed respectively by the medical science students (65%) and the pure science students (50%). However, among these three groups of participants, it was found that a poor vocabulary was contributing to their low abilities in reading. As a result, this problem interfered with their successful reading comprehension.

Similarly, Intarasombat (2002) investigated the effect of vocabulary development on the English reading comprehension of 10th grade students in Thailand. The participants were 40 students studying in a science program. Two English tests, one on vocabulary and the other on reading comprehension, were used as instruments in this study. They comprised 37 vocabulary items and some reading passages with 43 multiple-choice items, respectively. The findings showed that the mean scores of the participants were lower than expected, at 21.90 for vocabulary and 27.90 for reading comprehension, indicating an overall weakness in reading comprehension. The two major factors responsible for this problem were limited vocabulary and poor reading ability.

A study to examine vocabulary problems in reading was conducted by Tanghirunwat in 2003. Fifty Thai engineers of telecommunication companies participated in the study. Their reading abilities were tested through the reading of selected English manuals and textbooks. A questionnaire related to their vocabulary and grammar problems and to their difficulties in understanding technical texts was also used. The conclusion from the questionnaire pointed to problems in grammar and vocabulary. Moreover, it was found that technical terms and the newly added vocabulary in the field of telecommunication created problems in text comprehension.

Mingsakoon (2003) studied the vocabulary learning strategies among grade-12 students in science and arts programs. The 129 participants were randomly assigned into two groups of experiment: 78 science students in one group and 51 arts students in the other group. It was found that these two groups earned more than 50 percent on their test results, with the science students at 52.08 % and the art students at 51.66 %. Although all of them scored higher than the 50 % mark and performed well in using strategies to gain successful reading comprehension, their achievement on the vocabulary test was lower than the satisfactory level and this had an impact on their overall reading comprehension.

Apart from difficulties in vocabulary, problems related to grammatical structures and background knowledge related to a reading text complicate the situation and lead Thai students into difficulties in reading comprehension. For example, Jesdapornpun (2001) conducted a study to investigate the reading problems of 18 technical staffs at Samart Comtech. The results revealed that, when asked to take a reading test, the staffs had problems with unknown words, background knowledge, and grammatical structures. It was also found that whenever they encountered difficult words, they tried to use a bottom-up process, consulting a dictionary to make the text comprehensible. While reading, they could not understand the passage because of their limited abilities to extract

meaning at the sentence level and their inability to guess unknown words. These problems, therefore, had an effect on their understanding of reading texts.

Another example of these problems comes from Adunyarittigun (2002) who investigated the factors affecting the English reading success of Thai graduate students learning in a joint-venture program in the field of information technology at a university in the eastern United States. A questionnaire was used as instrument to elicit the participants' attitudes towards their reading comprehension on the reading passages. The answers from the questionnaire revealed that the participants had general reading problems, but that insufficient knowledge of grammatical structures and weak vocabulary were the two main obstacles to their reading abilities, leading them to difficulties in reading comprehension.

According to many teacher educators and researchers, in addition to problems related to weak vocabulary and poor knowledge of sentence structure, there appears to be other factors that contribute to Thai students' difficulties in reading comprehension. These factors include uninteresting reading materials or textbooks, inappropriate reading skill practice and activities, and teacher-based instruction (Chandavimol, 1998; Changpueng, 2005).

According to Chandavimol (1998), the first factor contributing to the reading problems of Thai students concerns the English texts themselves which are outside the range of the Thai readers' interests. The textbooks they use have little connection to their experiences and many of them lack vitality. Although many types of texts are easily available to the students in schools or universities, they are not interesting and authentic enough when compared to more genuinely animated media such as the ones from television, magazines, and newspapers. Therefore, it is quite difficult for Thai readers to get a complete picture of the messages the textbooks try to convey. As a result, Thai

students will more likely to turn their interests to the more vivid media they are more familiar and have more fun with (Chandavimol, 1998).

Furthermore, the second factor contributing to the reading problems of Thai students relates to their approach to text comprehension. That is, English reading in Thailand is based on word and sentence translation. In trying to understand an academic text, particularly a difficult one, Thai students rely on word-by-word or sentence-by-sentence translation. Using this reading approach creates difficulties to Thai students to consult the dictionary and translate literally each English sentence without recognizing its English original meaning. As a result, they end up reading with little understanding and boredom (Chandavimol, 1998; Jesdapornpun, 2001; Vijchulata & Subphadoongchone, 2000).

One more source of the reading problems prevailing throughout Thailand's educational environment is the teaching methodology. A number of Thai teachers act as the only knowledge providers or the leaders of a class. Many Thai teachers begin a reading class by providing their learners with a Thai translation of each English word and sentence. Almost all of the methods of teaching are performed through the teacher's words and activities; for example, the teachers teach everything they think students should know such as the new vocabulary items, spelling, and the grammar points (Soonthornmancee, 2002). Therefore, their students are treated as passive observers and are given few opportunities to learn by themselves. This situation tends to impede the Thai learners' autonomy and their acquisition of reading skills in a natural language learning process (Chandavimol, 1998).

Piyanukool (2001) further pointed out that the problems of Thai students in reading comprehension partly stemmed from the specificity of the teacher-student interactions and from the activities performed in a reading class. Indeed, Thai students are

told to read an English text, to translate it word by word, and to answer questions that are too literal, without necessary reading activities that would assist their understanding (Chandavimol, 1998). Consequently, it is impossible for those readers to do a lot of textbook exercises due to their lack of effective way of reading.

As suggested by Chandavimol (1998), to obtain successful reading comprehension, Thai students are required to incorporate reading activities which include pre-reading, reading, and post-reading tasks. In a pre-reading activity, the students are asked to relate their background knowledge to the contents presented in the reading text. Thus, this type of activity helps students get an overall idea of the reading selection by providing the necessary background information, though this is hardly seen in a reading class in Thai schools. After the students have related their background knowledge to the reading contents, they are encouraged to read the text and to work with their peers and the teacher to share their knowledge while they are progressively monitoring their own work. This approach to reading is also rarely seen in regular Thai classrooms because of the large number of students assigned per teacher and because of the ensuing students' lack of cooperation. Finally, in the post-reading tasks, the students are provided with feedback from a wide variety of exercises helping them gain a correct understanding of the text being read, but in practice, in Thai classrooms, this kind of task is seldom performed in its entirety.

In conclusion, as confirmed by many researchers, the reading problems of Thai students mainly come from the difficulties they have with vocabulary, grammatical structures, and background knowledge. In addition, other factors creating reading problems to Thai students are the reading materials themselves which are out of interests, an inappropriate reading approach and activities, and the teaching method. These all have an impact on the Thai students' success in reading comprehension.

Computers in Language Classrooms

For nearly four decades, the computer has been widely used and recognized as an outstanding tool comprised of a variety of important functions and operations all designed to help people in their daily lives. Evidently, it has become increasingly popular in businesses, as a household appliance, in banking transactions, and even in the academic domain.

Computer-assisted language instruction has also been developed over the years. It has gone through three distinct stages of pedagogical implications: Computer-assisted language learning (CALL) using a drill approach, also called “behavioristic CALL,” whose main focus is drill and practice; computer-assisted language learning using a communicative approach, also called “communicative CALL”, with the aim of stimulating a learner’s communication through discussion, writing, reading and critical thinking; and finally, computer-assisted language learning using skills integration, or “integrative CALL,” which incorporates multimedia as an interactive learning tool and a CD package or as Internet resources (Warschauer, 1996).

Behavioristic CALL, the first form of computer technology assisting the learning process of the learner, was first used during the 1950s and 1970s. This CALL viewed as a tutor was applied through extensive drills, grammar instruction, and translation tests (Ahmad, et al., 1985). However, since the computer allowed the learners a limited degree of participation in the language learning process, the learning empowerment of this application of computers was severely criticized and was taken over by the introduction of communicative CALL.

In the 70s and 80s, the perception of communicative CALL as an extension of tutorials, as a stimulus encouraging a learner’s motivation, and as an empowering tool to enhance learner’s understanding of a target language brought about an opportunity for the

learners to construct their own knowledge based on the cognitive view of the learning process. The application of this instructional method better helped the learners in having alternatives in learning, in controlling their own pace of progress, in easily interacting with the program, and in providing individualized feedback on his or her language learning performance (Warschauer, 1996). Kenning and Kenning (1990), however, pointed out that communicative CALL failed to emphasize the important elements of language learning. In other words, this development of CALL as part of the cognitive approach could not live up with its full potential (Warschauer, 1996). As a result, teachers, instead, moved away forward to an integrative computer-based approach that called for an emphasis on real language used in a meaningful, authentic environment.

By the end of the 80s, the notion of integrative CALL incorporated various language skills with high technology. The information technology and the Internet in education helped provide the learner engaged in the learning process an easy access to authentic situations and to authentic materials such as newspapers and magazines in the target language. The integration of the four skills with multimedia features such as texts, graphics, sounds, pictures, animations and videos, all contributed to the notion of the learners as the constructors, sharers, and negotiators of meaning (Warschauer, 1996). In other words, the learners were actively engaged in the process of integrating new knowledge with the existing one and of constructing their own interpretation on any given language exposure. A computer-mediated communication like electronic mail is one example of how integrative CALL was used in a classroom context. The use of graphics, sounds, and animations through computer networking in a classroom provided students with a wide range of informational, communicative, and publishing tools (Graus, 1999). Thus, it appeared that the integration of a computerized features such as interactive multimedia, Web-based learning, and email communication, served to better reach the

goal of the learner as a knowledge builder. These computerized features that stimulate the language learners' sense of perception could support their learning ability, could be adapted to their different styles of learning, and were viewed as tools to remedy their weaknesses or underachievement and to promote their greater involvement in language learning activities (Roblyer & Edwards, 2000).

According to Pennington (1996), a computer used for educational purposes is viewed an ideal teacher or a powerful teaching system for language learning and contributes many advantages to a learner's mental efforts and intellectual development. She describes the attributes of the computer as an effective medium in an educational system. For example, it can help second-language learners increase their learning development. It can also encourage them to experiment in an environment fostering risk-taking. It can provide practices and feedback that allow them to reflect on their learning performance. It can assist them in learning according to the purposes and engage them in authentic communicative tasks. It can help create an autonomous learning environment. It can allow the learners' zone of proximal development to expand to get in touch with other learners.

Apart from this, computers in education can be said to possess many attributes facilitating language learning. CALL, in particular, could be a new type of input leading learners to a richer language-learning environment and providing them with a more focused and individualized input, as well as one of a better quality (Pennington, 1996). Lightbown and Spada (1999) found that to help promote a learner's optimal, more authentic, and comprehensible input, it is necessary to integrate CMC (a form of CALL) into learner-learner interaction in a foreign language classroom. CALL, therefore, has the potential to be another enriching channel for the learners, providing a diversity of

opportunities for the development of their language ability, and creating a variety of input that is learnable and accessible to each of them.

Computers in English Reading Classrooms

An essential role of graphics, sounds, and animations is to help build up referential connections in a learner's brain (Mayer & Sims, 1994). Better connections between the verbal and visual systems result in an easier assimilation of knowledge in a second language. Thus, multimedia features such as graphics, moving pictures, animations, and so on, as part of a technology-based language learning environment, could help the learners' and the readers' brain connect the information, a process that, in the end, leads to comprehension.

In practice, computer-facilitated language learning has been used to help promote students' reading comprehension by providing a more advantageously interactive environment than the printed text. A variety of authentic materials and enhanced features such as sounds colors, moving pictures, graphics, and animations, that the computers offer all help activate the reader's interaction in text processing.

The rich sensory communication or multimedia promoted by a computer is presumed to contribute to people's knowledge transfer and improved the quality of information. As stated by Hoogeveen (1995), the impact of multimedia messages may lead to many psychological responses, for example, a high level of audio and visual perception, a high level of involvement, attention, and concentration, a high level of emotion, and a high level of recognition, and are presumed to be superior in comparison to the impact of non-multimedia messages. It is believed that these complex interactions between psychological responses bring about, within people, information experience instead of information acquisition. Therefore, dynamic, complex, integrated representations of information are vital to mind processing. It is believed that people are

not passive to information: their mind and senses are built to process complex stimuli and information gathered from their natural environment. Therefore, people's perceptual system and their cognitive abilities are presumed to be akin to multimedia computing (Marmolin, 1991).

According to Hooegeveen (1995), a plethora of lively characteristics offered by the multimediality of computers, namely, a high level of sense stimulation, intense human-machine interactivity, a great diversity of easily accessible information, an adequate use of reference models, a high quality of information representation, and instantaneous feedback, are presumed to be vital electronic language-learning supports.

The first of these characteristics, intense sensory stimulation, refers to the greater stimulation of auditory, visual, and overall perception brought about by the combination of various computerized media features. Learners are more emotionally aroused by and involved into the learning tasks and are more able to increase information retention when exposed to the more intense sensory stimulation developed by computers. As revealed in a study conducted by Faber et al. (1991), learning with moving pictures is apparently better and easier than learning with non-moving pictures and leads to positive attitudes and a higher motivation in learning.

An intense human-machine interactivity, the second characteristic of electronically enhanced learning, is expressed in the simultaneous interplay (resulting from sensory stimulation) of a learner's brain functioning and a computer program. It is believed that a higher sensory stimulation facilitates learning better than a lower one. Indeed, people are not passive receivers of information: they are active explorers of their own environment. Schad (1993) states that the inclusion of interactive multimedia features in the learning process improves learners' sensorial stimulation. It allows them a better use of their brain to find solutions to problems and stimulates their senses such as

visual, audition, and kinesthesia, to act simultaneously with the brain. It is estimated that reading requires 1% of the eyes' capacity for visual stimulation. Watching TV stimulates 25 to 30% of this capacity which in turn goes up to 60% for three-dimensional visual objects. To transfer information effectively, this characteristic is inevitably important.

The third characteristic of computer-assisted learning, a high congruence of a variety of information, refers to the redundancy of the type of information used to express an idea, and how it leads to a learner's capability to build associations and gain retention. Marmolin (1991) pointed to the redundant use of color as creating a more stimulating environment and to the learner's facilitated ability in choosing and processing information. Hepeshi and Jones (1992) remarked that the congruent use of synchronized video and audio representations, in which moving images better support the learner's comprehension of spoken material, was more efficient than an incongruent presentation. The two researchers illustrated this point by quoting an experimental study of Hayes, Kelly, and Mandel (1986), who investigated the effectiveness of narrative TV presentations compared to that of radio presentations. They found that, during recall, the distortion and inaccurate content of an actual story occurred more often in a simple auditory condition than in an audio-visual condition. Additionally, Hapeshi and Jones (1992) described another study showing that the processing of an auditory message in a monologue or dialogue can be enhanced and facilitated if the performer's face and facial expressions, the lip movements in particular, can be seen. Therefore, it is suggested that processing information is easier when a given message is reinforced with congruent visual and audio representations. Thus, to transfer information to learners more effectively, a high level of multimedia congruence is needed.

Adequate use of a reference model, the fourth characteristic of computer-assisted language learning, refers to the use of meaningful media to enhance a learner's

language interaction. Meaningful reference pictures added to texts, meaningful sounds, and animations expressing the intended ideas support a learner's cognitive ability.

Illustrations like pictures, diagrams, or charts serve to make connections in the learner's intellectual processing. Schad (1993) stated that reference pictures added to a text help increase the understanding of a story by 75 %, compared to a text without pictures, and increase retention by 25-35%. Text-and-picture stories are stored faster and more efficiently in the readers' long-term memory than stories with text only. Nielsen, in 1995, stated that moving pictures are more easily understood than still pictures while the human voice enhances a sense of familiarity and learners' information recognition.

In addition to the four characteristics described above, the fifth one, quality of information representations, pertains to the use of more realistic and authentic materials resulting in a higher emotional response and the acquisition of a more natural language. Graphics, utterances, animations, videos, music, and natural language are perceived as essential media components of information representations in a learning system. For the learners, such authenticity facilitates the assimilation of the target language. It was found that the representations of realistic information support and is important to a learner's language learning performance.

The last characteristic of the multimedia offered by computers, instantaneous feedback, important for self-directed learning in second languages, is defined as the computer's reaction that is immediately produced after and is a response to a learner's learning behavior or output (Pellone, 1995). Computer-based feedback plays an important role in the learners' learning process: it helps them to be aware of their errors and misunderstanding, to verify their responses, and is adapted to each learner's personal work and individual needs. It has been designed to be non-judgmental and responsive to each learner regardless of one's characteristics. Feedback generated by computers is also

repetitive and encourages a learner's more learning (Mason & Bruning, 2001). Morrison et al. (1995) found that two types of computer-feedback (knowledge-of correct –response and delayed feedback) could help produce greater gains in learning. In addition, the immediacy or timing of the feedback provide the learners with an instant redefining of their understanding of a text and helped them recognize if their input was right or wrong, which lead to better information retention. Therefore, the immediate feedback provided by a computer is influential on a learner's cognitive ability and second language acquisition because unlike teacher-based feedback, computer-based feedback is more repetitive and effective in its immediacy.

A learner's autonomy or self-directed learning is another characteristic, apart from the ones described above, that a computer offers to facilitate second language input. Self-directed learning refers to the process consisting of self-observation, decision making, and self-reaction, all of which help learners plan, control, and direct their learning behaviors rather than let them respond to external controls (Zimmerman, 1989). It is believed that the learners who use this technique will perform better and thus show more effective learning results than those who do not (Ley & Young, 2001; Orange, 1999; Peterson, 1996; Wang, 1999). Computers and the Internet technology could accommodate the learners' different styles of learning. They provide them with a rich source to practice and a variety of choices to study, control, implement, and initiate tasks that are thus more flexible for interaction. They also offer learners with a great deal of choices of linguistic interactions such as graphics, authentic texts, rich sources of additional activities, glosses for data, repetitive practice, and so on (Healey, 2002; Zhong, 2008). This type of learning allows learners to be aware of their own progress toward their goals. Different learners have different styles and linguistic knowledge; therefore, the self-regulated system

initiated by a computer helps promote learners' self-directed learning environment, leading them to self-actualization and, ultimately, to independence in learning.

To sum up, multimedia, that is, the rich variety of sensory stimuli offered by computational features, provided by CALL, in particular when CALL is used as Internet resource, helps to promote and to facilitate readers' comprehension in many ways, as they interact with a computerized text. Thus, visualizing authentic materials through Internet encourages readers to create links between new information and the one stored in their minds and thus enhances their understanding. Moreover, computerized instantaneous feedback provides readers with an awareness that helps them modify their output for proper language internalization, something essential for them to immediately acquire language and maintain information. Finally, self-directing to access sources of knowledge via the Internet enhances the readers' motivation when interacting with reading texts and frees them from a teacher-centered approach (Srisa-an, 1998). As asserted by Nakorntham (2000), to maximize the advantage of information technology, the exploitation of Internet resources to empower Thai learners towards language competency is necessary and is viewed as another means of reforming the Thai education system.

Use of CALL in Foreign Countries

The effective instrumentality of computers in foreign language classrooms and in reading comprehension has been reaffirmed by a number of studies. In 1990, for example, in a study conducted by Hult et al., *HyperReader*, a computer program based on hypermedia (a combination of hypertexts – or computerized texts and links – and multimedia) in a technologically enhanced environment using a micro-computer (Macintosh) was applied in teaching technical English to engineering students to help them improve reading performance. This hypertext-multimedia combination allowed the

participants to ask questions, to revise points wherever they wanted to, and to meet their individual needs.

Additionally, Retter and Jacob (1991) carried out an investigation of the differences in the level of reading comprehension of 36 participants reading hypertexts (computerized texts with links), non hypertexts (computerized texts without links), and printed materials; of their level of anxiety towards computer-based texts; and of their reaction to hypertext reading. The participants were randomly assigned into three treatment groups. The first group experienced hypertext reading. The second group was given the same text on a computer, but without the hyperlinks. The last group received the same text, but printed. All of the participants' reading comprehension was measured using a cloze test. As well, an anxiety assessment was performed with the first and second groups, while a survey to assess their perception was conducted with the first group. The results of the one-way ANOVA based on the cloze test measurement showed that among the three treatment groups, the reading comprehension of the group experiencing hypertext materials was the highest, followed respectively by that of the groups reading non hypertext and printed materials. Finally, the two-way ANOVA indicated that computer anxiety had no effect on the participant's reading comprehension.

In 1992, the computer-assisted language environment was examined by Moore and Karabenick. Their study was conducted to examine whether the use of computers to help the writing and reading skills of fifth-grade students exchanging E-mail was effective when compared to a non-computerized (pencil-based) environment. The participants were divided into two treatment groups, an experimental group, exposed to instructions on word processing and a variety of writing activities using a computer, and a control group, exposed to paper-and-pencil communicative activities. The findings showed that the participants in the computer-based environment outperformed those in

the non-computer-based one. E-mail exchanges helped improve the students' communicative skills and had a beneficial effect on their motivation in improving their writing and reading. In other words, it helped enhance their skills by promoting their enthusiasm in responding to their friends and in writing longer replies.

Evan (1993) reassured of the computer as an efficient reading assistant by exploring the potential usefulness of hypermedia, a combination of hypertext and multimedia, in helping 30 intermediate French students learn English as a foreign language in England. Interactive reading tasks and a variety of comprehension checks included in a computer program were assigned to the participants. An examination of the participants' performance showed that the computer program provided motivational benefits, enhanced interaction, and encouraged the participants' self-direction. Furthermore, the questionnaire on the participants' evaluation of the tasks performed through the program reaffirmed the ease and the potential of computers as another possible way of assisting learners in foreign language learning.

In 1994, a study was carried out by Aweiss to explore whether CALL would have a positive effect on the reading performance of 24 American college beginners learning Arabic as a foreign language. The research hypothesis was that computer-based reading would build up a favorable environment and promote reading comprehension. The students taking part in the study were randomly assigned into four conditioned groups and were required to read four different texts. The four conditions presented to the participants were as follows: (a) reading of a simple text, (b) reading of a text with its glossary, (c) reading of a text with a glossary and verb conjugations, and (d) reading of a text with a glossary and verb conjugations, as well as with added background information. The first group received only a printed text without any technological support. Opposed to this group, the other three groups worked with computer-supported

texts. The data were derived from a recall protocol, a measure used to assess readers' reading comprehension. It was found that the CALL glossary groups outperformed the paper-based group in reading comprehension. This indicated that computer-mediated reading had a positive effect on American college beginners' reading comprehension.

Chun and Plass (1996) studied the effects of the CALL program *Cyber Buch* (a multimedia application) on initiating bidirectional interaction with the readers and on aiding the overall text comprehension of 160 second-year university German students in California. The study was divided into three phases during which three questions were examined. The first question investigated whether an advanced organizer video preview (a video clip presentation) would facilitate top-down processing of the students' reading comprehension. The second question asked whether multimedia annotations (the aid of text, graphics, video and sound) would facilitate bottom-up processing of the students' comprehension. Then, the last question investigated if a correlation existed between the students' scores on a reading comprehension test and their vocabulary acquisition.

The general procedure of the three phases was developed in the following manner: first, the participants were required to watch a video preview of what they were going to read in order to initiate a top-down processing; second, they read the actual story while freely selecting different types of annotations on the meaning of unknown words; and finally, after reading, they were required to take a vocabulary test and write a recall protocol, a measure used to assess reading comprehension, of the text in their native language. The findings showed that a dynamic visual advance organizer and the visual and verbal annotation of the vocabulary items helped the global comprehension of the participants. This kind of word provision is parallel to the dual coding theory contending that, to master reading comprehension, a reader utilizes both textual and non-textual (color, shape, movement, and voice) information into brain functioning based on

interactive bottom-up and top-down operations. It was also found that there was a relationship, though a moderate one, between vocabulary knowledge and reading comprehension.

Medwell (1998) studied the effectiveness of two types of reading software packages, also called talking books, *Naughty Stories* (no structured reading stories, a collection of stories without reading scheme) and *Oxford Reading Tree* (structured stories, a collection of stories with reading scheme), and compared them with the same reading packages but in their printed versions to investigate their potential outcome on children's reading development. The findings revealed that the computer-mediated talking books helped children to gain a better accurate retelling of the story to an adult listener than the printed versions of the books. When compared to *Naughty Stories*, the *Oxford Reading Tree* influenced a greater gain in reading comprehension, but in any case both packages yielded a satisfying result of story retention. It was also found that the two programs helped the participants improve their reading comprehension better than the traditional materials.

Similarly, an investigation of a computer-networked environment on students' development of EFL critical skills was conducted by Levine, Ferenz and Reves (2000). To explore this, a computer-networked environment, as an innovative way of supporting language learning, was compared to the traditional learning environment to expose students to authentic materials. Four groups of students enrolled in an EFL academic reading course at Bar-Ilan University in Israel participated in the study. The findings showed that the computer-networked environment had a more beneficial impact on the development of EFL critical reading skills than the traditional one. In particular, the students with higher language proficiency benefited more from this environment than the students with lower proficiency. Therefore, it was found that the computerized

environment partly contributed to the acquisition and implementation of the learners' reading skills and to the changing role of teacher and EFL students in the traditional reading classroom.

De Ridder (2000) asserted the effect of a specific feature of CALL, that is, highlighted links to dictionary definitions, to enhance second-language reading comprehension on a random sample of 17 second-year Dutch students in Applied Economics learning French. The research questions investigated whether highlighted links impacted the participants' reading process, overall text comprehension, and language acquisition; whether the participants consulted the hyperlinks more often if they saw randomly highlighted words; what effect highlighted links had on the participants' mouse clicking and reading behavior; and whether those highlights had a positive or negative effect on the reading process. The three hypotheses stated first that the students in the highlighted condition would spend much more time on clicking the words to consult dictionary definitions, secondly that the students in the highlighted condition would gain little incidental vocabulary because they would find the meaning of words from a dictionary rather than inferring it from the context, and finally that the students would not gain clearer comprehension because they paid more attention to the marginal glosses than to the overall text. All the research questions and hypotheses were validated

The participants were provided with two conditions, highlighted and non-highlighted gloss, and each of them was required to read two different glossed authentic texts on economics selected through a pilot study. The Latin square design was used. As they were reading and randomly clicking on glossed words, the computer opened links to dictionary definitions. This allowed them to consult immediately the dictionary for the meaning of any difficult word. After reading, they were required to take a vocabulary and reading comprehension test, and one week later another test for vocabulary retention. All

the participants' computer-aided reading activities were recorded with Microsoft Camcorder. Finally, during short interviews, they were asked to reflect on their attitudes on reading and on their Internet habits. The results showed differences in reading between the highlighted and non-highlighted links. The highlighting of words in a text helped the learners to absorb incidentally more vocabulary, which led to an increased quality in their reading comprehension.

Apart from these previous investigations, a comparison of two software packages – *Success Maker*, an integrated learning system, and *Arthur's Teacher Trouble*, a disk-based talking book – and a comparison of these two packages and book-based environment were conducted by Underwood (2000) to find out supportive alternatives for a better development of second-language reading comprehension and to investigate the difference in gains on students' learning.

The first program, *Success Maker*, a kind of computer software integrated with a variety of sub-skill training activities (for example, vocabulary enhancement, cloze tests, sentence comprehension, and comprehension tests) was studied over a period of three years. The study was divided into two experimental phases that included an 18-month piloting period and another 12 months of evaluation. In phase I, the participants of the study, 155 primary and secondary school students, were divided into two groups. That is an Integrated Learning System group paired with a control group and an Integrated Learning System group paired with no control group. In phase II, some students from four primary and secondary schools formed the participants and the Integrated Learning System group paired with a control group. A pretest and posttest were used as a measurement of the participants' reading performance. The results showed that, during each experimental phase, the participants experiencing the Integrated Learning System made as much progress as that of the control group and, through small group interviews,

that the participants in both phases felt positive towards the use of *Success Maker* as a reading stimulus.

The second program, *Arthur's Teacher Trouble*, a story-based talking book, was studied later with 62 eight-year-old students. They were all native speakers of English, who were paired as boy-boy, boy-girl, and girl-girl on the basis of their reading performance as assessed with the GAP Reading Comprehension test. Before the actual study, all pairs were asked to take a pretest as a way to measure their pre-reading achievement and, following the study, they were asked to take the same test as a posttest measurement. Based on Bales' process of interaction analysis, the participants' behaviors on computer software were videotaped and recorded individually. Everyday for five weeks, the participants were assigned 20 minutes with the software. Each week, they were given a 30-minute reading comprehension test on the plot, characters, and actions of a story. After this, they were given a 20-minute free recall assessment, during which they were asked to write a short story. The findings revealed no maximum scores and a low level of free recall among all gender pairs except the girl-girl pairs. The failure to remember the story came from confusion about the story itself, but not about the characters. Additionally, the findings showed that the participants' learning was facilitated through the aid of their peers.

However, when the two software packages were compared to assess their effectiveness on reading comprehension, the results showed that they both had motivated the participants in performing better, but this was more remarkable for *Success Maker* and the Integrated Learning System. Regarding the comparison of software and book-based learning, there was no significant difference on the participants' performance.

In support of the effectiveness of CALL, Dreyer and Nel (2003) conducted a quasi-experimental, non-randomized, control group study to examine the effect of

teaching reading strategies on students' reading comprehension within a technology-enhanced environment. The participants of the study were all first-year ESL South-African university students enrolled in a course named English for Professional Purposes. They were all divided into two groups: an experimental one and a control one. Based on their reading comprehension scores on another course, Communication Studies, and on their scores on the TOEFL, they were further divided within their groups into successful students (scores above 55%) and at-risk students (scores below 55%). To determine the reading strategies of the participants, a questionnaire on reading strategies, the TOEFL test, and two reading comprehension tests taken from the university courses Communication Studies and English for Professional Purposes were used as instruments.

After a questionnaire was completed within the first two weeks of the second semester of the academic year 2002, the participants were required to experience a technologically enhanced learning environment consisting of interactive study guides, contact sessions, and *Varsite*, a computer program with dynamic delivery interface, automated authoring system, administrative system, and learning object repository. The purpose of the study guides and their practice activities was to lead the students into realizing the benefits of the strategies necessary to reading comprehension. The purpose of the contact sessions was to model the strategies through group and individual practices as well as hold discussions on reading strategies. *Varsite* was to allow the participants to be exposed to a variety of authentic information provided within the *Varsite* environment. With *Varsite*, the participants were required to go through four features: study guides, assignments, resources, and announcements, all to help them enhance their comprehension of and background knowledge on the topics discussed in the course Communication Studies. Based on the analytical tool *t* test, the findings showed that the successful and at-risk participants in the experimental group, who were taught reading

strategies within the technologically enhanced environment, outperformed those in the control group on the reading comprehension measurement. In other words, the graphic illustrations given on the Web pages contributed to the facilitation of the participants' comprehension of the reading content (i.e., related to Communication Studies).

Use of CALL in Thailand

In Thailand, a number of researchers have supported the potential use of computers in facilitating reading comprehension in educational settings. For example, Onlumyong (1991) investigated the integration of a microcomputer in classroom teaching in order to develop a reading program that would facilitate 10th grade students at Sirindhorn School in Surin in developing their reading skills. The participants were divided into an experimental group experiencing computer-mediated instructions and a control group instructed by the conventional method. The instrument for the two groups was the lesson "Practice in comprehension" adapted from a lesson in an English book. The participants in the two groups experienced their own respective conditioned treatments for 10 weeks. The findings showed that after a 10-week session, the development of reading in the computer-mediated environment was significantly higher than that in the non-computerized one.

Prapphal (1992), in the same year, conducted a study to test the potential of a computerized environment using communicative CALL activities in facilitating the English language skills of 22 first-year science students attending the general Foundation English course at Chulalongkorn University in 1991. To fulfill the objective of the study, two research questions were investigated, namely the extent to which students benefit from the use of computers in an English class and the type of computer activities they prefer. *Word Star*, a computer program with five activities, and a questionnaire investigating the participants' opinions on the benefits of *WordStar* were used as

instruments. The procedures were carried out by forming the participants into groups based on the notion of cooperative learning and exposing them to the five activities of *Word Star* available in the Resource Center. These five activities included Interviews, Places, Songs, News, and Famous People. Each group was asked to do the assignments on their own and was required to give class presentations as well as evaluate their friends' presentations. The findings, as disclosed by the questionnaire distributed after the participants' completion of the treatment, revealed that the CALL activities introduced by *Word Star* helped develop their attitudes towards learning in a technologically enhanced environment and helped improve their English language performance in many areas such as vocabulary, grammar, and reading skills. They added that they gained other benefits by using CALL as a scaffold to learn more about the world and team work.

Sirivedin (1998) confirmed the efficient use of computer programs to facilitate reading comprehension over traditional text-based instruction on 28 Thai secondary students at Suankulab Wittayalai School in Nontaburi, by experimenting with a multimedia program on a set of CD-ROMs. The participants were divided into two groups, 14 in the experimental one and the other 14 in the control group, according to their gender and the English grade they had earned in the previous semester. The two groups were assigned the same reading text, namely "Winnie the Pooh and the Honey Tree," but in different learning environments: The participants in the experimental group experienced the text animated with CD-ROMs, while those in the control group were exposed to plain text. Thereafter, both groups were required to take a comprehension test on the entire story. The results indicated that the experimental group reading the story from a CD package outperformed those in the control group working on a printed text.

Added to these investigations, the effectiveness on the Thai employees at Allegiance Healthcare (Thailand) a multinational company in Rayong of a combination of

two CALL programs called *Triple Play Plus*, a vocabulary software program, and *Versatext*, an adapted reading software program on vocabulary acquisition and reading comprehension was evidenced and reaffirmed by Reongmanee (2001). The participants were 20 employees holding a Bachelor's Degree, aged between 24 and 33 years old, and randomly selected from the company's departments such as Finances, Engineering, Human Resources, Materials, Production, and Quality and Regulation Management. Based on a pretest, the employees were divided into an experimental group and a control group and were asked to complete a pre-session questionnaire. The 10 employees in the experimental group were given prior training with the software packages and were assigned an exposure of two days a week to the two computer programs *Triple Play Plus* and *Versatext* as English learning assistance, and another two days a week attending an elementary English class instructed by a native English speaker. Meanwhile, the 10 employees in the control group were assigned a simple exposure of two days a week to a traditional elementary English class with a native English speaker. After six weeks, a posttest was administered to the all participants, as well as a five-point Likert scale questionnaire on their attitude, and the improvement of their English learning ability through CALL, after the session. The results of this study showed that based on the mean scores of the posttest between the two treatment groups, when compared to text-based instruction, the computer programs allowed the learners to gain a higher reading performance and an increased amount of vocabulary. This indicated that the use of the two multimedia programs helped the participants acquire not only vocabulary but also reading skills in an English language-mediated workplace.

Hirunburana and Opanon-amata (2003) examined the use of a computer program in developing the English reading abilities, speed reading, and reading comprehension of 99 students from the Faculty of Commerce and Accountancy at Chulalongkorn University

in Bangkok. Two research hypotheses were tested: first, that no differences in reading rates and comprehension would be noted between the experimental group and the control group before and after the participants experienced the speed reading training program, and second, that no differences in English reading proficiency would be seen between the experimental and control groups before and after the participants experienced the speed reading training program. Forty-eight third-year students from the Faculty of Commerce and Accountancy were piloted with speed reading training through a computer program over eight weeks to pinpoint the potential problems in the program. Ninety-nine students (78 women and 21 men) enrolled in the course Social English, a compulsory course, formed the participants of the study and were designated into an experimental group and a control group. The 51 participants in the experimental group and the 48 ones in the control group were sub-divided into groups based on the results of the Chulalongkorn University's test of English Proficiency (CU-TEP) used as a pretest. *Speed Reader*, a speed training computer program, was used in the study. It was designed for training speed reading skills and consisted of activities such as reading warm-ups, eye movements, newspaper reading, paced reading, timed reading, and eye max.

The experimental group, trained with the speed reading program complementing the regular English course for one hour, twice a week, over 12 weeks, was assigned activities and a variety of reading passages in each reading pace. On the other hand, the participants in the control group only attended a regular English course. Each speed reading activity performed by the experimental participants was automatically saved on a diskette and regularly monitored. After the experimental participants had been trained in activities aimed at increasing reading speed, timed reading, and paced reading, a different version of the CU-TEP was used as a posttest given to the participants of the two groups to determine their reading speed, reading comprehension, and English proficiency. A

questionnaire to assess the attitudes toward the speed reading computer program and an evaluation form with a five-point Likert scale rating were also administered. Based on (a) the application of the two-sample dependent *t* test to examine any significant difference in the participants' reading rates and comprehension, (b) the application of the two-sample independent *t* test to examine any significant difference in the participants' reading rates and reading comprehension, and (c) the English proficiency of the participants as rated from the CU-TEP, the results showed that, for the experimental group, the scores derived from the comparison of the pretest and posttest yielded significant gains in their reading rates as well as an improvement of their reading comprehension and English proficiency.

Finally, in 2004, Thinsan conducted a study to investigate if glossing could help Thai postgraduate students learn and retain vocabulary and gain successful reading comprehension. Five research questions were explored. Thinsan wanted to know (a) if the gloss users could outperform the non-gloss users in reading comprehension, (b) if electronic and paper-based glosses would have a different effect on the learners' reading comprehension, (c) if glossing helped learners retain vocabulary better, (d) if electronic and paper-based glosses would have different effects on the learners' vocabulary retention, and (e) what the participants' attitudes towards glossing were. Three Thai female students studying for their master's degree at Indiana University Bloomington volunteered for the study. The instruments consisted of three redesigned reading passages with electronic glosses, paper-based glosses, and no glosses respectively used as a pretest, a posttest and a reading comprehension test, a questionnaire to elicit the participants' attitudes towards glossing, and telephone interviews. A randomly assigned sampling was used in this study. Three participants were randomly assigned to get one of each different reading set: electronic glosses, paper-based glosses, and non-glosses. The time spent on each set and the behaviors of the participants were all recorded. Before and after the

treatment, the participants' knowledge of vocabulary was examined through a pretest and a posttest. One week later, a comprehension check was performed after the participants completed their tasks. The vocabulary test was in the cloze format and the questions in the comprehension test were selected from online sources. Following this, to collect qualitative data, a questionnaire was distributed and telephone interviews were conducted to confirm the participants' responses.

Concerning the first research question investigating if the gloss users would outperform the non-gloss users in reading comprehension, the results revealed that there was no obvious difference in the effects of glossing and non-glossing on the participants' reading comprehension. As for the answer to research question two that examined if electronic and paper-based glosses would effect differently the participants' reading comprehension, it appeared that the users of the electronic glosses performed better than the users of the paper-based gloss and get benefits from an easy use on computerized glossing, including a faster access to the meaning of the words. The research questions three and four, concerned respectively with finding out if glossing helped learners retain vocabulary better and if electronic and paper-based glosses would have different effects on the participants' vocabulary retention, the data showed that electronic glossing indeed helped the participants learn and retain vocabulary better and it was more helpful than paper-based glosses. Finally, research question five that was meant to investigate the participants' attitudes towards glossing found a very positive answer in that the participants all agreed with the potential of glosses to help them learn and retain vocabulary and understand the reading passages something that led them to better reading comprehension.

In conclusion, as revealed by the history of CALL in education, the computer can perform as a tutor offering drills or skill practices, a stimulus for discussion and

interaction, and a medium of global communication (through the use of the Internet) with unlimited sources of authentic reading materials. It also offers ongoing exercises and practice that facilitates learners' linguistic interactions with the target language and enhances foreign language learning with a variety of educational purposes. Additionally, as obviously evidenced in a number of studies, to become competent and independent readers of English, it is suggested that Thai students be exposed to such an efficient technological tool and be provided with Web-based, interactive, second-language content in their language learning environment in order to benefit from the non-verbal and visual features available on the Internet that promote interactive reading and lead to their better reading ability.

CHAPTER III

METHODOLOGY

This chapter details the methodological framework of the study. It revolves around the participants, the research instruments and materials, the research design, as well as the procedures for the collection and analysis of the data.

This study was conducted to investigate the effects of the Internet as a supplementary reading resource on Thai students' reading comprehension in classrooms of English as a foreign language. Three hypotheses were tested to examine: (a) if the mean score of the participants experiencing Internet-based reading as a supplementary resource would be higher than that of the participants experiencing book-based reading as a supplementary resource, (b) if the mean score of the participants with high computer knowledge would be higher than that of the participants with low computer knowledge, and (c) if a relationship existed between the participants' final grades in their English reading course and their scores on the English reading section of the CU-TEP. This reading section of the CU-TEP was used both as a pretest and a posttest to measure the participants' reading proficiency. The scores obtained from the pretest and the posttest were then compared and analyzed using (ANCOVA) to investigate any statistically significant differences.

Participants

Selection of the University

As required by the Ministry of University Affairs, to be admitted in Thai public universities, secondary students are allowed to select four choices of universities they wish to study at depending on their scores on the entrance examination. Srinakharinwirot University (SWU), according to Thailand's Commission on Higher Education (2006), is

one of the oldest and most well-known public universities in the country and is the one that most of the secondary students select as their academic choice and add to their preference list. Therefore, a large number of students are admitted at this university every year (Srinakharinwirot University Operation Center, 2007).

Moreover, to meet the market needs and serve the country's continuing development, technology transfer, and globalization, SWU has produced a number of graduates in various fields of study and provides courses and training as well as English programs for students to improve their academic development and professional career. With the mission to produce qualified graduates proficient in English language skills, the Department of Western Languages at SWU designed many English courses to help the students improve their general English proficiency, such as Business English, English for Specific Purposes, Critical Reading, Reading Techniques, and so on. Reading Techniques (EN 221), in particular, is one of many English courses that aims to help students study the techniques and methods for reading texts by teaching them the basic skills of reading, such as guessing a word meaning from its contextual clues or using transitional words. In addition, this course was developed to assist students to prepare themselves in the advanced level of reading in a reading course EN 321, to attain a higher level of English proficiency, and to help them finally become independent readers.

Additionally, the researcher was allowed to conduct a study with these students by permission from the Department of Western Languages and the Department of Political Sciences of Srinakharinwirot University. For these reasons, SWU was selected, and the English course Reading Techniques was used as a treatment course and the students who enrolled in this course were asked to participate in this study, for more information (see Appendix B).

Selection of Participants

The participants in this study comprised 51 second-year, undergraduate students not majoring in English and enrolled in Reading Techniques (EN 221) in the second semester of the academic year 2006 at Srinakharinwirot University (SWU), Bangkok, Thailand. As required by the university, all the students at SWU are to enroll in compulsory foundation English courses offered by the Department of Western Languages, which courses aim to provide them with general knowledge of the English language skills. Reading Techniques (EN 221) is one of these compulsory courses in which SWU learners are asked to participate as part of the on-going goal of improving their English language performance, in order to apply this knowledge to other courses and more generally to academic and professional purposes.

For this study based on convenient sampling, the students enrolled in Reading Techniques (EN 221) were assigned, regardless of gender, into a control group who experienced traditional text-based instruction supplemented with book-based reading and an experimental group experiencing text-based instruction supplemented with Internet-based reading. They were all required to take two versions of the reading section of the Chulalongkorn University's Test of General English Proficiency (CU-TEP), one as a pretest and the other as a posttest, at the beginning and at the end of the semester respectively. At the conclusion of the study, if the hypotheses were confirmed, the results could be applied to the SWU students and to all students at other Thai universities in need of English reading improvement.

Instrumentation

Chulalongkorn University's Test of General English Proficiency (CU-TEP)

In this study, the researcher was allowed to use academically, and free of charge, two different versions of the reading section of the CU-TEP as both a pretest and a posttest to evaluate the participants' reading proficiency. The purpose of the whole CU-TEP is to assess the test-takers' listening, reading, writing, and speaking skills needed in daily communication with English as a medium (Chulalongkorn University Language Institute, 2002). This test is for the Chulalongkorn University students and staffs, Government and private sector personnel, and the general public. It is also employed by many researchers in Thailand as a standardized measurement of their participants' English language proficiency.

The reading part of this test was used as an instrument for this study because the CU-TEP itself is a standardized test for measuring academic skills appropriate for higher education and because it is widely used in Thai institutes as a reliable and valid assessment of a person's proficiency in English. Specialists on the content of English tests also approved, edited, and piloted it before it was officially accepted and administered. The coefficients of reliability for the test range from .86 to .91 (Prapphal, 2003). Its concurrent validity can be equated with the Test of English as Foreign Language (TOEFL) and its correlation coefficient with TOEFL stands at .80 (Prapphal, 2003). In addition, its results can be used to predict English academic success at the graduate level (Prapphal, 2003).

The CU-TEP comprises three main sections: listening comprehension, reading comprehension, and writing. The number of questions for the listening part is 30, for the reading part 60, and for the writing part 30, for a total of 120 points. Testing time is limited at 180 minutes. The items in the test are in a multiple-choice format, and their

content is general English drawn from different genres. The test score for each skill is presented in percentage. The scores range between *Very Good User* if the examinee attains a score of 85-100%, *Competent User* if the examinee receives 75-84%, *Moderate User* if she or he gains 65-74%, and *Marginal User* and *Extremely Limited User* if the score hits between 55-64% and below 54% respectively (Chulalongkorn University Language Institute, 2002).

In this study, the aim was to investigate the differences in effectiveness in developing students' reading proficiency between the use of two kinds of supplementary resources, namely books and the Internet. As the CU-TEP claims, the objective of the reading section is to measure the test-takers' ability to extract both literal and interpretive meanings from verbal and non-verbal information taken from a variety of text sources, such as newspapers, travel brochures, leaflets, magazines, and excerpts from short stories and novels, with various rhetorical styles ranging from, for example, informative and descriptive or narrative, to persuasive and argumentative. In the test, the length of a passage is moderate at 150-300 words. Therefore, and for all these reasons, the reading section of the CU-TEP was selected as a measurement of the participant's reading proficiency.

Students Demographic Survey

In this study, to gather the participants' details of their computer literacy, a survey adapted from Chumpavan, Lorber, and AL-Bananieh (2005) was employed and given to them a few weeks after the pretest. Not many changes had been made to the questions in that survey since it was used for the same purpose as for this research (see Appendix A).

Materials for the Experimental and Control Groups

The textbook *Reading Connections* was randomly selected from a variety of commercial reading materials and was used as a main text for Reading Techniques (EN

221) for both groups. The purpose and description of the book in part corresponds to the course description of EN 221. In addition, at the time of this study, *Reading Connections* was selected as a course book in reading classes by many Thai institutions, including Srinakarinwirot University. As Ediger and Pavlik (2000), the authors of the book, claimed, it is intended for international students of intermediate English to help them with their college or university studies, by teaching them skills and strategies for purposeful reading. Determining the meaning of words from context and word structures, scanning and skimming, recognizing topic sentences, the main idea, the implied main idea and the supporting details, understanding logical transitions, understanding the author's plan, and making inferences, that is, the essential reading skills that enhance the students' reading abilities and the proficiency of which needs to be tested, are included in the book. Therefore, *Reading Connections* was selected as a reading material for participants in both groups.

Supplementary Materials for the Experimental Group

The website *BBCworldservice.com* was used in the study for the experimental group since it was continuously accessible, flexible, and autonomous. Users could access the Web site anywhere and anytime they needed, and there were no general constraints of use as long as the Internet was available. There were no payments or membership fees, and the Web site content was periodically updated. The readers could easily surf the Web site by themselves.

The *Learning English* page on *BBCworldservice.com*, in particular, a skill-integrated page comprising reading activities, was selected as Internet-based supplementary material for the experimental group because this learning resource aimed at teaching by drilling, practicing reading tasks, and providing the readers with more reader/text interaction in the form of exercises, multimedia-enhanced content, individual

controllability, and immediate feedback. It comprised three main modes: reading texts, audio-visual presentations, and exercises. In the reading practice, a lot of features were included, such as hyperlinks, highlighting, detailed vocabulary, and audio-visual representations assisted with additional background knowledge. Besides, it included many essential drills to give its readers more choices of interactions, such as true/false questions, multiple-choice questions, and blanks to be filled, all of which helped promote its users' English reading ability. Therefore, the researcher used this page as a supplementary resource for the participants in the experimental group.

Other Web sites were not selected since nearly all of them provided no more than just a plain text with few additional features such as audio with text, pictures with text but no audio-visual representations, something that would help readers build their background knowledge. Moreover, to be accessed, some sites required payments or membership fees from their users. When compared to *BBCworldservice.com*, some other Web sites offered little multimedia functionality to their readers. Therefore, other Web sites were not selected for the study.

The page *Learning English* of *BBCworldservice.com* acted as an interactive assistant facilitating the participants' reading comprehension. The multimedia offered on this Web-based reading provided the participants with background knowledge and vocabulary drilling and allowed them to interact with the audio-visual representations. The role of the teacher in this experimental group was to help the students go step by step with their tasks and lessons and to provide them with instructional guidance and explanations on the Web-based reading.

Before the beginning of the computer-based reading practice, the participants of the experimental group were all introduced to the Web site in order to become familiar with it. At the start of the treatment, the participants were instructed on how to go through

BBCworldservice.com and were provided with instructional guidance which led them to the *Learning English* page of the Web site and its three sections: *News English*, *Business English*, and *Watch and Listen*. The participants were informed that they needed to cover all three sections by going over them one after the other and that they were free to choose, in each section, any reading text with its vocabulary and comprehension check. They had to read the text first, then the vocabulary and its annotations; and finally, they were requested to do the exercises in order to check their comprehension. Moreover, to help them improve their reading skills, they were required to experience the audio and video representations offered with the readings. With such an enriching learning environment, therefore, the participants were able to apply the skills they had learnt by checking their overall reading comprehension through exercises similar to those of the book-based reading. They were required to practice the Web site reading they found of interest, one hour each week throughout the semester. At the end of each practice hour, in order to check if they actually did the assignments, they were required to hand in those completed immediately as assignment records (see Appendix C).

Supplementary Materials for the Control Group

The book *For Your Information 2* was selected as the text-based supplementary reading material for the control group. The book was designed to help college students of English as a second or foreign language to become independent, competent readers (Blanchard & Root, 1996). Through the book, students were encouraged to move beyond the state of passive thinkers to more active thinkers by integrating their analytical skills and experiences with the follow-up activities. Tasks were offered and varied to provide stimuli for students to engage in interactions. *For Your Information 2*, therefore, was used to supplement reading for the control group. Although the content, the lessons, and the exercises accompanying the texts of the book were varied, those associated with

comprehension and vocabulary check were selected, and the teacher himself helped the students with their reading techniques and clarified their understanding of the texts.

In addition, topics of interests such as sociology, science and technology, business and economics, wildlife, music, and sport in the supplementary materials for the control group were selected by the researcher to match with those provided on the Web site for the experimental group. For this study, the number of words in the reading passages found in the book and on the Web page were also counted and selected to equal each other in number.

In conclusion, the participants in both groups were asked to do the exercises that were part of their respective supplementary materials to check their reading comprehension and their understanding of vocabulary. These exercises included multiple-choice questions, true-false questions, blanks to be filled, matching, and definitions to find.

Research Design

This study used a two-group, pretest and posttest design. The participants in both groups took the reading section of the CU-TEP to measure their English reading proficiency at the beginning of the semester. Two weeks later, they were asked to fill out a survey to obtain demographic information. At the end of the semester, both groups took a different version of the reading section of the CU-TEP to determine their level of reading achievement, as well as the final examination for the course Reading Techniques (EN 221).

Pilot Study

A pilot study was carried out in the first semester of the academic year 2006. The printed supplementary reading material *For Your Information 2*, and the electronic supplementary reading material, the Web page *Learning English* of the Web site *BBC*

worldservice.com, were instruments. The participants were 70 second-year students not majoring in English and enrolled in the English course English for Academic Purposes (EN 203). They were randomly assigned into an experimental and a control group, with 35 participants in each. The participants of the two groups were required to use the course book *Reading Connections* as a primary reading material. The participants in the control group were supplemented with *For Your Information 2* as book-based reading, while the participants in the experimental group experienced Internet-based reading, the English learning page at *BBCworldservice.com*.

Before experiencing their respective learning environment for a semester, the two groups were both required, at the beginning of the semester, to take the reading section of the Chulalongkorn University's Test of General English Proficiency (CU-TEP) as a pretest to measure their English reading proficiency. Two weeks later, the *Students Demographic Survey* was distributed to the participants to collect demographic information and their computer literacy. At the end of the semester, they were required to take a different form of the reading section of the CU-TEP to measure their level of achievement in English reading proficiency and to investigate any significant difference in their English reading performance.

The findings derived from the comparison of the raw scores obtained in the reading section of the CU-TEP between the two treatment groups indicated that the mean scores of the participants in the experimental group, who used Internet-based reading as a supplementary resource, was higher than that of the control group, who used book-based reading as a supplementary resource. In other words, the level of reading achievement for the participants of the experimental group, who used the English learning page of *BBCworldservice.com* as a supplementary reading material, was better than that of the control group, who used the book *For Your Information 2* as a supplementary material.

Data Collection Procedures

The actual study was conducted in the second semester of the academic year 2006. Before the semester started, the researcher contacted the Chair of the Department of Western Languages and the Chair of the Department of Political Sciences at Srinakharinwirot University and asked for permission to conduct the study with the students enrolled in Reading Techniques (EN 221) and was allowed to conduct the study with these students as convenient sampling. These students were then assigned into two groups: an experimental group of 21 participants and a control group with 30 participants. Then, they were asked to take the reading section of the CU-TEP as a pretest measurement of their reading proficiency. The pretest was given a week after the start of the semester.

The participants in the experimental group were allowed to use the computer lab in the Faculty of Humanities to access their electronic supplementary materials throughout the semester. To access the Web site, these participants were given guidance and support, and were supervised during practices. Their assignments were checked and recorded periodically at the end of each weekly practicing hour.

Two weeks after the second semester started, a survey investigating the computer knowledge of the participants (see Appendix A) was distributed in both groups. After the two groups experienced their own respective environment for the semester, they were asked to take a different version of the reading section of the CU-TEP as a posttest measurement.

Data Analysis

The data collected from the pretest and posttests of the experimental and control groups were analyzed quantitatively using the analysis of covariance (ANCOVA), a statistical tool used to analyze significant differences in the mean scores of the results on

these two tests, and Spearman's rho correlation coefficient to investigate the presence of a relation between the students' final grades and scores on the test. The answers on the questionnaire related to computer knowledge of the participants in two groups and their attitudes towards the Internet-based environment and its learning potential were also analyzed. The alpha level of .05 was established to indicate if differences between the results were statistically significant.

CHAPTER IV

FINDINGS

To detail the collected data according to the hypotheses, this chapter presents a quantitative statistical analysis of this data through an analysis of covariance (ANCOVA) and Spearman's rho correlation coefficient.

Research Hypothesis I

On the posttest administration of the reading section of the CU-TEP controlled for prior English performance, the mean scores of the experimental group experiencing the Internet-based reading as a supplementary resource will be significantly higher (at a level of .05) than the mean scores of the control group experiencing the book-based reading as a supplementary resource.

Results

Table 1 details the pretest and posttest mean scores and the standard deviation scores of all the participants in the Internet and non-Internet groups. The total number of the participants was 51 ($N = 51$); the experimental group counted 21 students ($n = 21$), while the control group counted 30 students ($n = 30$).

Table 1

*Pretest/Posttest Mean and Standard Deviation Scores of Internet and Non-Internet**Participants*

Group	Pretest			Posttest		
	<u>M</u>	<u>SD</u>	<u>N</u>	<u>M</u>	<u>SD</u>	<u>n</u>
Internet	15.52	5.34	21	17.71	4.35	21
Non-Internet	14.13	4.66	30	14.97	4.44	30

It should be noted that the participants were assigned into their Internet and non-Internet groups and that at the time of the pretest, they were limited in number and that the groups were unequal in size. For this reason, it was important to determine if the pretest measurements of the participants from the two groups were similar. Therefore, to note the differences, if any, between the pretest mean scores of the two groups, the independent *t* test for groups with unequal variance was conducted at the time of the pretest. The findings did not show any significant difference between the pretest mean scores of the participants in the Internet group and the ones of the participants in the non-Internet group, at $t(39.2) = .96$, and $p = .34$ (see Table 2).

Table 2

*T-Test Comparison of Pretest Scores of Internet (n = 21) and Non-Internet (n = 30)**Participants*

Group	<u>M</u>	<u>SD</u>	<u>t</u>	<u>p*</u>
Internet	15.52	5.34	.96	.34
Non-Internet	14.13	4.66		

* $p < .05$

Although the t test did not uncover any significant difference between the groups, it was vital to test the homogeneity of slopes assumption prior to conducting a one-way analysis of covariance (ANCOVA). According to Green and Salkind (2002), the purpose of conducting ANCOVA is to “evaluate the interaction between the covariate and the factor in the prediction of the dependent variable” (p. 212). In such a test as this pretest, if the interaction is significant, the results from ANCOVA are not meaningful, and ANCOVA does not need to be conducted. The Internet and non-Internet groups themselves were the independent variables and their achievement on the posttest was the dependent variable, while the pretest was treated as the covariate.

The results of the test of homogeneity of slopes between the Internet and non-Internet groups indicated that the interaction was not significant, with $F(1, 47) = 2.78$, $MSE = 14.43$, and $p = .10$. Table 3 shows the results of the test of homogeneity of slopes.

Table 3

Results of the Test of Homogeneity of Slopes of Internet and Non-Internet Groups

Source	Sum of Square	<u>df</u>	Mean square	<u>F</u>	<u>p</u> *	Eta Squared
Intercept	493.07	1	493.00	34.16	.00	.42
Group	70.01	1	70.01	4.85	.03	.09
Pretest	223.32	1	223.32	15.47	.00	.25
Interaction	40.17	1	40.18	2.78	.10	.06
Error	678.26	47	14.43			

* $p < .05$

Because of the results pointing to an insignificant interaction of the groups as seen in Table 3, ANCOVA was applied. Table 4 presents the summary of the analysis of the covariance of the differences between the Internet and non-Internet groups.

Table 4

Summary of Analysis of Covariance of Group Differences

Source	Sum of Square	df	Mean square	F	p*	Eta Squared
Intercept	472.05	2	472.06	31.53	.00	.39
Pretest	232.81	1	232.81	15.55	.00	.24
Group	55.20	1	55.20	3.69	.06	.07
Error	718.44	48	14.97			

* $p < .05$

The result of the search for differences in the posttest measurements between the Internet and non-Internet participants was reached through an analysis of the covariance of the posttest scores using the pretest as a covariate. As seen in Table 4, no significant difference was found between these two groups of participants, with $F(1, 48) = 3.69$, $MSE = 14.97$, and $p = .06$. With the control of the pretest scores, no significant difference was found between the adjusted mean scores of the participants in the Internet group ($M = 17.51$, $SE = .83$) and those in the non-Internet group ($M = 15.31$, $SE = .70$) on their posttest measurements. The partial η of .07 suggested a weak relationship between the group effect and the participants' posttest scores on the CU-TEP. Thus, it can be concluded that the results of the present investigation do not support Research Hypothesis I.

Research Hypothesis II

On the posttest administration of the reading section of Chulalongkorn University's Test of General English Proficiency (CU-TEP) controlled for prior English performance, the mean scores of the students who on the *Students Demographic Survey* rated themselves as proficient in computer knowledge will be significantly higher than the mean scores of those who rated themselves as less knowledgeable.

Results

Table 5 presents the mean and standard deviation scores for both the pretest and posttest measurements of the participants with high and low computer knowledge, regardless of their group. One male participant did not complete some parts of the *Students Demographic Survey* and gave no other information regarding his knowledge of computers. Therefore, parts of his data on this matter were considered missing and were excluded.

Table 5

Pretest/Posttest Mean and Standard Deviation Scores of Participants with High and Low Computer Knowledge

Degree of computer knowledge	Pretest			Posttest		
	<u>M</u>	<u>SD</u>	<u>n</u>	<u>M</u>	<u>SD</u>	<u>n</u>
High	14.46	4.35	30	16.30	4.30	30
Low	15.10	5.92	20	16.10	4.97	20

It is important to note that the participants were not selected based on their computer knowledge. Therefore, it was necessary to determine if the participants who, on the *Students Demographic Survey*, rated themselves as having high computer knowledge

and those who rated themselves as less proficient were equal on the pretest measurement. To confirm differences between the mean scores, on the pretest measurement, of the participants with high and low computer knowledge, the independent t test for groups with unequal variance was conducted at the time of the pretest. The findings revealed no significant difference on the pretest mean scores between the participants with high computer knowledge and those with low computer knowledge, with $t(32.3) = .41$ and $p = .69$ (see Table 6)

Table 6

T-Test Comparison of Pretest Scores of Participants with High Computer Knowledge ($n = 30$) and Participants with Low Computer Knowledge ($n = 20$)

Degree of computer knowledge	<u>M</u>	<u>SD</u>	<u>t</u>	<u>p*</u>
High	14.46	4.35	.41	.69
Low	15.10	5.92		

* $p < .05$

The homogeneity of slopes was tested before conducting a one-way analysis of covariance (ANCOVA) to compare the achievement, with the control of the pretest scores, on the posttest between the participants with high and low computer knowledge. High and low computer knowledge were the two independent variables, the posttest achievement was the dependent variable, while the pretest was treated as the covariate.

The results of the test of homogeneity of slopes did not indicate any significant interaction, with $F(1, 46) = .24$, $MSE = 15.93$, and $p = .62$. Table 7 shows the results of the test of homogeneity of slopes between the participants with high and low computer knowledge.

Table 7

Results of the Test of Homogeneity of Slopes between Participants with High and Low Computer Knowledge

Source	Sum of Square	<u>df</u>	Mean square	<u>F</u>	<u>p</u> *	Eta Squared
Intercept	430.20	1	430.20	26.99	.00	.37
Com skills	5.71	1	5.71	.36	.55	.00
Pretest	260.68	1	260.68	16.36	.00	.26
Interaction	3.76	1	3.76	.24	.62	.00
Error	732.99	46	15.94			

* $p < .05$

As shown in Table 7, the results of the homogeneity of slopes between the participants with high and low computer knowledge suggested that the interaction was not significant and that it was possible to proceed with ANCOVA. Table 8 presents the summary of the analysis of covariance on the differences of computer knowledge between the two groups.

Table 8

Summary of Analysis of Covariance of Difference in Computer Knowledge

Source	Sum of Square	<u>df</u>	Mean square	<u>F</u>	<u>P</u> *	Eta squared
Intercept	426.64	1	426.64	27.22	.00	.37
Pretest	269.35	1	269.35	17.18	.00	.27
Computer skills	2.96	1	2.96	.19	.67	.00
Error	736.75	47	15.68			

* $p < .05$

As seen in Table 8, the results of ANCOVA did not reveal any significant difference in the participants' knowledge of computers, with $F(1, 47) = .19$, $MSE = 15.68$, and $p = .67$. Using the pretest scores as control, no significant difference was found in the adjusted mean scores of the posttest of the CU-TEP between the participants with high computer knowledge ($M = 16.41$, $SE = .72$) and the participants with low computer knowledge ($M = 15.92$, $SE = .89$). In addition, the η partial of .00 suggested the absence of relationship between the participants' computer knowledge and their posttest scores on the CU-TEP. Thus, Research Hypothesis II was rejected.

Research Hypothesis III

There is a positive relationship between the participants' final grades in Reading Techniques (EN 221) and their posttest mean scores on the reading section of the Chulalongkorn University's Test of General English Proficiency (CU-TEP).

Results

A one-tailed Spearman's rho correlation coefficient was used to test the degree of relationship between the final grades of the participants in the two groups earned on the English reading course Reading Techniques (EN 221) and their posttest scores on the reading section of Chulalongkorn University's Test of General English Proficiency (CU-TEP).

Table 9 presents the coefficients of correlation between the participants' final grades in Reading Techniques and their scores on the posttest administration of the reading section of the CU-TEP.

Table 9

Coefficients of Correlation between Participants' Final Grades in Reading Techniques (EN 221) and their Posttest Scores on the Reading Section of the CU-TEP

Participants' Achievement	Posttest results		
	<i>n</i>	<i>r_s</i>	<i>p</i> *
Final grades in Reading Techniques	51	.67	.00

* $p < .05$

The analysis of the one-tailed Spearman's rho correlation revealed, as seen in Table 9, that the participants' final grades on the English reading course Reading Techniques were significantly correlated to the scores they earned on the posttest administration of the reading section of the CU-TEP (posttest, $r_s(49) = .67, p = .00$). Therefore, there was a positive correlation between the students' final grades in Reading Techniques (EN 221) and their posttest scores on the reading section of Chulalongkorn University's Test of General English Proficiency (CU-TEP).

Finally, the results of the analysis of the coefficients of correlation showed that the final grades earned by all the participants of the two groups on the English reading course Reading Techniques was also be a good predictor of their English proficiency on the reading section of the CU-TEP. That is, the participants who had received higher grades in EN 221 would likely earn higher scores on the reading section of the CU-TEP. Therefore, Research Hypothesis III was supported.

Results of *Students Demographic Survey*

Table 10 contains the information gathered from the participants concerning their use of computers and their general attitudes towards computers and the Internet. As shown in this table, the majority of the participants of both the Internet (95.2%) and the non-Internet (86.7%) groups had already studied English for more than five years. Regarding the use of computers and of the Internet, most of the participants in both groups (85.7% in the Internet group and 90% in the non-Internet group) stated that they had their own computers at home. The majority of the participants in the Internet group (81%) said that they used the computer for e-mail. It was interesting to find that only half of the students in this group (52.4%) used the computer for word processing. Opposed to this, 90% of the participants in the non-Internet group said they used the computer for surfing the Internet. More than half of them (76%) said that they used the computer for word processing.

With respect to the Internet use, the answers from the *Students Demographic Survey* showed that most of the participants in the Internet and non-Internet groups used the Internet. Additionally, all the participants in the Internet group and most of those in the non-Internet group said that it was appropriate for them to learn English via the Internet and added that the Internet helped them improve their English.

Although over half of the participants in the Internet group said that they enjoyed surfing the Internet because of the multimedia or the rich communication it offered, less than half of the participants in the non-Internet group said the same. On the other hand, most of the participants in the two groups said that reading over the Internet might not have helped them increase and retain English vocabulary. Moreover, they said that they would not continue using the Internet after the course. However, most of them said that the Internet would help them improve their English and computer skills in general.

Table 10 presents the percentages of the summary of the habits related to computer and Internet usage of the two groups of participants.

Table 10

Percentages of Demographic Characteristics of Participants of the Two Groups

Demographic Characteristics	Internet group (%) (<i>n</i> = 21)	Non-Internet group (%) (<i>n</i> = 30)
Length of English learning		
Three years	1 (4.8%)	1 (3.3%)
Four years		1 (3.3%)
Five years		2 (6.7%)
More than five years	20 (95.2%)	26 (86.7%)
Computer at home	18 (85.7%)	27 (90%)
No computer at home	3 (14.3%)	3 (10%)
Computer Use		
Games	16 (76.2%)	22 (73.3%)
E-mail	17 (81%)	25 (83.3%)
CD-ROMs	14 (66.7%)	20 (66.7%)

(table continues)

Table 10 (continued).

Percentages of Demographic Characteristics of Participants of the Two Groups

Demographic Characteristics of Participants	Internet group (%) (<i>n</i> = 21)	Non-Internet group (%) (<i>n</i> = 30)
Internet surfing	16 (76.2%)	27 (90%)
Word processing	11 (52.4%)	23 (76.7%)
Program installation	14 (66.7%)	21 (70%)
Frequency of Internet use:		
Rarely	1 (4.8%)	1 (3.3%)
Moderately	10 (47.6%)	18 (60%)
Extensively	10 (47.6%)	10 (33.3%)
Learning English via Internet as a		
supplement is appropriate.	21 (100%)	21 (70%)
Internet helps to improve English language	21 (100%)	23 (76.7%)
Reading through the Internet has helped		
increase my English vocabulary.	10 (47.6%)	9 (30%)
Reading through the Internet has helped me		
retain my English vocabulary.	8 (38.1%)	5 (16.7%)
I enjoy Internet multimedia.	14 (66.7%)	14 (46.7%)
I will continue using the Internet after the		
course.	9 (42.9%)	8 (26.7%)

(table continues)

Table 10 (continued).

Percentages of Demographic Characteristics of Participants of the Two Groups

Demographic Characteristics	Internet group (%) (<i>n</i> = 21)	Non-Internet group (%) (<i>n</i> = 30)
Internet has helped improve my English and computer knowledge.	11 (52.4%)	18 (60%)

Summary

In this study, three hypotheses were tested. The first one stated that on the reading section of the CU-TEP used as a posttest measurement, the participants using the Internet as a supplementary resource would score significantly higher than those using a book as a supplementary resource. The second hypothesis maintained that on the same test, the participants with high computer knowledge would score significantly higher than those with low computer knowledge. The last hypothesis stated that a positive relationship existed between the participants' final grades in the English reading course Reading Techniques (EN 221) and their posttest mean scores on the reading section of the CU-TEP. Furthermore, this study was to investigate the participants' attitudes towards the use of computers and the Internet as supplementary resources in helping English reading comprehension.

It was found from the statistical analysis that Hypothesis I was not supported. That is, no significant difference was found on the posttest scores between the Internet and non-Internet groups, using the pretest as control. It was also found that no significant difference existed on the posttest scores, as controlled by the pretest, between the participants with high computer knowledge and those with low computer knowledge. Therefore, the result did not support Research Hypothesis II.

With respect to Research Hypothesis III, a positive relationship was found between the participants' final grades in Reading Techniques and their scores on the posttest measurement on the reading section of the CU-TEP. Thus, the result supported Research Hypothesis III.

The data collected from the *Students Demographic Survey* showed that the majority of the participants in both groups had their own computers at home. The Internet group used it mostly for e-mail, surfing the Internet, games, CDs, installing programs, and word processing, and the non-Internet group used it mostly for surfing the Internet, e-mail, word processing, games, installing programs, and CDs. Most of the participants in both groups used the Internet. The participants in the Internet group enjoyed surfing the Internet because of its multimedia. It was also found that both groups considered appropriate for them to learn English via the Internet because they thought that the Internet could help them improve their English language skills. In conclusion, it was found that the Internet would help both groups improve their English and computer skills in general.

CHAPTER V

DISCUSSION, IMPLICATIONS, AND RECOMMENDATIONS

The purpose of this study was to investigate the effects of the Internet as a supplementary resource on the students' reading comprehension. Three hypotheses were investigated to see: (a) if the posttest mean scores of the experimental group experiencing the Internet-based reading as a supplementary resource were significantly higher than those of the control group experiencing the book-based reading as a supplementary resource, (b) if the posttest mean scores of the participants rating themselves as having high computer knowledge were significantly higher than those of the participants rating themselves as having low computer knowledge, and (c) if a positive relationship existed between the participants' final grades in an English reading course and their posttest mean scores on the reading section of the Chulalongkorn University's Test of General English Proficiency (CU-TEP).

This chapter focuses on the discussion, implications, and recommendations flowing from this study. The results are discussed and brought into light in details. The pedagogical implications are described to pave the way to the implementation of a technology-based instruction in the EFL classroom. Furthermore, to help other researchers with their investigations of the Internet as an extensive reading supplement to help students become more independent readers, future studies are recommended at the end of the chapter.

Research Hypothesis I

Research Hypothesis I stated that on the posttest administration of the reading section of Chulalongkorn University's Test of General English Proficiency (CU-TEP),

using the pretest as control, the mean scores of the experimental group, who experienced the Internet-based reading as a supplementary resource, would be significantly higher than the mean scores of the control group, who experienced book-based reading as a supplementary resource.

Results

The research results showed that, using the pretest as a control, there was no significant difference on the posttest between the participants who experienced Internet-based reading as a supplementary resource and those experiencing book-based reading as a supplementary resource, $F(1, 48) = 3.69$, $MSE = 14.97$, $p = .06$. Therefore, Research Hypothesis I was not supported.

Discussion

The purpose of this first hypothesis was to determine if the participants experiencing Internet-based reading as a supplementary resource had a better command of English than those experiencing book-based reading as a supplementary resource. This research hypothesis was not supported by the results, and it is to be noted that the results of this present study were not consistent with the findings of the previous studies (Onlumyong, 1991; Prapphal, 1991; Reongmanee, 2001; Sirivedin, 1998). In the previous studies, it was found that the participants experiencing a computer program as a learning support were more likely to have higher levels of achievement in foreign or second language study, particularly in reading comprehension, than those not experiencing computer-supported learning. In these studies, a computer program was accessed from a CD-ROM, and this kind of tool might have been more consistent, more immediate in its feedback, and easier to access than the Internet connection and the Web site used in this study. The participants in this study sometimes encountered technical problems such as the inability to access the Internet, loss of Internet connection, and a

reduced speed of the multimedia features. These problems may have had an influence on the language learning process or may have reduced the participants' motivation in completing their work in the allotted time. It seems that this situation resulted in non-significant gains in the participants' reading achievement when compared to the gains obtained through other experimental methods by some previous investigations.

Additionally, other possible explanations accounting for the lack of significant differences in reading ability between the participants experiencing the Internet-based reading as a supplementary resource and those experiencing the book-based reading were as follows. Firstly, the number of participants assigned to the two sample groups was not equal. The experimental group (Internet-based) counted 21 students only, as opposed to the 30 students in the control (book-based) group. This could explain a possible inconsistency in the posttest mean scores of the Internet-based group.

Conversely, in a pilot study conducted by the researcher in the first semester of the same academic year, because of the equal number of participants in the two groups, that is, 35 students in the experimental and another 35 in the control group, the findings received from the raw data showed that the participants in the Internet-based reading group outperformed the participants in the book-based group in the achievement level of reading on the posttest measurement of the CU-TEP. This showed that the unequal number of participants in the groups of the actual study might have been a factor of unexpected change in the findings. It is likely, however, that if the samples assigned to the two groups had been equal in number, as it had been the case in the pilot study, differences in posttest scores might have been found between the students experiencing Internet-based reading and those experiencing book-based reading.

Secondly, the results from the *Students Demographic Survey* showed that 81% of the participants in the computer group frequently used computers first for e-mail and

second for Internet surfing. Additionally, less than half (47.6%) of the participants with Internet-based reading used Internet extensively as a language supplementary resource. This indicated that they had less opportunity for sufficient practice and exposure to interactions with the target language, and this could have affected their reading. The less they were exposed to the language, the less likely they would have the ability to acquire an optimal amount of language, and this would affect their proficiency. According to Krashen (1993), in order to be proficient enough to be able to interact with speakers in another language, second or foreign language learners should be naturally more exposed to that language than their own. Learners who maintain high levels of target language interaction both in and out of the classroom progress at a faster rate than those having little target language interaction (Selinger, 1983). Similarly, Gass (1997), who gave a supportive notion of learners' language interaction, stated that learners' making use of an integrated system through an interlanguage system reflected an ample role of learners in their language learning. Therefore, target language interaction is vital to learners in learning the language (Pica, 1994; Chapelle, 2005).

Some studies indicated a relationship between language proficiency and second- or foreign-language reading ability. Regarding this study, the mean scores of the participants experiencing the Internet-based reading was significantly lower than standard cut-off scores. That is, the English proficiency of the Internet-based reading group was considered low based on their mean scores at the time of the pretest. This indicated that their reading ability might have been equally weak. This led them into reading difficulties. As stated by researchers (Carrell, 1991; Sheorey & Mokhtari, 2001), to gain successful reading comprehension, proficiency in the target language is considered one of many important factors that have an impact on the learners' reading achievement level.

Although the participants of the Internet-based reading were exposed to the rich communication provided by CALL and experienced a variety of multimedia representations such as sound, graphics, still images, motion pictures, video clips and so on as Internet resources to enhance their overall reading comprehension and promote their bidirectional processing of reading, there was no significant difference in their language proficiency, in particular reading comprehension, between their pretest and posttest mean scores. From this, it was likely that the participants of Internet-based reading relied too much on word-by-word translation while the use of video and audio features available as Internet resources did not help them make a connection between what was stored in their brain and what they were reading. As pointed out by Chandavimol (1998), in the reading classrooms, Thai students try to translate each English sentence into Thai and use a dictionary to help them understand the meaning of a text. To read that way led Thai students into difficulties in reading and the inability to understand the original English meaning. As a result, gains in comprehension were not achieved and they could not benefit from that interactive linguistic assistance.

Thirdly, the participants of the Internet-based reading were less motivated and not interested to use the supplementary resources provided, despite all that the multimedia offered such as hyperlinks, sounds, graphics, still images, motion pictures, and videos. Because of the nature of the class which was autonomous, some of them (30%) kept missing class and paid less attention to practice and this decreased their exposure to the language and their contribution to the language activities. In addition, although assignments were checked and supervised periodically and required to be submitted after the participants had gone through classroom language practices, the missing participants, in particular, were able to cheat because it was not possible to know and check who had actually done the assignments. To support this explanation, Becker and Dwyer (1994)

found that self-directing could lead to a decrease in learning if the learners are not mature enough to choose their learning activities and get benefits from that learning environment.

Additionally, because the scores on reading proficiency of the Internet-based reading participants were low at the time of the pretest, their reading performance was fairly poor, they could not read what was assigned, and in the end they did the assignments carelessly. Ur (1996) pointed out that inefficient readers usually have no particular interest in reading while efficient readers are motivated to read and feel challenged by tasks they find interesting. This low motivation of the Internet-based reading participants, who experienced autonomous learning and had low pretest scores on English language proficiency, might be another reason for the lack of difference between their posttest scores and those of the participants in the control group who also had low pretest scores but were controlled by the teachers in the tasks. Therefore, this might be another reason why the findings developed in an unexpected way.

Although the findings of this research were not consistent with the ones derived from many other studies stating that students using computers as learning support tend to reach a higher performance in language achievement, in particular in reading ability, than those supplemented with books, and did not shed lights on an increase of students 'vocabulary and retention, the results obtained from the *Students Demographic Survey* showed that over half of the participants in both groups believed that the use of the Internet still could help them enhance their computer skills and improve their English language in general.

Research Hypothesis II

Research Hypothesis II stated that on the posttest administration of the reading section of Chulalongkorn University's Test of General English Proficiency (CU-TEP),

using the pretest as control, the mean scores of the participants who, on the *Students Demographic Survey*, rated themselves as highly proficient in computer knowledge, would be significantly higher than the mean scores of those who rated themselves as less knowledgeable, regardless of the group they belonged to.

Results

The research results showed that, using the pretest as control, there was no significant difference on the posttest between the participants with high and low computer knowledge, with $F(1, 47) = .19$, $MSE = 15.68$, and $p = .67$. Therefore, Research Hypothesis II was not supported.

Discussion

The purpose of the second hypothesis was to determine if the participants with high computer knowledge had a better command of English than those with low computer knowledge, regardless of the group they belonged to, when pretest scores and other factors were controlled. This hypothesis was not supported by the data.

The first plausible explanation for this lack of significant difference is that to operate the computers during this experiment, only basic computer skills were required. When the participants with low computer knowledge came across most applications and interactive language learning, no advanced computer literacy was required of them. This perhaps caused no more difficulty to the participants with low computer knowledge as to the participants with high computer knowledge. Additionally, the participants' answers on the *Students Demographic Survey* showed that the majority of them, regardless of their group type or level of computer knowledge, frequently used the computer they had at home for e-mail, games, Internet surfing, word processing, and program installation, a fact that made it possible for them to have a similar level of language learning skills since the same demand would be made on all of them for performing the same computer

operations. The results of the study were consistent with the results of Taylor et al. (1999) who found that there was no meaningful relationship between the level of computer familiarity and the test-takers' performance on the computerized language tasks. In other words, computer familiarity does not play an important role on learners' language performance. All of these might be possible reasons for the lack of significant difference in the posttest scores concerning the reading proficiency of the participants with high computer knowledge and those with low computer knowledge.

Research Hypothesis III

Research Hypothesis III maintained that a positive relationship existed between the final grades the participants earned on the English reading course Reading Techniques (EN 221) and the posttest mean scores they earned on the reading section of Chulalongkorn University's Test of General English Proficiency (CU-TEP).

Results

The research results showed that the r_s values that pertained to the relationship between the final grades the participants from the two treatment groups earned on EN 221 and their scores on the posttest administration of the reading section of the CU-TEP were positive. The students' final grades on EN 221 were related to the posttest scores on the reading section of the CU-TEP, and it was a good predictor for the achievement level on the reading section of the CU-TEP. That is, if the students earned good grades in Reading Techniques, they would earn good scores on the reading section of the CU-TEP as well. Therefore, Research Hypothesis III was supported.

Discussion

A possible reason for this positive correlation between the participants' final grades on EN 221 and their posttest scores may come from the nature, purposes, and testing of Reading Techniques and those of the reading section of the CU-TEP. Since they both equally measure the test-takers' achievement in reading comprehension, the contents and learning activities were very much alike. To help them overcome barriers in reading comprehension, Reading Techniques provided the participants with reading techniques, practices, and activities, and a reading comprehension check as a measurement of their reading performance. Similarly, the reading section of the CU-TEP measured a comparable reading performance and offered the same purpose. As supported by the findings of Al-Othman (2003) on the relationship between online reading rates and performance on reading tests, the high rate of reading speed of the students enrolled in a course of English as a second language were correlated positively with their good performance on the reading comprehension section of the TOEFL. In other words, the students who performed with higher reading rates in the ESL course were equally able to show high reading performance on the reading tests. The purpose of both of the test administered in the course Reading Techniques and of the reading section of the CU-TEP was to measure the participants' reading proficiency. Therefore, a significant positive correlation between the participants' final grades and their posttest scores on the reading section of the CU-TEP was found.

Implications of the Study

CALL, as part of a teaching and learning system, asserts its potential as a supportive educational tool to language learning. Students' language performance and information transfer are enhanced through the interactive features integrated in CALL in

the form of multimedia resources that build a rich communication. Optimal input, intrinsic motivation, immediate feedback, and learner autonomy, all vital to lifelong learning, are all enhanced by the unique features of CALL. Internet-based learning, an alternative for independent language learning, is considered an important tool of integrative CALL in promoting students' learning abilities. The multimedia available on the Internet is easily accessed and exploited by students who are looking for language learning scaffolding and who can benefit from these characteristics of CALL that help them learn better and, particularly, learn to read better.

However, the present study shows that Internet-based reading is slightly different from book-based reading in a classroom in that it is not the teacher as controller who keeps periodically supervising the learners. CALL could be a type of language learning facilitating the learners' autonomy by making them aware of self-management or self-directing as they overcome the difficulties in a reading text. Students who cannot manage themselves when they practice reading in this environment might not be able to benefit from such a system and might end up the victims of their loss of direction while working on enriching their language.

Moreover, in general, students who have less language proficiency in building and associating ideas through audio and visual language representations might not be able to construct and associate this kind of information representations into their own stored representations, an association needed for successful comprehension. This could discourage them and weaken their efforts and motivation toward more effective reading.

Although the findings of this present study did not shed any light on gains obviously derived from the features of CALL and on its ability in promoting students' achievement on reading performance, the idea of exploiting the power of CALL in education of foreign language learning, as asserted by some previous studies, could still

help students gain successful reading comprehension. Finally, because language learners always need the best way to maximize their learning ability in order to internalize the target language, to avoid the teacher as a commander, and to become autonomous, lifelong independent, it is essential that further research be performed on this Internet resource to improve their reading ability.

Recommendations for Future Research

Based on the results of this study, recommendations for future research are as follows:

1. This study was limited to second-year university students. It is advisable that additional studies should be conducted with students of even higher levels of study to determine if the Internet used as a supplementary resource would help promote a better command of English.
2. This study was conducted with students not majoring in English. It is suggested that additional studies should be carried out with English majors to explore if Internet-based supplements would better enhance their command of English reading skills than book-based supplements.
3. It is recommended that comparative studies should be carried out with English and non-English majors to determine if the Internet as a supplementary resource would help promote their command of English and be beneficial to both of these types of students.
4. This study was limited to a small size of participants. Additional studies should be conducted with larger and equal size of each treatment group so that their findings could be generalized and significant differences between Internet and non-Internet supplementary resources should be observed

5. This study was limited to a few instruments. To get a clearer picture of overall differences if any, additional studies should be conducted using other measurements, such as in-depth interviews and questionnaires with open-ended questions, to find out more on differences between participants with high and low computer skills in terms of their language learning, interests, favorite websites, and motivation.
6. A qualitative study using in-depth interviews and observations should be conducted to determine the participants' motivation in their use of the Internet and books as supplementary resources and to explore their opinions about the effectiveness, suitability, problems, and other benefits of these supplementary resources.
7. This study focuses on the product of learning to read, that is reading comprehension, not on the process of reading. Additional studies should emphasize on the process that leads to read effectively by letting the participants learn about the grammar provided in the website before experiencing the multimedia offered in any of the readings so that the potential of the Internet as a supplementary resource in helping learners learn a foreign language could be assured.
8. Gender differences related to the Internet used as an extensive reading supplementary resource could be explored to observe the differences if any between male and female participants, and which of the two would benefit more from this type of supplements than from book-based supplements.
9. It is suggested that socio-linguistic factors such as culture, social class, peer pressure, economic status, zone of proximity, intellectual ability, etc. be included

in further studies to investigate if the integration of web-based technology in EFL classrooms will affect learners and be affected by such factors.

Conclusions

The aim of this study was to investigate if the use of Internet as a supplementary resource was effective in promoting foreign language learners' reading comprehension.

The effects of the Internet on these learners were tested based upon three hypotheses. The first hypothesis was to observe if the performance of the participants with the Internet-based reading as a supplementary resource was significantly higher than that of the participants with the book-based reading as a supplementary resource. The second hypothesis investigated if, after the treatments, the performance of the participants with better computer knowledge was significantly higher than that of the participants with poorer computer knowledge. And the last hypothesis was if there was a positive relationship between the participants' final grades in an English reading course and their posttest performance on the reading section of the CU-TEP.

This study was conducted using convenient sampling. Twenty-one second-year undergraduate students not majoring in English and enrolled in Reading Techniques (EN 221) were assigned as participants in an experimental group and 30 participants in a control group. The instruments consisted of the books *Reading Connections* (as material for both the experimental and the control groups) and *For Your Information 2* (as supplementary material for the control group), the Web site *BBCworldservice.com* (as supplementary material for the experimental group), the Chulalongkorn University's Test of General English Proficiency (CU-TEP), and a questionnaire, the *Students Demographic Survey*.

The findings showed no significant difference in reading comprehension between the participants in the Internet-based environment and in the book-based environment. Also no significant difference was found between the participants with high computer knowledge and those with low computer knowledge. However, the correlation coefficient showed a positive relationship between the participants' final grades in Reading Techniques and their post performance on the reading section of the CU-TEP.

Additionally, the findings from the *Students Demographic Survey* showed that most of the experimental students' opinions were that vocabulary and vocabulary retention did not increase significantly and that, as a result, they did not receive enough benefits from their language learning through the Web based-environment. However, they and their counterparts in the control group thought that, at least, when they surfed the Internet, it could help them learn their English language skills in general.

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APPENDIX A

Students Demographic Survey

STUDENTS DEMOGRAPHIC SURVEY

You have been asked to participate in a study intended to study the effects, or lack of them, associated with the Internet. All participants in the study will take the CU-TEP as a pretest, and then one group will participate in Internet supplement and the other group will not. At the end of the study all participants will again take the CU-TEP and pre and posttest scores will be compared. In order to better interpret the results of this study, it will be useful to know about your background regarding your previous English instruction and the use of computers. The following questions are intended to help gather that information. The information you provide will be used only for purposes of this study and no information about individuals will be revealed to anyone. Your assistance in providing the needed information is greatly appreciated.

Sincerely,

Rapeepat So-in, Researcher

Identification Number: _____

Directions: Please circle the letter(s) preceding your answer(s).

1. I am assigned to the:
 - a. Internet group
 - b. Non-Internet group
2. I have been studying English for:
 - a. 3 years.
 - b. 4 years.
 - c. 5 years.
 - d. more than 5 years.
3. Do you have a computer at home?
 - a. Yes
 - b. No

If you answered “Yes” please tell all of the things you use on the computer (mark all that are appropriate).

- a. games
 - b. e- mails
 - c. CD-ROMs
 - d. The Internet
 - e. word processing
 - f. installing programs
4. To what extent do you use the Internet?
- a. Extensively – almost daily
 - b. Moderately – three or more times a week
 - c. Rarely, if ever
5. How do you rate your own computer skills?
- a. High – I can install and uninstall programs and use most system utilities.
 - b. Medium High – I can use most application programs such as Word and Excel, and can use functions such as changing styles in Word and generating graphs in Excel.
 - c. Medium – I can use most application programs, but do not consider myself skilled in their use.
 - d. Medium Low – I can use only the basic parts of most application programs, i.e., cut and paste in Word, and getting the sum or average of columns and rows in Excel.
 - e. Low- I need help with most applications.
6. Do you think it is appropriate to learn English via the Internet?
- a. Yes
 - b. No

7. Do you think the Internet will help you improve your English?
 - a. Yes
 - b. No
8. Mark all of the following that are appropriate to you:
 - a. Reading through the Internet has helped me increase my English vocabulary.
 - b. Reading through the Internet has helped me retain my English vocabulary.
 - c. I enjoy surfing the Internet because it offers multimedia.
 - d. I will continue using the Internet after the course is over.
 - e. In general, I think that the Internet has helped me improve my English and computer skills.

APPENDIX B

Samples of Semester Lesson Plan

1 SEMESTER LESSON PLAN

UNIT 1: Text Organization: Chronological Order, Description, Comparison and Contrast, and Guessing Meaning of Unknown Words from Explanations and Familiar Words

CONCEPT / SKILL: Analyzing organizational patterns of text, recognizing titles and names, and looking for explanation of unknown words.

OBJECTIVE: You will be able to describe the patterns of organization of the text the writer developed in a given piece of writing.

CONTENT

1. There are three common types of text organization (chronological order, description, comparison and contrast). The organization of the text helps reader predict what is coming while reading. It might be possible to have a combination of three types of text organization in the same text.
2. The writers sometimes give the reader the explanations of unknown and familiar words especially technical vocabulary, titles and names. The explanation often comes before or after the words.
3. Summarizing gives a brief overview of the most important points in the story. Most readers understand the text by picking out main ideas of the text while leaving out most of the details.

INSTRUCTIONAL ACTIVITIES

Min.

- | | |
|----|---|
| 15 | 1. Take attendance. |
| 10 | 2. Have students preview the reading and discuss how important previewing is to the reader. |

- 15 3. Have students read closely the story then check their comprehension.
- 20 4. Reread a passage to a class and then discuss the types of organizational patterns contained in the story.
- 10 5. Distribute handouts describing types of organizational patterns the author uses to develop their ideas in the text and examples of each type of organization.
- 20 6. Ask students to figure out organizational patterns which are developed by the author in the reading text and briefly discuss the responses.
- 15 7. Explain how to guess the meaning of unfamiliar words given in the text by looking for the explanations coming right before and after an unknown word.
- 20 8. Ask students to practice finding explanation of unfamiliar words from a reading text and show the transparency with the answer for better understanding.
- 20 9. Close the books and review an overall of organizational patterns of text which helps students predict what is coming next in a piece of writing and the aid of the explanation of an unknown word which is often given by the author of the text to make it clearer for the reader.
- 20 10. Evaluate the student's understanding by asking them to describe the text organization the author developed in the reading and by asking them how to look for explanation of unknown words.

MATERIALS: Transparencies, handout and a reading book (*Reading Connections*)

UNIT 2: Author's Purposes in Writing, Making Inferences, and Guessing Meaning of Word Combination and Words from Technical Reading

CONCEPT / SKILL: Analyzing author's purposes in writing, drawing inferences, and understanding how to guess meaning of word combination and words from technical reading.

OBJECTIVE: You will be able to understand the purposes of the author in writing texts and identify the implied ideas.

CONTENT

1. There are many different ways the authors use to convey their intended meaning or purposes. It is important to understand the author's purposes in order not to be misled.
2. The writers give their information in two different ways; direct and indirect information. Direct information is given directly or explicitly. Indirect information is given indirectly or implicitly and required by the reader's world general knowledge to make a correct interpretation.
3. The writers sometimes use specialized vocabulary and the combination of words in their texts. It is necessary to recognize which word has particular meaning and which group of words often appears together.

INSTRUCTIONAL ACTIVITIES

Min.

- | | |
|----|--|
| 15 | 1. Take attendance. |
| 10 | 2. Have students preview the reading and discuss how important previewing is to the reader. |
| 15 | 3. Have students read closely the story then check their comprehension. |
| 20 | 4. Reread a passage to a class and then discuss the types of author's purposes and how to interpret the implied ideas or make inferences drawn from the story. |

- 10 5. Distribute handout describing types of purposes the writer uses to develop their ideas and examples of each type.
- 10 6. Ask students to analyze author's purposes in each reading text and briefly discuss the responses
- 20 7. Describe how to make inferences from the information given in each reading passage as well as the examples.
- 15 8. Explain how to guess the meaning of specialized vocabulary or unknown words given in the text by seeking for more on surrounding context and word combination which often appear together.
- 20 9. Ask students to practice finding new words and words that go together from a reading text and show the answering transparency for better understanding.
- 10 10. Close and review an overall of author's purposes and how to draw inferences from the implied idea which helps students understand better a piece of writing, and the cautions of the specialized vocabulary and words combination which possibly harm their understanding.
- 20 11. Evaluate by asking students to describe the author's purposes contained in the reading and the way to interpret correctly the author's implicit idea apart from explicit one, and the way to guess meaning of words by being aware of word combination.

MATERIALS: Transparencies, handout and a reading book (*Reading Connections*)

APPENDIX C

Samples of Reading Passages retrieved from the Internet

Web Page: BBCworldservice.com on the English Language

Learning Unit

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Learning English - Words in the News

21 June, 2006 - Published 14:16 GMT

[News about
Britain](#)

Bangkok - a city on the move

Thailand's capital, Bangkok, is well known for problems like traffic, floods and very poor housing. But in recent years, new highways and public transport systems have made the city seem better organised and increasingly wealthy. This report from Jonathan Head:



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27 October, 2006

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BBC China ELT

Bangkok is **swept up in World Cup fever** again, after a week's distraction from the football by celebrations to mark the king's sixtieth year **on the throne**, and the police are reporting the arrest of more than three hundred people in the city for **gambling** on the matches - it's **illegal** in Thailand.

The police say they also want **to crack down on** children selling garlands of flowers to drivers at traffic lights. The flowers are used to bless Buddha images on **the dashboard**; the police plan to **penalise** the children's parents.

And the government's plan announced today to make the area around Bangkok's new international airport a separate province has angered the city's governor; he's from the main opposition party. The new province would **swallow** two of Bangkok's districts. The new airport is due to open in September, more than a year late. It aims to compete with **aviation hubs** like Singapore and Hong Kong. Much of the planning for new **infrastructure** in Bangkok has been held up by disputes between the city administration and the government.

[Listen to the words](#)

swept up in World Cup fever

caught up with and carried away by the excitement of the World Cup games

on the throne

a king or queen in power; a throne is a special chair that's used by them on special occasions

gambling

betting money on the results of a game or competition, but people who guess incorrectly lose their money

illegal

not allowed by law

to crack down on

to become stricter on, to put a stop to (usually illegal or bad behaviour)

the dashboard

the part of a car in front of the driver where the steering wheel and other controls are

[25 October, 2006](#)

[16th century royal letter for sale](#)

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penalise

punish

swallow

in this case, to absorb and take over the districts so that they can no longer be identified as separate areas

aviation hubs

airports which people can fly to so that they can catch flights going to different places

infrastructure

basic systems such as railways, roads and banks which allow the city to work properly

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For teachers

 [Lesson plan based on this story \(67K\)](#)

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Learning English - Working Abroad

WORKING ABROAD GENERAL

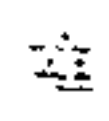
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'Working Abroad' is for those of you who've always wanted to get out of your chairs and go and do something else instead.

Each unit on the left explores different issues connected with working abroad and by clicking on the photographs on the right, you can find out about people's **personal experiences**.

There are also vocabulary pages, exercises and quizzes to help you develop and test your English.

For a more detailed guide to the site, click on the link below. Or go to the next page to hear our interviewees introduced themselves.

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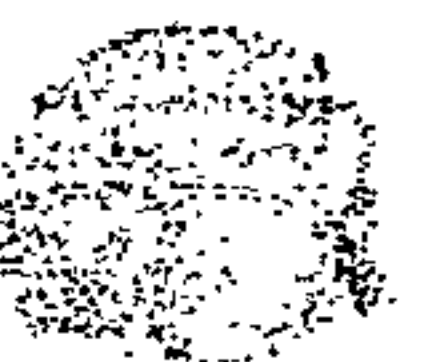
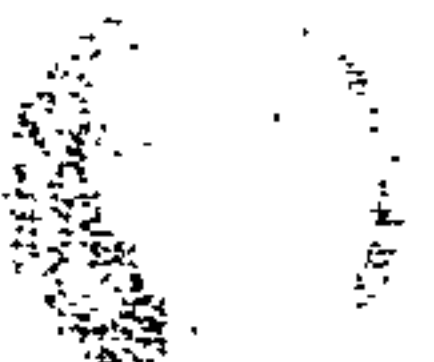
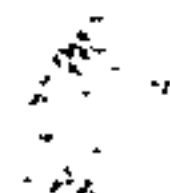
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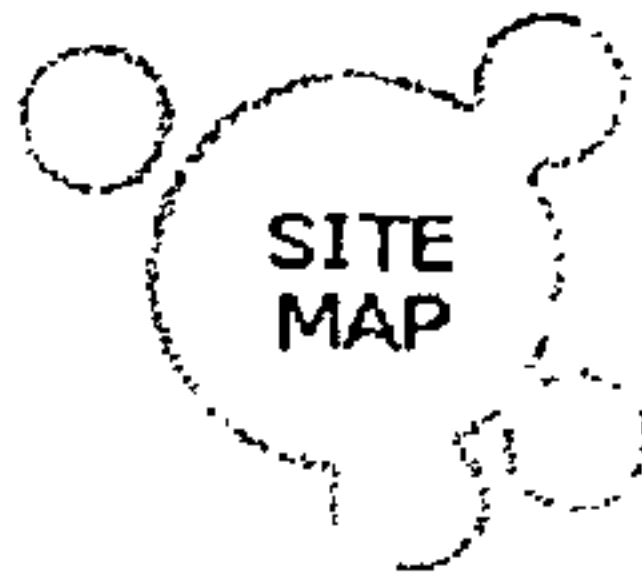
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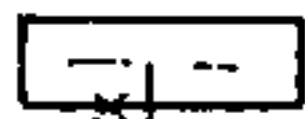
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Edinburgh

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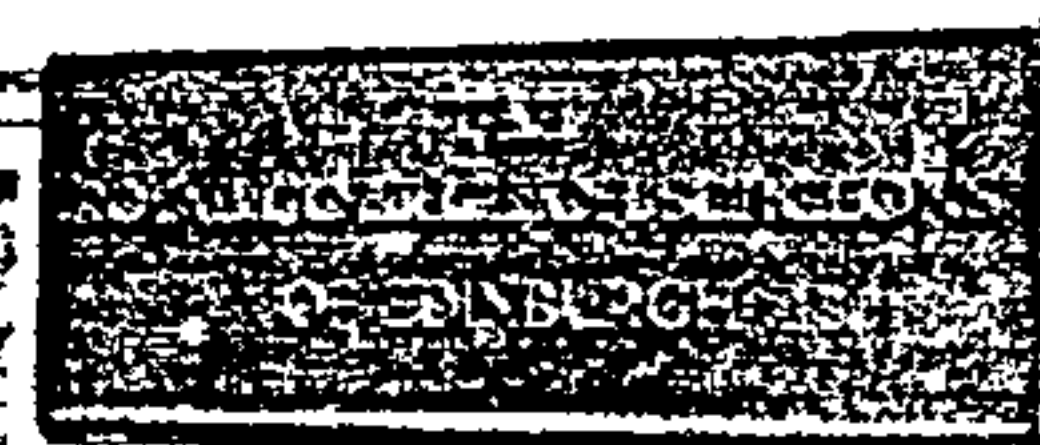
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Anatomy

Edinburgh has been a centre of medical learning for five centuries. King James IV, who performed surgery himself, gave royal approval in 1505. The present-day name of The Royal College of Surgeons came into use in 1681.

Read the text, then try the comprehension exercise below.



Just below Edinburgh Castle, at the western end of its main street, Princes Street, there is a small tower. It is at the entrance to St Cuthbert's churchyard. Probably even most local people do not know its connection with medicine.

Edinburgh holds a particular place in medical history because of **the pioneering work** at the University in the teaching of **anatomy**. This, too, had its unusual aspects. In the 18th and early 19th centuries, a father, son and grandson, all named **Alexander Monro**, formed a **dynasty** of professors in charge of anatomy for an unbroken 126 years.

But there was a dark side. Studying anatomy required **dissection**. Dissection required bodies. Normally those were criminals who had been hanged. **But not always**. A body could be sold to the anatomy school without questions being asked. The first Alexander Monro worried in 1725 that "the requirements of anatomical teaching provided **unscrupulous** criminals with a particularly **macabre** opportunity for **illicit gain**."

That was why watchtowers - such as the one **surviving** in St Cuthbert's - were built: to prevent newly-buried corpses being stolen. But people's greatest fear was of what might happen if there were no bodies... That fear became real in 1828 with the notorious case of Burke and Hare. Having legally sold one dead person to the university, they went on to sell another sixteen. Unfortunately, all of those had been alive until they met the two murderers.

An exhibition in the Sir Jules Thorn Museum in the Royal College of Surgeons tells the story of the surgeons and anatomists in Edinburgh.



See vocabulary

Exercise - Comprehension

Look at the statements below, according to the text are they true or false?

1: The tower is famous for its connection to medicine.

True or False ▼

2: It was possible to study anatomy without actual bodies.

True or False ▼

3: Anatomy schools always checked carefully where the bodies came from.

True or False ▼

4: The watchtowers' purpose was to stop people stealing bodies from churchyards.

True or False ▼

5: Burke and Hare stole 16 bodies from a church graveyard.

True or False ▼

☐ Check your answers

Links for more information

Royal College of Surgeons - museums

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VITAE

VITAE

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