จุฬาลงกรณ์มหาวิทยาลัย

ทุนวิจัยรัชดาภิเษกสมโภช

รายงานผลการวิจัย
เรื่อง

การประเมินผลความสามารถในการอ่านเร็ว เพื่อจับใจความภาษาอังกฤษของนิสิตชั้นปีที่ 3 คณะพาณิชยศาสตร์และการบัญชี จุฬาลงกรณ์มหาวิทยาลัย ที่ได้รับการฝึกการอ่านด้วยโปรแกรมคอมพิวเตอร์

โดย

กุลพร หิรัญบูรณะ
ประกายแก้ว โอภานนท์อมตะ

มิถุนายน 2542

จุฬาลงกรณ์มหาวิทยาลัย

ทุนวิจัยรัชดาภิเษกสมโภช

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ผู้ช่วยศาสตราจารย์ ดร. กุลพร หิรัญบูรณะ

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Ratchadaphisek Somphot Research Grant

THE ASSESSMENT OF THE READING SPEED AND READING ABILITY OF CHULALONGKORN UNIVERSITY COMMERCE AND ACCOUNTANCY STUDENTS WHO ARE TRAINED BY USING A COMPUTER READING PROGRAM

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PRAKAIKAEW OPANON-AMATA

June 1999

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บทคัดย่อ

งานวิจัยนี้มุ่งศึกษาการใช้คอมพิวเตอร์ในการพัฒนาความสามารถในการอ่านด้านการอ่านเร็วและการอ่านเพื่อจับใจความ นิสิตจุฬาลงกรณ์มหาวิทยาลัย คณะพาณิชยศาสตร์และการบัญชี จำนวน 99 คน ได้ฝึกอ่านเร็วภาษาอังกฤษจากโปรแกรมคอมพิวเตอร์ โปรแกรมนี้ประกอบด้วยกิจกรรมที่มุ่งพัฒนาความเร็วในการอ่าน เช่น การเคลื่อนสายตา การอ่านจับเวลา และการอ่านตามเวลาที่กำหนดให้ การเปรียบเทียบความสามารถในการอ่านเร็ว การอ่านเพื่อจับใจความและสมิทธิภาพหรือความสามารถทั่วไปในการใช้ภาษาอังกฤษของนิสิตก่อนและหลังการฝึกกับความสามารถดังกล่าวของนิสิตที่ไม่ได้รับการฝึก ผลปรากฏว่านิสิตกลุ่มทดลองฝึกโปรแกรมการอ่านเร็วภาษาอังกฤษได้พัฒนาความเร็วในการอ่านอย่างมีนัยสำคัญ นิสิตกลุ่มทดลองยังได้พัฒนาการอ่านภาษาอังกฤษเพื่อจับใจความและสมิทธิภาพทางภาษาอังกฤษมากขึ้น แต่มีผลไม่แตกต่างอย่างมีนัยสำคัญจากนิสิตกลุ่มที่ไม่ได้รับการฝึก จากผลของการวิจัยนี้จึงควรนำโปรแกรมคอมพิวเตอร์ที่ใช้สอนการอ่านเร็วมาใช้ในการเรียนการสอนภาษาอังกฤษด้วยเพื่อช่วยให้อ่านได้เร็วขึ้น

Project Title: The Assessment of the Reading Speed and Reading Ability of Chulalongkorn University Commerce and Accountancy Students Who are Trained by Using a Computer Reading Program

Names of the Investigators: Kulaporn Hiranburana and Prakaikaew Opanon-amata

Abstract

This research investigated the use of the computer in developing reading abilities, including speed reading and reading comprehension. In this study, 99 students from the Faculty of Commerce and Accountancy, Chulalongkorn University were trained in speed reading using a computer program in English. The program contained activities aimed at increasing reading speed such as eye movement, timed reading and paced reading. The performance of these students in speed reading, comprehension and general English proficiency pre-tests and post-tests was compared with that of students who did not take part in the training. The results show significant gains in the reading rates of the experimental group. Their reading comprehension and proficiency also improved but this improvement was not significantly different from that of the control group. The results of the study suggest the incorpiration of a speed reading computer program to improve students' reading rate.

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Chapter One

Introduction

Background and Rationale of the Study

Reading ability in a foreign language, particularly English, plays a vital part in academic study, professional success and personal development. Speed and fast reading in English has become important in the globalised and competitive world where quick access to information and fast text processing are required. It has been recognised that competent readers should acquire and display a reasonably high reading speed. There continues to be, however, a contradiction relating to research in speed reading. Some experiments show that some speed readers can also achieve good comprehension (McConkie, Rayner and Wilson, 1973; Thomas, 1962). American high school students trained in speed reading by a computer program displayed growth in reading rates with no loss but rather gains in comprehension (Beers, 1986). Some studies (Carver, 1985a; 1985b; Himelstein and Greenberg, 1974), however, seemed to show that an increase in reading speed was likely to result in a decrease in comprehension. Carver (1990) noted that students can score around 70% on one of the tests without even reading the text that the questions are based upon. Gray (1984:38) also pointed out that the interrelation of speed and comprehension was "by no means invariable". Although there is controversy about the effectiveness of speed reading, since it is important for information search, speed reading training has been incorporated in many reading courses. They include the Wisconsin Workplace Partnership

Training Program (1993) and the Oneida Career Development and Technical Training Service Project (Martin,1995)

Speed reading plays an important role not only in first language acquisition but also in English as a second or foreign language learning programs such as in Malaysia (Lim, 1976) and in China (Zhang and Jiang, 1996). In an English as a Second Language (ESL) or as a Foreign Language (EFL) context, speed reading may be problematic as Parry (1987:62 pointed out that students lack the appropriate knowledge to work with "text and language, products of a culture alien to them". In Thailand, in particular, there is little research into the effectiveness of speed reading training. This study is a small attempt to investigate this unexplored area.

Objectives of the Study

The purpose of the study was:

1. to assess students' improvement in reading rates and comprehension after a computer program training in speed reading in English.
2. to study the relationship between improvement in speed reading and reading comprehension in English and English proficiency.

Hypotheses

In achieving these objectives, the following were the hypotheses to be validated in the study :

1. No significant differences in rates and comprehension will be seen between the experimental group and the control group before and after the experimental students' participation in the speed reading training program.
2. No significant differences in English proficiency will be seen between the experimental group and the control group before and after the experimental students' participation in the speed reading training program.

Expected Outcomes of the Study

The insight into speed reading will shed light on the reading process and development in relation to rapid reading and comprehension skills which are integral in communication and information searching in this globalised world. Such knowledge would be helpful from a practical standpoint by suggesting teaching and training procedures that focus on speed reading. In so doing, it would be beneficial to count on some theoretical explanation and empirical evidence relating to the reading process which would help explain how students can be oriented towards the mastery and development of fluency and skills in reading. This is what is emphasised in the review of related literature in the following chapter.

Chapter Two

Review of Related Literature

This chapter looks at the nature and the process involved in reading including previous ESL and EFL studies. It particularly reviews research on the relationship between reading speed and reading comprehension and also the use of computer to aid training in speed reading.

The Reading Process

Reading is a process which involves many multifaceted factors. It is not only concerned with the visual information readers receive from print. Reading comprehension also involves the interaction of visual and nonvisual information, that is, prior knowledge. Some theorists and researchers in reading take two approaches to reading. The bottom-up approach presupposes the mastery of reading fundamentals related to the decoding process in which the reader identifies and recognises letter, word and sentence formation (Anderson, 1937; Gough, 1972). It has been reported that good readers recognise words, and guess the meaning of unknown words and their relationship (Golinkoff, 1975-1976). A study on text processing (Mc Cormick and Samuels, 1979) shows that readers who have high scores in reading comprehension tend to be good in word recognition. On the other hand, the top-down approach assumes that the reader's comprehension depends mainly on prior knowledge which is drawn on in the interpretation of meaning (Ausabel, 1980;

Goodman, 1976; Pearson, Hansen, & Gordon, 1979; Smith, 1973). According to Smith (1988: 65) reading is "the trade-off between visual and nonvisual information".

Despite some credibility in these two views of reading, it is more likely that the underlying process is interactive, thus involving both. In other words, readers not only rely on graphic information but also draw on contextual information which contributes to the meaning they derive from text. To comprehend a text, the reader needs to examine how sentences combine in discourse to convey meanings which are of multiple levels (Candlin, 1981; Nuttall, 1996) as follows:

- Notional/Conceptual Meaning is what a word can mean on its own.
- Propositional Meaning refers to the meaning a sentence can signify if it is not used in a context.
- Contextual Meaning is the meaning a sentence conveys when it is used in context.
- Pragmatic Meaning refers to the meaning which derives from the relationship and interaction between the writer and the reader and this reflects the writer's feelings, purposes and attitudes.

For a reader, to get the intended meaning or effect of the text, both graphic and nonvisual information are operating simultaneously and interdependently (Rumelhart, 1977). Therefore, the reader extracts the visual information from the printed text using linguistic knowledge to generate the meaning based on his prior knowledge held in long-term memory (Devine, 1986). These cognitive or mental structures of prior knowledge known as schemata

(Widdowson, 1983) play an important part in text processing. This process is explained by Parry (1987: 62) as follows:

...The reader starts with the perception of graphic cues, but as soon as these are recognized as familiar, schemata derived from both linguistic knowledge and knowledge of the world in general are brought into play. The proportion of graphic cues that must be perceived varies with individual texts and with individual readers according to the difficulty of the former and the knowledge and confidence in that knowledge of the latter.

Reading Speed and Comprehension

Thus an implication of the role of prior or background knowledge in reading is, presumably, that in developing reading ability, reading must be quick and selective (Smith, 1988). Clearly, the relationship between comprehension and reading speed is complex. Some studies(1985a; 1985b;1990) seemed to show that students' increase in reading rates did not improve their comprehension. It, however, has been observed that a slow reader is likely to read with poor understanding (De Leeuw, 1990). The reason is that slow reading with many fixations or pauses and regressions (backward movements along the line of print) can result in tunnel vision (Mackworth, 1965), the condition in which the reader misses the general topic due to overattention to detail. Fry (1977) and Bergquist (1984) also point out that the reader who reads one word or a few letters at a time has difficulty in grasping the meaning as the mind deduces from the interrelationships of larger units. Skilled readers tend to make fewer fixations but pick up more information on each fixation with the stimulus perceived from the

peripheral span. For instance, Sailor and Ball (1975) have confirmed that training in peripheral vision can improve reading rate and comprehension. Marcel (1974), in particular, experimented with fast and slow readers, and found that the increased reading speed which results in rapid scanning, tends to cause fast readers to use context to derive meaning and to maintain thematic content.

Although regressive eye movements are considered symptoms of poor comprehension and an impediment to reading speed by some reading practitioners, good readers also show some regressions. Nuttall (1996) points out that skilled readers can make a regression when they discover inconsistencies to their interpretation or prediction. As mentioned earlier, skilled readers do not need to understand every word or sentence in the text. It is possible that they understand only bits of the text. Activating their schemata, they derive only some of the meanings and they continuously altering their interpretation as they go along the text. In doing this, they may need to check previous parts of the text and reinterpret them. In this respect, regressive eye movements could reflect the active and responsive participation of the good reader. Regression with no obvious purpose for comprehension, however, contributes little to reading ability, and thus should be avoided in training.

The Use of Computer in Speed Reading Training

Practice in visual perception, grasp of meaning and recognising associations of ideas is integral to developing reading speed. Some speed reading programs use reading materials with timed readings and then have students complete comprehension questions

such as in the SRA Reading Laboratory. Recently, computers have been introduced to assist students in increasing their reading fluency and accuracy. What is important is the introduction of the text-window by Lundberg (1984) which sheds light on a variable length of text; the reader can adjust the speed of the text-window. With this new method, for example, Roth and Beck (1987) reported improvements in word recognition and decoding skills of the experimental group. Based on their study with American college students, Wepner, Feeley and Minery (1990) have also found that the computer group performed significantly better than the control group in reading rate and comprehension. Another study carried out by Watts (1993) shows that the use of computers with initial letters highlighted on the screen tends to enable students to recognise words better and faster. These studies emphasise the role which the computer plays in providing helpful and effective reading practice environments.

EFL Reading

We have so far looked at what the literature says about reading in a first language. It is interesting to look at reading in a second or foreign language; the process in which research and experience (Clarke, 1979; Cummins, 1981; Cziko, 1980) have documented the interplay of language proficiency in the first and second language and the reading ability and skills in the first language. Research findings in EFL reading also support the view that students reading a foreign language read more slowly and with lower comprehension than reading in their native language (MacNamara, 1970). As regards speed training and comprehension, increasing the reading rates of Isaelli college level readers by using the

IBM computer screen could increase their reading comprehension (Breznitz & DeMarco, 1994).

Owing to this controversy in reading in a foreign language such as English, there is an urgent need to validate the use of the computer in speed reading training and its contributions to reading fluency and efficiency in a foreign language. To do this, we need to find the ways in which information can be gathered to provide evidence and this will be looked into in the following chapter.

Chapter Three

Research Method

This chapter describes the design and procedure used in this study. Details are discussed in five sections: The Pilot Study, The Main Study's Population and Subjects, Materials and Procedure, Instruments and Analyses.

The Pilot Study

To test the speed reading program, a pilot study in which 48 third-year students from the Faculty of Commerce and Accountancy, Chulalongkorn University who took the Business English Correspondence Course received training over eight weeks was conducted to find potential problems in using the program. A comparison of the pre- test reading rate and the post-test reading rate indicated a significant improvement in the pilot group. That is, the students displayed an ability to read faster after they finished the program. Before participating in the program the majority of the students in the pilot group read at rates of 100-199 words per minute scoring about 50-100% on the comprehension test. After the program, most of the students, in contrast, read at rates of 200-299 words per minute with similar comprehension scores. Also, their performance in the proficiency post-test was better than in the pre-test, it, however, did not show a significant gain. It is notable that the pilot group also took the required course. Therefore, their gains in reading rates were not likely to be totally related to the training program. The students in the pilot group were asked to evaluate the program and many expressed the opinion that the

training program was rather short and should be extended. The information gained from the pilot study was used to design the main study.

The Main Study

Population and Subjects

The subjects of the main study were 99 (78 women, 21 men) third-year Chulalongkorn University Commerce and Accountancy students who were randomly chosen from those enrolling in Social English, a compulsory course for all Commerce and Accountancy students. They were designated to form the experimental group (51) and the control group (48) by matching their proficiency of English based on the results of the Chulalongkorn University Test of English Proficiency (CU-TEP) pre-test. CU-TEP consists of 120 multiple choice items (60 items of reading comprehension 35 items of listening comprehension and 25 items of writing ability). The reason for using CU-TEP was that it is a standardised test(rpb 0.6 ~ 0.30, KR20 0.89 ~ 0.92, Phi 0.79 ~ 0.80) and the correlation with TOEFL is high (Rxy = 0.91 ~ 0.94). The experimental group contained 42 women and 9 men. The control group consisted of 36 women and 12 men. Neither group was significantly different in English proficiency or reading rate but the mean for the control group was slightly higher in comprehension at the start.

Materials and Procedures

The experimental group and the control group were both pre-tested in reading rate and in comprehension. Only the experimental group worked outside class on a self-access learning program, Speed Reader by Davidson(1991) is a program highly recommended by subscribers to Teachers of English to Speakers of Other Languages (TESOL) Internet service as being a very useful speed training computerised package, suitable for use on PCs.

The Speed Reader is a computer program designed for training speed reading skills. This program contains such activities as Reading Warm-ups, Eye Movement, Newspaper Reading, Paced Reading, Timed Reading and Eye Max.

In the "Reading Warm-ups", students choose the letter(s) or word(s) that they just saw flashed on the screen. This increases their eye span and perception rate. As students advance from two letters or words to three or four, they learn to use their peripheral vision. "Eye Movement" trains the eye to move rhythmically from one group of words to the next across and down the screen, pausing only once per group of highlighted words. The number of these highlighted words can be chosen by students; for example, every two, three or four words. In "Newspaper Reading", one or two columns of words are displayed with each line highlighted in turn. This activity provides more practice in utilising peripheral vision. "Paced Reading" presents longer reading texts displayed at a preset pace. "Timed Reading" enables students to measure their reading rate and comprehension to gauge

improvement. "Eye Max" is a game in which students choose one of the surrounding objects to match a central object after all of the subjects are flashed on the screen. This activity improves peripheral vision and eye perception. None of the reading activities allow students to make regressions. They are, however, able to repeat the activity with the same reading passage or a new one. The topics used for the reading passages cover the following areas: business, human interest, innovators, literature, psychology, reading techniques, speeches, sport and technology.

After the pre-test which assesses students' initial reading speed, the training program sets the speed of the activities to suit the individual student's ability to practise in order to reach the target speeds which are also set, based on the results of the pre-test. The speed changes depending on students' performance. It is possible that if students perform unsatisfactorily in the comprehension test after the timed reading, for instance, the speed set up for this activity in the following session would decrease. Students can increase the speed once their performance improves.

The experimental group spent one hour twice a week over 10 weeks, a total of 20 hours, on the Speed Reader complementing the regular English course which required three contact hours per week for about twelve weeks. The control group took only the regular course. In the training program, the experimental group kept records (See a copy of the record sheet in Appendix 1) of their performance in each activity in a file apart from the records which were automatically saved on diskette. In this way, their performance could be monitored regularly by the researcher. After the ten-week program, the experimental group

took the post-tests in speed, comprehension and English proficiency at the same time as the control on August 15th 1997.

Instruments

The Instruments used to collect data were speed and comprehension pre-tests and post-tests, the CU-TEP and a questionnaire:

1. The pre-tests and post-tests in speed and comprehension were parallel. They were randomly chosen from the same bank of assessment tests as the pre-tests. The readability level of the reading texts used in the pre-tests and post-tests is about 8 (according to Gunning's (1952) Fog Index which is commonly used to measure text difficulty). The topic of each reading text was of general interest. The comprehension tests were composed of a set of six to eight multiple choice questions at the end of reading texts in the assessment tests. These questions yielded measures of reading skills such as identifying the topic and the main point(s); distinguishing important and unimportant points and supporting details, facts and opinion, relevance and irrelevance, sound and unsound conclusions, adequate and inadequate evidence, valid and invalid inference; and identifying the writer's purposes and attitude.
2. In the pre-test and post-test. The CU-TEP is a batch of standardised test items measuring proficiency in general language skills, namely, reading, listening, speaking and writing.

3. A questionnaire (See Appendix 2)consisting of ten items to be evaluated on the 5 point Likert scale by the students in the experimental group.

Analyses

The two-sample dependent t-test (the paired two sample t-test) was applied to examine whether there was a significant difference between the experimental group's reading rates and scores on the pre-comprehension test and the post-test (parallel). In addition, the application of the two-sample independent t-test was made to find whether there was a significant difference between the experimental group and the control group in their reading rates and their percentage in the pre-comprehension test and the post-test (parallel), and also in their scores on the English proficiency test, the CU-TEP.

To assess attitudes toward the speed reading training program, an evaluation form, with a 5-point Likert scale rating including items about different aspects of the effectiveness and usefulness of the program was administered to the experimental group immediately after the post-tests. The results were produced in the form of a table. The last part of the form asked students to give general comments on the program.

The analyses of the pre-tests and post-tests in speed, reading comprehension and English proficiency and also of the questionnaire yielded results which were tabulated and are reported in the following chapter.

Chapter Four

Research Findings

This chapter presents the findings of the research in two main parts: Pre-training and Post-training which includes Reading Speed, Reading Comprehension and English Proficiency.

Pre-training

A comparison of the mean reading rate, the mean comprehension percentage and the mean proficiency in the pre-tests (Table 1) shows no significant differences in reading rate or proficiency between the experimental group and the control group. This shows that before speed training began the two groups were at the same level in their reading speed and proficiency. The mean score of the experimental group for reading comprehension, was, however, a little lower than that of the control group.

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Table 1: Pretest Means and Standard Deviations for Reading Rates, Comprehension and English Proficiency of the Experimental Group and those of the Control Group – Pre-training

	Control(n=48)		Experimental(n=51)				
	Mean	S.D.	Mean	S.D.	DF	*t* value	*p*
Rate	105.02	38.80	104.41	37.39	97	.08	.937
Comprehension	77.52	15.55	73.96	17.85	97	1.06	.294
Proficiency	489.69	41.57	488.65	45.82	97	.12	.906

Post-Training

Reading Speed

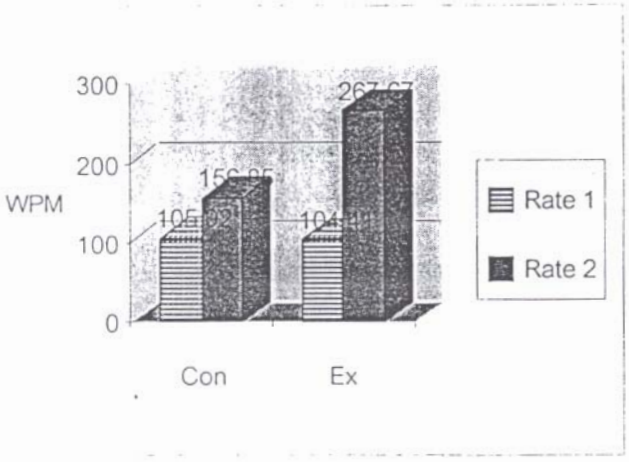
The results of the post-test interestingly indicated a significant improvement in the mean rates of both the experimental group and the control group. The post-test experimental group's mean rate (267.67 wpm) was significantly higher than that in the pre-test (104.41 wpm), $t(50) = -11.13$, $p<001$. The difference between the control group's mean rate in the pre-test (105.02 wpm) and that in the post-test (156.85 wpm) was statistically significant, $t(47) = -6.89$, $p<001$. (See Figure 1.) This finding is not surprising because, as mentioned earlier, the control group took the compulsory English course which could have had some effect on their rates. What is more interesting is that the experimental group,

however, made remarkably more progress in their reading speed than that of the control group. Table 2 shows that the experimental group's post-test mean rate (267.67 wpm) was statistically higher than that of the control (156.85 wpm). The finding also confirms the results of the pilot study in which speed training improved students' reading rate or fluency.

Table 2: Means and Standard Deviations for Reading Rates, Comprehension and English Proficiency of the Experimental Group and those of the Control Group – Post-training

	Control(n=48)		Experimental(n=51)				
	Mean	S.D.	Mean	S.D.	DF	*t* value	*p*
Rate	156.85	58.25	267.67	117.40	97	-5.89	.000
Comprehension	78.77	23.52	77.55	17.85	97	.29	.771
Proficiency	500.42	54.28	495.96	50.89	97	.42	.674

Figure 1: Means, Standard Deviations and t-values of Mean Differences of the Experimental Group's Pre-training and Post-training Reading Rates Compared with those of the Control Group



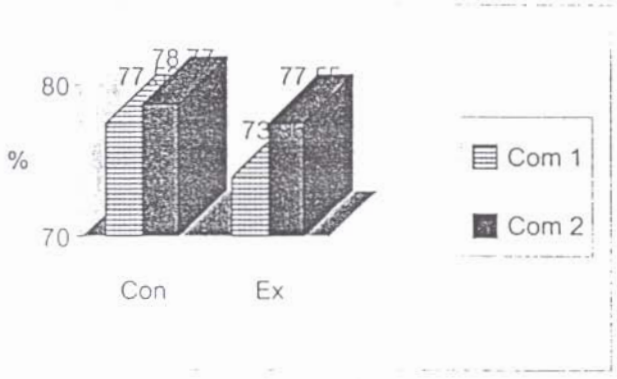
The Control group's mean rate difference $t(47)=-6.89$, S.D.=52.09, $p<.001$

The Experimental group's mean rate difference $t(50)=-11.13$, S.D.=104.76, $p<.001$

Reading Comprehension

It is also worth noting that students of both groups scored better in the comprehension post-test. This could be explained by the fact that both groups took the required English course in which they were exposed to some use of the language. Their gains were not, however, of statistical significance. (See Figure 2.) A comparison of the experimental group and the control group, interestingly, reveals the experimental students' higher growth in reading comprehension than that of controls but no statistically significant difference was seen between the two groups' means. (See Table 2.) These findings contradict those of the pilot study in which students did not show any improvement in reading comprehension in the post-test. The experimental group's development in reading comprehension could possibly be explained by the fact that students in the main study were in the training longer (10 weeks) than the pilot study which lasted only eight weeks.

Figure 2: Means, Standard Deviations and t-values of Mean Differences of the Experimental, Group's Pre-Course and Post-Course Reading Comprehension compared with those of the Control Group



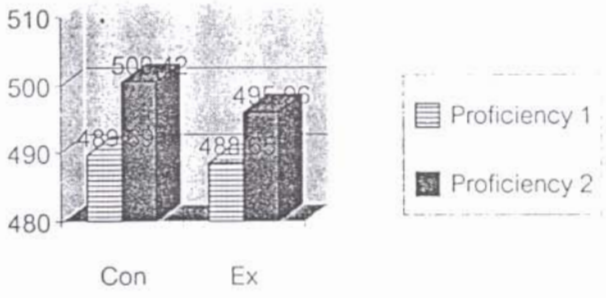
The Control group's mean comprehension difference t(47)=-.36, S.D.=24.39, p>.05

The Experimental group's mean comprehension difference t(50)= -1.05, S.D.=24.41, p>.05

English Proficiency

The pre- and post-test scores of the experimental group and the control group on the CU-TEP show that their performance in the proficiency post-test was better (See Figure 3.). It does not, however, show a significant gain in both groups. (See Table 2.) It is worth noticing that the experimental group's lower scores could be related to physical condition during testing because there was an unexpectedly long period of power outage which resulted in a change in rooms which the test was administered.

Figure 3: Means, Standard Deviations and t-values of Mean Differences of the Experimental Group's Pre-Course and Post-Course CU-TEP Compared with those of the Control Group



The Control group's mean proficiency difference t(47)=-2.47, S.D.=30.13, p<.05

The Experimental group's mean proficiency difference t(50)=-2.19, S.D.=23.84, p<.05

Students' Attitudes towards the Speed Reading Program

When we asked the experimental group to evaluate the training program, the majority were positive although quite a number of them had some technical problems with the program. (See Table 3.) For instance, they considered the program to be very useful in their study and future careers. They also thought that their reading rate and comprehension had improved at the end of the training. Furthermore, most of them found the time allotted and the level of difficulty of the program appropriate and the content interesting. Quite a large number of them thought that the training had enabled them to improve their English proficiency. Many of them wanted to continue their speed reading training and that all students would benefit from this. When asked to give additional comments, some students who improved in reading comprehension after the speed training revealed that they were able to answer questions on comprehension by partly making speculations based on the available clues or words. Quite a few also wanted to have further practice on vocabulary in context.

Table 3: Statements and Percentages of the Experimental Students' Evaluation of the Training Program

Statements	5 (Most)	4	3	2	1
1. I think the program was useful for my study.	29.41	49.02	19.61	0	0
2. I think the program would be useful for future career.	35.29	39.22	21.57	0	0
3. After completing the program, I have improved my reading rate and comprehension.	17.65	52.94	21.57	3.92	0
4. The time allotted to the program was appropriate.	11.77	33.33	39.32	11.77	0
5. Difficulty of speed reading exercises/activities was suitable.	7.84	35.29	45.1	5.9	0
6. The content of the program was interesting.	15.67	35.29	39.22	7.84	0
7. I had problems in training.	13.73	35.29	27.45	17.65	5.9
8. I think the training have helped me to improve my English proficiency.	11.77	52.94	31.37	3.92	0
9. I am interested in continuing my speed reading training.	33.33	31.37	27.45	3.92	0
10. I think all students should have speed reading training.	43.14	39.22	15.67	0	0

In summary, the results of the pre-tests and post-tests show that the experimental group made more significant progress with their reading speed than the control. The experimental group also improved in their comprehension and also in English proficiency after the speed reading training. Their performance on comprehension and proficiency, however, was not significantly different from that of the control. These findings will be discussed in more detail with some considerations from the results of the questionnaire and this is the focus of the following chapter.

Chapter Five

Discussion and Conclusion

Reading Speed and Reading Ability

The results of this study suggest that reading is a complex communication process. Growth in reading rate could be helpful but it is part of the whole reading process. It involves not only a bottom-up or passive serial processing in which the reader merely adopts a letter-by-letter analysis, leading to positive recognition of individual words, sentences and paragraphs, but also requires top-down processing where meaning identification comes before word identification. It is quite possible that the reader formulates a hypothesis regarding the information to be processed. Then he or she may make use of the available minimal language cues from perceptual input to assist in confirming, correcting or rejecting the predictions he or she makes about the message.

The findings of the study tend to support the view that reading is multileveled (Shuy, 1977; Spiro, 1980) and interactive (Rumelhart, 1980; Ulijn, 1977, 1980). In this view, the reader tends to draw on his or her language knowledge at different levels: phonological, morphological, syntactic, discourse and pragmatic and also that of the world in constructing and reconstructing meaning. It could be interactive, in that reading comprehension is likely to be driven by the reader's knowledge structures or schemata and the specific content and linguistic structures in the text. The reader tends to require many levels (linguistic, conceptual, pragmatic and social) of background knowledge which interact simultaneously

and interdependently as he or she constructs a meaning from the text by making predictions and confirming or rejecting them. Therefore, the improvement of reading ability requires not only lower level reading skills, but also higher ones as well. This is, probably, also of consequence for students who read English as a second or foreign language.

As revealed in this study, reading skills to handle the lower level structural aspects of the text such as the perception of letters, words, sentences and paragraphs which include eye fixations are quite relevant. In fact, the improvement of reading ability focusses on visual and graphic information occupies the attention of ESL and, in particular, EFL reading teachers. Eskey (1988) even suggested that it was necessary for ESL readers to pay more attention to bottom-up features than first language readers because the linguistic competence of the former was not as good, therefore, they were less able to make use of the range of cues in and outside the text. This study, however, clearly shows that the experimental group's remarkable growth in reading rates over the control group after the ten-week speed training led to only a small improvement in reading comprehension. It is obvious that the students satisfactorily developed their reading speed but they also need more practice in developing schematic knowledge regarding the higher level of text processing. This includes top-level structure (Kintsch and van Dijk, 1978, Meyer, Brandt and Bluth, 1980) such as the patterning of various types of text which makes it easier to find the topic and overall idea of the text. These higher level elements have been found to be used by fluent and mature readers in text processing, thus resulting in better comprehension. Some of the students in this study also mentioned that they tried to activate their background knowledge by making speculations based on the available clues.

An integration of practice in top-level features in the training program could enhance the reading ability of ESL or EFL students in complementing their speed training. Of course, the interactive model of the bottom-up and top-down processing would yield a more effective extensive reading program.

Reading Speed and Language Proficiency

Similar to reading comprehension, the experimental group's English proficiency was not significantly improved and their improvement, similar to that of the control, could have resulted from the general English program that both of them took regularly. Therefore, it could be the case that general language proficiency is not greatly related to an improvement in reading rates, based on the results of the study. This finding tends to give some interesting suggestions to the relationship between language proficiency and second and foreign language reading. As revealed by research, second and foreign language proficiency has significant effects on second and foreign reading ability (Carrell, 1991). One would expect that reading ability would improve a proficiency in a second or foreign language and some research in this field has suggested that reading in a second language can facilitate growth in second language proficiency (Cummins, 1979) but this study reveals that this need not always be the case. Although the fact that the experimental and the control groups did not make a significant improvement in their English proficiency was partly due to some technical problems, the training in physical aspects including eye movement and fixations can enhance reading speed and comprehension only to a certain extent. As a matter of fact, the training is basically mechanical and not sufficient to deal

with competency in language use which is more complex. Another possible reason for minimal growth in language proficiency is the way in which a text is blocked into groups of words to be highlighted on the computer screen for training fixations. This is merely absurd or irrational. In other words, the basis on which students choose the number of words in a text to be blocked and highlighted in groups for training eye movement and fixations is mechanical. It is not related either to sense groups (Nuttall, 1996) or meaningful units consisting of several words. Therefore, the way students learn to take in words for each fixation does not correspond to the way English is used naturally. Recent research by Just and Carpenter (1980) also suggests that eyes tend to fixate on almost all content words in a text and that longer fixations are, on infrequent words and at sentence ends when inferences are being made. If students have practice in eye movement of sense groups and larger blocks of words at each fixation, it is possible that they might develop better comprehension and proficiency and this needs further investigation and implementation.

Conclusion and Further Research

Speed reading and fast reading are taking on an important role in foreign language reading in, especially English. This study shows that Chulalongkorn University commerce students who study English as a foreign language were able to increase their rates of reading English after being trained in speed reading by a computer program. Their comprehension and proficiency in English also improved, though this improvement was not significantly different from that of the control group. The development of an extensive reading program which incorporates speed reading training emphasising rapid eye

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movement, fixations and text processing with sense groups and also schematic knowledge of text structure or different genres in English, could be useful and practical. This development will not be empirically supported or even possible if no further research is conducted to explore the strategies competent second or foreign speed readers use in text processing and to incorporate those features in a speed reading computer program for ESL or EFL training. More studies on the relationship of speed reading and reading comprehension and also their relevance to foreign language proficiency are necessary so far as English is significant in the globalisation of world communication.

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Appendix 1

RECORD OF SPEED READING

DATE: _____

ACTIVITY:	SPEED:	SCORE:
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

DATE: _____

ACTIVITY:	SPEED:	SCORE:
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Appendix 2

Questionnaire

แบบสอบถามเกี่ยวกับการฝึกอ่านเร็ว

โดยใช้โปรแกรมคอมพิวเตอร์

ชื่อ .....นามสกุล.....

โทรศัพท์.....

เพศ ☐ หญิง จำนวนปีที่เรียนภาษาอังกฤษ .....ปี

☐ ชาย

คะแนนที่สอบ CU-TEP Pre-Test ..... Post-Test .....

คะแนนเฉลี่ยสะสมของรายวิชาทั้งหมดของรายวิชาภาษาอังกฤษ.....

ตอนที่ 1 โปรดตอบคำถามต่อไปนี้ โดยขีด ✓ ในช่องที่มีข้อความที่เหมาะสม

คำถาม	มากที่สุด				น้อยที่สุด
	5	4	3	2	1
1. ท่านคิดว่าโปรแกรมการฝึกอ่านเร็วเพื่อจับใจความภาษาอังกฤษที่ท่านได้ฝึกมีประโยชน์ต่อการเรียน					

คำถาม	มากที่สุด				น้อยที่สุด
	5	4	3	2	1
2. ท่านคิดว่าโปรแกรมการฝึกอ่านเร็วเพื่อจับใจความภาษาอังกฤษที่ท่านได้ฝึกจะมีประโยชน์ต่อการทำงานในอนาคต					
3. ท่านได้พัฒนาความสามารถในการอ่านเร็วเพื่อจับใจความภาษาอังกฤษเพิ่มขึ้นจากการฝึก					
4. ท่านคิดว่าเวลาที่ใช้ในการฝึกอ่านเร็วเพื่อจับใจความเพียงพอ					
5. ระดับความยากง่ายของแบบฝึกหัดที่ใช้ในการฝึกอ่านเร็วมีความเหมาะสม					
6. เนื้อหาของบทความในแบบฝึกหัดที่ใช้ในการฝึกอ่านเร็วน่าสนใจ					
7. ท่านประสบปัญหาในการฝึกอ่านเร็วเพื่อจับใจความภาษาอังกฤษ					
8. ท่านคิดว่าการฝึกอ่านเร็วเพื่อจับใจความภาษาอังกฤษทำให้ท่านพัฒนาความสามารถในการใช้ภาษาโดยทั่วไปได้ดีขึ้น					
9. ท่านสนใจที่จะพัฒนาการอ่านเร็วเพื่อจับใจความภาษาอังกฤษต่อไป					
10. ท่านเห็นว่านิสิตทุกคนควรมีโอกาสได้ฝึกอ่านเร็วเพื่อจับใจความภาษาอังกฤษโดยใช้โปรแกรมคอมพิวเตอร์นี้					

ตอนที่ 2 โปรดเขียนปัญหาและข้อเสนอแนะเกี่ยวกับการฝึกอ่านเร็วเพื่อจับใจความภาษาอังกฤษ

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ขอขอบคุณที่ได้กรุณาตอบแบบสอบถามนี้