THE EFFECTIVENESS OF USING MULTIMEDIA APPLICATIONS ON STUDENT PERFORMANCE IN VOCABULARY LEARNING

THILLAI RAMAN A/L SUBRAMANIAM

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DECLARATION

I hereby declare that the writing in this dissertation is my own except for quotations and summaries which have been duly acknowledged.

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THILLAI RAMAN A/L SUBRAMANIAM
200100205

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ABSTRACT

Advancement in computer technology has triggered the development of multimedia CALL programs which can present information in different formats using graphics, text, and video with links to other types of information. The purpose of this study was to examine the effects of two multimedia CALL programs on vocabulary acquisition. Samples of the study were 86 intermediate level English as a second language (ESL) students. They were randomly assigned to one of two treatment groups. Students in group one viewed a program with Motion Graphics and text. Students in group two viewed a program that had Still Graphics and text. Their task was to study ten names of hand and power tools. Both groups took the pretest, viewed the video on the tools, and had an immediate posttest and a two-week delayed posttest. Both Motion Graphics and Still Graphics were found to be effective in vocabulary learning in this study. Learning occurred significantly in both groups. However, students in the Motion Graphics group performed significantly better than students in the Still Graphics group in the delayed posttest. Lastly, further research in the use of various graphic formats in a CALL environment is very much needed.

ABSTRAK

Perkembangan dalam teknologi komputer telah mencetuskan satu era baru dalam penggunaan program multimedia CALL dimana maklumat dapat disampaikan menggunakan format yang berbeza dengan menggunakan grafik, teks, dan video yang mempunyai pautan dengan maklumat-maklumat lain. Tujuan kajian ini adalah untuk memastikan keberkesanan dua program multimedia CALL ke atas penguasaan kosa-kata. Seramai 86 pelajar sekolah menengah yang lemah dalam penguasaan bahasa Inggeris sebagai bahasa kedua mengambil bahagian dalam kajian ini. Pelajar-pelajar ini ditempatkan secara rawak ke dalam dua kumpulan berasingan yang akan menerima pengajaran berasaskan komputer. Kumpulan satu akan menerima pengajaran menggunakan gambar hidup (Motion Graphics) manakala kumpulan dua akan menerima pengajaran menggunakan gambar kaku (Still Graphics). Tugas mereka ialah mempelajari sepuluh nama peralatan bengkel. Kedua-dua kumpulan telah menduduki ujian pra, menonton video mengenai peralatan bengkel, menduduki ujian pos dan akhirnya menduduki ujian pos kedua selepas dua minggu. Dapatan kajian menunjukkan bahawa program yang digunakan dalam kajian ini berkesan dalam mengajar kosa kata. Kedua-dua kumpulan kajian menunjukkan kemajuan pembelajran yang significan. Walaubagaimanapun kumpulan gambar hidup (Motion Graphics) mempamirkan keputusan yang signifikan dalam ujian pos kedua jika dibandingkan dengan kumpulan gambar kaku (Still Graphics). Kajian menggunakan pelbagai bentuk grafik sangat diperlukan dalam CALL.

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CHAPTER 1

BACKGROUND OF STUDY

1.1 Introduction

English Language teaching under the KBSM (Kurikulum Bersepadu Sekolah Menengah) has been implemented in all secondary schools since 1989. In line with the National Education Policy, English is to be taught as an effective second language in Malaysian schools. The program aims to equip students with the ability to communicate accurately and effectively both orally and in writing.

The KBSM system has tried to provide a range of teaching and learning styles to suit different abilities and levels of proficiency. Yet one of the prominent difficulties faced by learners in mastering this language is the acquisition of vocabulary. If vocabulary is acquired then this should enable the students to use the structures and functions taught for comprehensible communication. According to Morgan and Rinvolucri (1988), the size of the students' word store will determine their ability to read and express their ideas vividly and precisely. In the KBSM syllabi emphasis is given to

vocabulary but teachers tend to teach words in isolation or sometimes overlook teaching vocabulary.

In order to get students to communicate accurately and appropriately, the syllabus is structured in such a way that it provides them with linguistic form and language functions that will enable them to communicate both in oral and written forms within a given context.

The key to develop meaningful interaction is by having a wide range of vocabulary. Vocabulary is one of the most important elements in learning English. It is true that the students should get the forms of English right but it is also essential to get the meaning right. Students may have acquired the writing skill of the second language but may still be unable to use vocabulary successfully in classroom and in real situations.

Vocabulary acquisition will be used interchangeably in this study with vocabulary learning. Researchers (Harley, 1996; Kolich, 1985; O'Rourke, 1974) point to vocabulary learning as a vital part of each student's life. According to O'Rourke (1974), the knowledge of vocabulary affects students' thoughts, actions, aspirations, and success, especially in academic achievement.

Studies (Harley, 1996; Kolich, 1985) noted that without an adequate knowledge of relevant vocabulary, students have difficulty performing the tasks required in school where the need to perform their duties as students, for example completing their assignment and to write essays. Once the students have completed their studies they need to have adequate vocabulary to perform well in their future careers. Harley (1996), revealed a close connection between reading comprehension and vocabulary knowledge. According to Kolich (1985), students who use a wide variety of words have little or no

difficulty reading fluently, understanding the author's intent, and expressing themselves correctly and concisely in both oral and written forms.

Harley (1996) noted that vocabulary knowledge is fundamental to the development of second language proficiency. While many researchers accept the importance of vocabulary acquisition in language proficiency and academic achievement, their ideas about how vocabulary should be learned have varied widely. Mckeown (1985) recognized two ways of learning vocabulary: word recognition and word meaning. According to them word recognition is mainly acquired through context where a learner needs to get the meaning of a word through reading the whole sentence and then unlock the meaning of the difficult word by himself or herself. In this respect, this study will focus on contextualized vocabulary learning through word recognition in a computer-assisted language learning environment.

Researchers (Prince, 1996 and Siribodhi, 1995), in the field recognize the need for vocabulary acquisition especially at the weak level. One of the major concerns that they have is the need for developing effective pedagogical methods for the teaching of second language vocabulary. Traditional pedagogical methods for vocabulary acquisition include word-lists, dictionary use, workbooks, teacher-made materials, and group discussion. Yet developing effective pedagogical methods for vocabulary acquisition continues to demand attention and exploration.

One pedagogy which interests many researchers is computer-assisted language learning (CALL). Computer-assisted language learning programs have been found to be effective in many language-learning studies (Asoodeh, 1993; Kolich, 1985; Siribodhi, 1995). The results of the studies showed that students who used CALL programs

performed better than those who used traditional teaching method. Additionally, CALL programs can enhance learning through its multimedia application. They also can provide individualized instructions and allow students to work at their own pace.

At present, many existing CALL studies (Ianacone, 1993 and Siribodhi, 1995), concentrate on listening, reading, writing, and speaking, with very few exploring vocabulary acquisition. Furthermore, most of the available CALL programs for vocabulary acquisition employed the word-list pedagogical method. Word-list pedagogy is not an effective way of teaching vocabulary (Ianacone, 1993; Fitzgerald, 1995). According to Trump, Trechter & Holisky (1992), Ianacone (1993), word list pedagogy does not introduce new words to be learned within their meaningful contexts. To enable learners to learn vocabulary more effectively and meaningfully, contextualized vocabulary instruction within the CALL environment has to be explored. Studies (Pusack & Otto, 1990; Pellow, 1995; Ciccone, 1995) suggest that video can be used to provide contextualized vocabulary instruction. The new words to be learned can be recorded in the form of video clips or quick time movies and then incorporated into CALL programs.

Early CALL developers confronted limitations in the use of video, movies, and graphics (Siribodhi, 1995). It has been possible to develop interactive multimedia CALL because of the advancement in computer technology. According to Kalmbach (1994) and Siribodhi (1995), interactive multimedia CALL combines graphics, sound, video, and text to enhance learning. Furthermore, using graphics together with sound and text in CALL to teach vocabulary is considered a vocabulary-remembering strategy (Kenning & Kenning, 1990). Graphics can be used to gain and direct the attention of learners.

Additionally, graphics are effective in creating mental images that help to improve recall, retention, and imagination of information being learned (Rieber 1994; Ciccone, 1995).

However, the present researcher has no clear picture whether multimedia CALL with video, motion graphics format, or still graphics format would represent a better method of learning vocabulary for English as second language (ESL) students. Research in this area is still developing because the use of multimedia CALL in vocabulary acquisition and learning is still new. Thus, investigation of the effectiveness of different graphic formats in a multimedia CALL environment is sorely needed.

1.2 Statement of the Problem

This study was conducted to find out how computer based multimedia applications can be used to teach vocabulary in the process of helping weak ESL students to learn new words. The recognition of the importance of vocabulary in the language learning had propelled the present researcher to search for an effective pedagogical method to teach new words. Therefore, this study was concerned with vocabulary learning in a multimedia environment. Computer-based multimedia application is widely used in instructional activities. It is commonly used to refer to tutoring applications such as drill and practice, tutorials, stimulations, and games (Chimezie, 1987, Rieber, 1994).

The English Language has been recognized as international language and our present education policy also has put more importance in this language where Mathematics and Science are being taught in English. The inability of students to speak English could hinder their development of appropriate communication skills needed for

gainful employment, success in schools, and adapting to a new learning environment. Thus, the students' chances of succeeding in schools and being employed cannot be assured as a result of their communication problems.

Vocabulary plays an important part in the development of the four language skills: speaking, listening, reading and writing. A wide range of vocabulary could provide clarity and enables the speaker to convey the message or information without much problem. Having limited and committing mistakes in the use of vocabulary could lead to misinterpretation, whereas the correct use of vocabulary would make it easier for people to read and write better, understand main ideas and to speak correctly.

One of the problems faced by language teachers was on how to establish contextualized vocabulary instruction in computer-based applications. The incorporation of video clips and sound into these applications could provide contextualized vocabulary instruction. These computer-based applications could help weak ESL students to learn new words more effectively compared to the traditional method.

1.3 Purpose of the Study

This study examined the effects of two multimedia computer-assisted language learning (CALL) programs on vocabulary learning by weak ESL students. The first program consisted of motion graphics and vocabulary. The second program consisted of still graphics and vocabulary. The purpose of the study was to investigate which of the programs would present a better application for learning vocabulary by weak ESL

students. The second purpose was to examine which of the programs would help the weak ESL students to retain vocabulary words longer.

1.4 Significance of the Study

It is hoped that this study on teaching vocabulary using computers will encourage English teachers to equip themselves with the latest strategies and work towards making the English Language an interesting and meaningful subject. As computer programs today have become very sophisticated and flexible, they can control the presentation of the materials according to the program, for example, by limiting the time available to read a text or answer a question. They can also control other equipment, such as CDs and laser discs, and present the students with letters, sound, and visuals. So, it is up to the teachers to fully utilize this facility to make language learning more interesting.

Teaching vocabulary using computers may enhance the English vocabulary skills of students who have limited English proficiency. The use of computers in instructions may also develop self exploration among students in learning new words and help them to unlock the meaning of unknown words with minimal help from teachers. When the students are able to unlock and understand the meaning of difficult words without any help from others, they would develop self confidence and they would be aware of the importance of education. Once the students are engrossed with this learning situation it is hoped that the number of dropouts would be reduced and the learners in the schools would perform better in the public examinations.

It is also hoped that the policy makers would support curriculum experts, syllabus designers and educators in the development of materials which can be used to assist language teaching using computer. Suitable programs may be developed to help weak students in learning English language. The use of advanced and sophisticated instruments and programs in language teaching would enhance and motivate the weak students to participate in the language classroom.

One way of providing students with authentic and varied contexts is by tapping the resources from the Internet. This is one of the ways of encouraging the learners to manipulate unknown lexical items. When the students have a wide range of vocabulary they will have the confidence to derive the meaning of difficult words and able to understand the text. If the students are trained to prepare their own multimedia materials for vocabulary learning based on the downloaded text, they will have confidence and be motivated to learn new words and they also will be able to help others who have problems in learning new words. In addition, involvement in creating an authentic product has been shown to increase the level of motivation and enthusiasm and has been found to be conducive to enhancing content knowledge (Mckeown, 1985).

The findings of this study would also contribute to the body of knowledge relating to the field of multimedia application and its use in language learning. Studies have shown that efforts to improve second language learning with computer technology have been successful (Chimezie, 1987, Rieber, 1994). The use of an effective computer graphics format in vocabulary learning can be helpful to ESL students. It is hoped that more multimedia programs especially in the teaching and learning of vocabulary will be produced to help our language learners.

Vocabulary learning requires a very systematic technique in order to equip ESL learners with suitable strategies to learn new words. In our present education system, much emphasis is being laid on learning new English vocabulary as Mathematics and Science are being taught in English. This research hopefully will assist teachers to seek ways in reducing the problem of learning English lexical items among students and propose other alternatives in teaching, by using computer based multimedia programmes. Besides that, it would hopefully contribute to further research in this area. This study would also provide significant insight in explaining the promising role of computers in language teaching and learning in the context of Malaysian classroom.

1.5 Research Questions

The following research questions were asked:

1. Will the use of multimedia CALL program with Motion Graphics and vocabulary in instruction help weak ESL students improve their vocabulary learning?

2. Will the use of multimedia CALL program with Still Graphics and vocabulary in instruction help weak ESL students improve their vocabulary learning?

3. Will the use of multimedia CALL program with Motion Graphics and vocabulary in instruction help weak ESL students to recall vocabulary information better after a certain period of time?

4. Will the use of multimedia CALL program with Still Graphics and vocabulary in instruction help weak ESL students to recall vocabulary information better after a certain period of time?

1.6 Hypotheses

In order to answer the research questions, the following null hypotheses (Ho) and alternative hypotheses (Ha) were generated:

(Ho1). There is no statistically significant difference in the vocabulary Pretest and Posttest scores among students in the Motion Graphics treatment group.

(Ha1). There is a statistically significant difference in the vocabulary Pretest and Posttest scores among students in the Motion Graphics treatment group.

(Ho2). There is no statistically significant difference in the vocabulary Pretest and Posttest scores among students in the Still Graphics treatment group.

(Ha2). There is a statistically significant difference in the vocabulary Pretest and Posttest scores among students in the Still Graphics treatment group.

(Ho3). There is no statistically significant difference in the posttest means scores between students in the Motion Graphics treatment group and the Still Graphics treatment group.

(Ha3). There is a statistically significant difference in the posttest means scores between students in the Motion Graphics treatment group and the Still Graphics treatment group.

(Ho4). There is no statistically significant difference in the delayed posttest mean scores between students in the Motion Graphics treatment group and the Still Graphics treatment group.

(Ha4). There is a statistically significant difference in the delayed posttest mean scores between students in the Motion Graphics treatment group and the Still Graphics treatment group.

(Ho5). There is no statistically significant difference in the posttest and delayed posttest mean scores among students in the Motion Graphics treatment group.

(Ha5). There is a statistically significant difference in the posttest and delayed posttest mean scores among students in the Motion Graphics treatment group.

(Ho6). There is no statistically significant difference in the posttest and delayed posttest mean scores among students in the Still Graphics treatment group.

(Ha6). There is a statistically significant difference in the posttest and delayed posttest mean scores among students in the Still Graphics treatment group.

1.7 Limitations of the Study

This study examined the effects of only two computer-assisted language-learning programs on vocabulary learning of ESL students. The first program consisted of motion graphics and text, while the second program consisted of still graphics and text. The sample population was also limited to weak ESL learners in a selected secondary school. Furthermore, the two experimental groups also included those students who were computer illiterate. This might affect their vocabulary learning using computers.

1.8 Definition of Terms

CAI: The use of the computers to assist in instructional activities. It is commonly used to refer to tutor applications such as drill and practice, tutorials, simulations and games (Chimezie, 1987).

CALL: Computer Assisted Language Learning is defined as a means of using computer to present, reinforce and test particular language items (Barker, 1989).

Graphic: Any visual representation that the authors use to highlight, clarify, illustrate, summarize, or complement their text (Ciccone, 1995).

Multimedia: The use of the computer to present and combine text, graphics, audio and video with links and tools that let the user navigate, interact, create, and communicate (Hofstetter, 1994).

Still visuals: Images, including text, displayed on a computer monitor without the illusion of movement in space (Rieber, 1990).

Motion Graphics: Images, including text, displayed on a computer monitor with the illusion of movement in space (Rieber, 1990).

Glossing: A pleasant appearance of something, which is better than truth. Normally used in computer applications (Davis, 1989).

CHAPTER 2

REVIEW OF LITERATURE

2.1 Introduction

In this chapter, the related literature on vocabulary acquisition, visual research, imagery and studies relating to computer based multimedia applications will be presented. Furthermore, literature on how information is processed will be reviewed. Finally, the effects of motion and still graphics on learning will be examined. Motion, dynamic, and animation have been used interchangeably in many studies to represent movement (Rieber, 1994; Asoodeh, 1993, Ciccone, 1995). Research findings or literature in which motion, dynamic or animation was used will be considered in this study.

There are a number of domains concerning vocabulary development about which researchers disagree. One fundamental difficulty is that of defining what it means to know a word (Baumman & Kame'enui, 1991). Is it enough for students to derive the meaning of words from context or does knowing the meanings of words mean that students should

be able to generate texts and conversations in which those words are used correctly and pronounced properly? Blanchowicz and Lee (1996) state that word knowledge cannot be defined dichotomously like a light switch that has only on and off positions; they suggest that a better metaphor for word knowledge is

> *"…that of a light dimmer switch that gradually supplies an increasingly richer supply of light" (p. 270).*

Another debate among researchers has been dubbed the "fertility versus futility debate" (Anderson & Nagy, 1992; Baumann & Kame'enui, 1991; Nagy, 1989; Wood, 1997). Essentially, scholars debate about the effectiveness of direct vocabulary instruction versus indirect instruction, respectively.

Those on the fertility side argue that natural contexts are often inadequate for deep vocabulary learning, that learning from context is less efficient than is learning from direct instruction and that some words are better taught explicitly (Baumann & Kame'enui, 1991 and Wood, 1997).

Those who feel that the futility position is more compelling state that the sheer number of words known by students is evidence that vocabulary development does not result solely from direct instruction and dictionary usage (Anderson & Nagy, 1992). How could it, if the average student is learning 2,000-3,000 new words per year? Indeed, Anderson and Nagy (1992) stated that learning new words is an incidental by product of reading for children of all ages and ability levels. Routman (1991) asserts that

> *"…vocabulary development is best promoted through wide reading where new words are learned incidentally…therefore, [teachers] need to encourage extensive reading…and teach strategies for inferring meanings of words through context" (p. 158).*

Similarly, Nagy (1989) asserts,

> *"…Increasing the volume of students' reading is the single most important thing a teacher can do to promote large-scale vocabulary growth" (p. 32).*

Instead of siding strictly with one argument or the other in the "fertility versus futility debate," many researchers believe that the most effective means of vocabulary instruction involves combining direct and indirect methodologies in order to create a balanced vocabulary program (Anderson & Nagy, 1992; Baumann & Kame'enui, 1991; Nagy, 1989).

2.2 What is Vocabulary?

As defined earlier, vocabulary is the total number of words (with rules for combining them) that make up a language. The words are also words known to or used by a person, in trade, profession etc. (Merriam-Webster, 1989)

Morgan and Rinvolucri (1986), said that to the Anglo-Saxons, a vocabulary was a 'word-hoard' to be owned and treasured, and to Chinese, a sea of words to be fished.

As for Seaton (1974) vocabulary is

> *"…a list of words arranged alphabetically with definition or translations of the principal words of the language."(p.13)*

The above definitions obviously need attention from the language teachers and they should concentrate more on the definition given by Seaton (1974) because the definition is more realistic and can become a guide for language teachers to fully utilise