

## 컴퓨터 보조 학습을 통한 멀티미디어 어휘교육의 효율성

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### 요 약

본 연구의 목적은 어휘 학습의 측면에서 컴퓨터 보조 학습을 통한 컴퓨터 기술의 효과와 유용성을 알아보고자 하는데 있다. 컴퓨터 기술을 통한 멀티미디어 수업은 네 가지 (듣기, 말하기, 읽기, 쓰기) 언어기술과 관련하여 다양한 언어학습방법을 제공한다. 한국인 영어 언어 학습자는 주입식 교육에 익숙해져 왔으며, 단어를 습득하는데 있어 반복적인 어휘 암기방법을 활용한다. 이를 위해 본 연구에서는 세 가지 연령 그룹을 대상으로 설문 조사와 교육용 멀티미디어 학습실험이 이루어져있다. 본 연구는 오프라인에서의 어휘학습과 다르게 교사는 컴퓨터 멀티미디어프로그램을 응용하여 교실 수준에 적합한 어휘 학습 응용 프로그램을 어떻게 효과적으로 개선 할 수 있는지 밝히고자 한다.

## Effectiveness of Multimedia Program in Computer-assisted Vocabulary Learning

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### Abstract

The purpose of this study is to discover if the use of computer technologies in computer-assisted language learning, in the aspect of vocabulary learning, is both effective and useful. The technique of using multimedia lessons, using the computer, offers a variety of language learning tasks in relation to the four basic language learning skills. Korean students have been accustomed to a cramming style of education, and they utilize rote memorization for learning vocabulary. This study consisted of surveys and experiments, using specific multimedia language learning courseware exercises on three different age groups. The study explores the issues and problems that followed, and how teachers could effectively apply or enhance their vocabulary teaching through computer-assisted multimedia which is suited for a variety of levels versus the classroom off-line vocabulary learning application which is suited to one level.

**Keywords :** Computer-assisted Language Learning, Vocabulary learning, Multimedia program, Computer Technology

### 1. Introduction

“In Computer-Assisted Language Learning

(CALL), there has been a strong movement towards the use of collaborative and facilitative courseware, and away from instructional soft ware such as tutorial and drill programs.” (Wyatt, 1988:223)

According to Wyatt (1988), there are increasing numbers of language teachers who are using multimedia in classrooms. This means, more and more learners are interested in computer language classes since computers are more widely available in schools (Wyatt, 1988). Teachers need to

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think about how to use the computer language classes effectively to enhance language learning.

Multimedia and web programmes provide a diversity of language learning tasks in relation to four skills (Listening, Speaking, Reading and Writing). This study will look at effectiveness and usefulness of computer technologies in language learning in the aspect of vocabulary learning. As many language classrooms are computer-based learners would now study and complete assignments using computers. According to Samimy and Brutt-Griffler (1999 in Braine, 1999), English has become a 'lingua franca' among people from most countries, thus English is known as the most widely learned first language (FL). Árvá and Medgyes (2000) state that the rapid spread of English and the ratio of non-native English speakers is increasing. EFL (English as a foreign language) learners do not have chance to use English outside classrooms (Kent, 2004). However, computer assisted multimedia language teaching helps to achieve collaborative language tasks though real-life interactions between computer technology and students (Wyatt, 1988).

## 2. Literature Review

### 2.1 Role of technology in classroom

Technologies play an important role in language classroom in terms of setting up equipment, navigating the web, installing software, consulting with IT people (lecture note). Within the classroom, computers create materials and tests, Hot potatoes style exercise, Virtual learning exercise (e.g. Moodle). Jamieson & Chapelle (1988) point out the role of the technology as a teacher in the classroom and the relationship between students and teacher

and students and technology. According to Jamieson & Chapelle, students respect and trust their teacher when the teacher is taking a role in the classroom. However, if the relationship between the students and the computer technology continues, the teacher becomes a guider or helper in the classroom. Therefore, there will be fewer interactions between the teacher and students, and the students' perceptions and behaviors towards the teacher may change later (Jamieson and Chapelle, 1988).

### 2.2 Use of technology in classroom

"As language teachers we use a variety of teaching aids to explain language meaning and construction, engage students in a topic, or as the basis of a whole activity." (Harmer, 2001)

Technology is being used as a means of teaching equipment in many classrooms, such as computer dictionary, Picture/images, OHP, internet, web programmes, word processor, CD/DVD-ROMs, and so on. (Harmer, 2001). Teaching aids such as multimedia programs can benefit students' learning (Kecskes, 1988). However, there might be some advantages and disadvantages when using the technology. Many researchers' (Harmer, 2001; Nozawa, 2004; Jamieson & Chapelle, 1988) outline the advantages and disadvantages of technology use in language learning classrooms.

Harmer(2001) points out that the Internet is the real advantage for the first time, because students have access to 'authentic' situation. There are exceeding numbers of writing programs available in the web-sites, students can browse web-sites and practice their writing exercise. View point of writing process learning internet use can make writing instruction more interesting, appealing, motivating and authentic. (Krajka,

2000). Fandrych (2001) points out that word processor is handy and helpful for student in writing documents compared to 'pen and paper' (Harmer, 2001), because the word processor checks their spelling and grammar errors in which teachers give feed back on their errors in 'pen and paper' writing style. Teachers can bring web-program such as 'MOO' into language learning (reading and writing exercises). Virtual environment programmes such as MOOs provide students opportunity to experience 'authentic' situation (Peteson, 2004). Students can create virtual spaces using MOOs, which can develop both speaking and writing skills.

There are so many factors which affect students' learning in multimedia lessons, that are: age, different characteristic, behaviors, and ability of using techniques. One of the disadvantages that the researchers discussed was typing speed: some people are slow in typing rather than writing in hand. They can learn and practice typing in order to improve the speed. This brings us to the next issue, which is age. Teachers need to consider the level and the age of the learners. It is difficult for adult learners to follow with computer lesson. "Adults differ with respect to their purposes, styles and strategies for learning; they put their cognitive abilities to work in a variety of ways" (Jamieson & Chapelle, 1988:152). The adult learners take a long time to become good at typing fast, also their eye easily become tired in front of the computer screen.

Students learn things in different ways, thus the learning pace is different. The lesson must provide reasonable type and level of techniques/computer programmes. If the computer-based activity or exercise is difficult in dealing with terms and performing the program, learners may get

irritated and bored. Jamieson & Chapelle (1988) states that not all learners can use the software properly and accurately. Thus, teachers must be aware of the all the possible consequences that could happen from individual learner due to their different cognitive style (Jamieson & Chapelle (1988). To make the best use of the multimedia programs in the classroom or laboratory, teachers must be able to use the programme perfectly and prepared to help with the students' technical problems occurred during the lesson (Kecskes, 1988).

### 2.3 Vocabulary Learning in Classroom

Computers provide an effective way of putting the principles of good vocabulary learning into practice, particularly about repetition and opportunity for retrieval. Several studies and discussions in vocabulary learning in ESL context looked at what teachers do about vocabulary in classrooms (Anderson & Shifrin, 1975; Gipe & Arnold, 1980). Gipe & Arnold (1979) suggest teachers encourage learners to guess word meanings from the context. This is in line with Anderson & Shifrin (1980) who encouraged teachers to teach their students to use their own images for efficient learning. A common theme in many of the studies is that what happens in the classroom does not take account of the full range of options suggested by theory and research.

In 1998, South Korea's Ministry of Education proposed, through an Amendment, to lower basic vocabulary words that students would be required to learn from 3500 to around 1700 words, for first year middle/high school students, and from 3500 to around 3000 words for second and third year middle/high school students. The level for elementary students remained constant at 500 words. (Everyday Economy, 1998)

### 3. Data Collection and Description of participants

The participants of the study were recruited from three different institutions; Elementary school students are noted as ‘S’, Middle and high school students were noted as ‘A’, and ‘N’ were University students. Hundred students were selected from each age level or school grade, to explore their method of learning vocabulary, as well as their of vocabulary acquisition improvement through online lessons by age group. As shown in Table 1, there were 300 students, 180 females and 120 males, ranging from 12 to 21 (Age mean = 16.5). The age group, of the research participants, is addressed as group A (Elementary school students, Age 12-13), B (Middle/High school students, Age 14-19) and C (University students, Age 20-21) as follows.

<Table 1> General information of the survey participants

	Group A (n=100)		Group B (n=100)		Group C (n=100)		Total (n=300)	
M	30		50		40		120	
F	70		50		60		180	
\	Me	SD	Me	SD	Me	SD	Me	SD
an	12.4	3.82	16.7	4.18	20.3	1.54	16.5	3.44

The present research involved a quantitative method of data analysis. The participants in the survey questionnaire were randomly chosen.

### 4. Research Methodology and Data Analysis

#### 4.1 Current Vocabulary Learning of Leaners

The survey questionnaire was administered to each participant group at the very beginning of the research time line, in order to determine the current address of how learners have been studying, or memorizing, English vocabulary in four basic skills.

Group participants were asked to list the books, or other related reference books, that they use for English study, both in and out of school. Table 2 illustrates the source of books/materials that are most frequently used for learning vocabulary, categorized into three different groups.

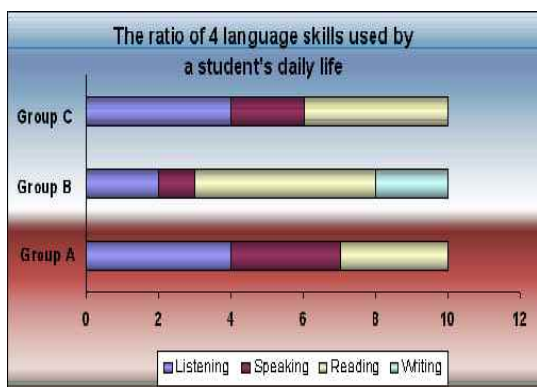
Group A participants were more often exposed to picture story books, whereas participants in groups B and C showed that their common source of new vocabulary came from school textbooks, TOEFL/TOEIC study books, and other reference material. It is interesting to find that some participants, in groups B and C, learn some new vocabulary through American dramas or movies, which they find hard to learn from textbooks used at school.

<Table 2> Vocabulary Sources

	Group A	Group B	Group C
SOURCE	Story telling	Textbook	Textbook
	Textbook	TOEFL/TOEIC	TOEFL/TOEIC
	Picture book	other reference books	other reference books
	Reading books (i.e graded readers, Level 1 & 2)	English Novel/ Movie EBS on TV	Movies/ American dramas News-paper article Time magazine

The participants were asked to determine the ratio of each of the four language skills used in a student's daily life by percentage. The resulting ratios of the four language skills that the learners believe themselves to have used in their daily life is shown in Figure 1.

(Fig.1) The ratio of four language skills used by a student's daily life, as determined by students



As the results above show, Group A participants believe that they use listening, speaking, and reading almost equally. Some answered that they learn vocabulary the best with pictures and flash cards that are related to the content or topic and they study vocabulary through repetition, or reading the same story several times. On the other hand, Group C participants believe that writing tasks were almost nonexistent, and Group B participants believed that reading tasks were mostly used, whereas practicing speaking drills are likely to be avoided, compared to other language skills. It seems that the majority of the participants in Group B spend a reasonable time on listening and reading in which the learners are likely to be exposed to vocabulary from the repetition of listening and reading drills, but a less than reasonable time on speaking and writing. As

many of the Group B and C participants answered they study vocabulary for school exams or TOEIC/TOEFL exam preparation. They learn vocabulary through writing vocabulary in notebooks, memorizing whole words or sentences together with word families, work related to vocabulary, synonyms, antonyms, and verb tenses, but nothing in context. Some participants in Group C noted that they use electronic dictionaries or search words online to get the definitions.

Many researchers have found that most vocabulary is learned and acquired from a context or related information input (Nation, 2001; Gu and Johnson, 1996; Moir, 1996, Williams, 1985). The more vocabulary learners are exposed to, the better vocabulary they will have. Most Group A participants have opportunities to be exposed to a wider range of new words through the repeated retrieval of reading, story-telling, or other grade leveled picture books. Nation (2001) claims that learners show effective results from repeated retrieval, which is to hear the same story on the same topic over and over, or listen to a serialized story with repeating vocabulary. The eight participants of Group A, who answered that they actually say the word aloud to activate their auditory memory, believe this vocabulary learning method works best for them. The majority of the participants from Group B and C answered that they try to relate the new vocabulary to words they already know, and memorize them in groups such as word families, similar meanings to words, related words, or words they could make a sequence with. However, more than half of them answered that they easily and quickly forget the words they learnt in such a short period of time.

### 4.2 Computer-assisted Vocabulary Learning

Eight vocabulary focused lessons which covered four different topics were carried out in two consecutive sessions. The participant groups were given several different types of texts on cooking as an introduction for the topic in the first session, considering the levels of English for each group. Then, the participants were given opportunities to choose their own texts in line with their interests. With these texts, the participants identified grammar features such as commanding verbs, adjectives, adverbs, and nouns looking specifically for cooking materials. Also, some names of dishes, foods, vegetables, and cooking ingredients were practiced. In the first half of each class, participants practiced the use of grammar in a sentence.

until all four skills speaking, listening, reading, and writing had been worked through in the later session. The courseware multimedia exercises (H software program covered four lab sessions, followed by a topic focused session. In every second session of the same topic, the participants worked on three different types of exercises, using the H software program, as illustrated in figure 2, which are performed in pairs, groups, or individuals. Ideally, the learners were expected to repeat each exercise again, after they had tried all the exercises for the first time.

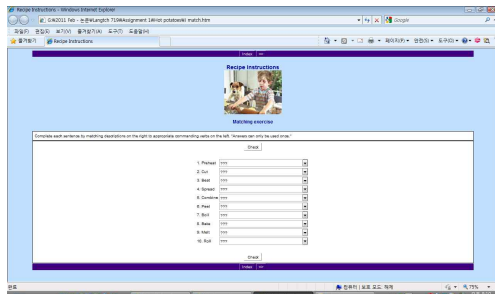
In the later session of the lab session the participants worked on other three different types of exercise from the previous session on the same topic, which are as follows; e.g. First session on 'Tuna mixed vegetables recipe' topic

1. JCross\*
2. JQuiz\*\*
3. JMix\*\*\* (Type A)

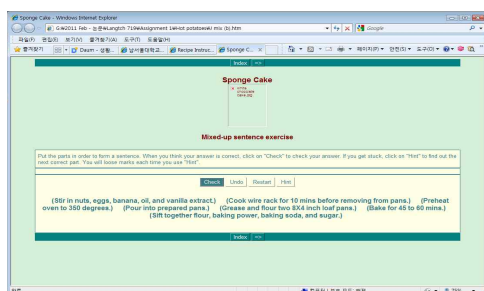
e.g. Second session on 'Tuna mixed vegetables recipe' topic

1. JCloze\*\*\*\*
2. JMatch\*\*\*\*\*
3. JMix (Type B)

(Fig.2) H software/web program (J Match)



(Fig.3) H software/web program (J Max)



For example finding correct verb forms in a sentence, appropriate use of adverbs, etc.

\* A crossed puzzle exercises in which testing their vocabulary memory whether the learners can find the correct word from the definitions given for a hint.

\*\* A multi-choice question exercises in which testing the understanding of vocabulary uses in selecting one correct answer/word among similar or related lexical words.

\*\*\* A jumbled sentence exercise in which testing whether the learners understanding the content of the text and able to sequence jumbled sentences in the correct order of the event.

\*\*\*\* A gap-filling exercise in which testing vocabulary knowledge of verbs, nouns, adjectives and adjectives.

\*\*\*\*\* A matching items on the left to the right in order to make a complete sentence or phrase.

The purpose of this courseware multimedia language learning exercises is to help learners become stronger in the use of vocabulary, in terms of appropriate use of commanding words, found in a list of instructions. They were also to become more familiarized with the use of cooking terms, names of ingredients, or foods. As was mentioned earlier, the more words learners are exposed to, the better vocabulary they will have. In doing so, the participants are exposed to new words, through the repeated retrieval of courseware multimedia language learning exercises.

The participant groups were given a scoring sheet to record their score for each exercise in the scoring table, as shown below, and compare the difference between the score they got in the beginning with the second. The results of the descriptive statistics for overall frequencies, with respect to the participants' first and second exercise tests, are presented in a dot bar graph (Figure 4). The results indicated all three participant groups achieved better scores in the second test. The results indicated all three participant groups achieved better scores in the second test. The most successful group, Group A, showed significant improvement with a 13.8% difference between the first and the second test. On the other hand, Group C, the oldest learner group, showed minor improvement with a 6.1% difference between the tests, and Group B with an 11.1 % difference between the tests.

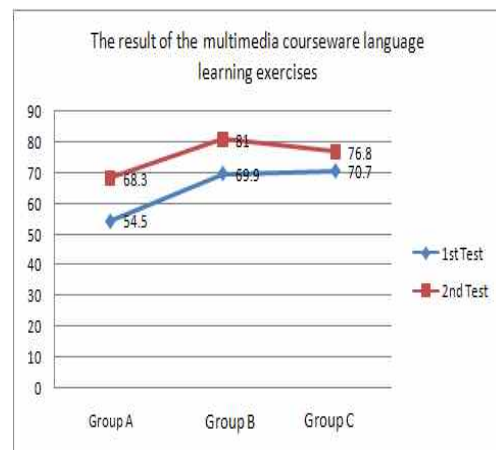
The second survey was administered to all participant groups, after the completion of the vocabulary focused lessons, in order to explore the usefulness and effectiveness of the multimedia courseware as a means to learn English vocabulary. ANOVA analysis was used to compare the mean of three

groups (A, B, C) to see if there are significant differences between the learners' feedback. There are some statistical differences between the learners' feedback due to the level of their grade or age. The results of the one-way ANOVA analysis indicated a statistically significant difference between the groups, in terms of the 'Interests & motivates learners' ( $p=.032$ ), and 'Learning vocabulary through multimedia is effective' ( $p=.017$ ). In other words, participants of Group A appeared to be more interested in vocabulary learning through multimedia courseware and effective, in learning vocabulary, than Group B and C.

<Table 3> Scoring table

	First time	Second time
J Cross	%	%
J Quiz	%	%
J Mix (a)	%	%
J Cloze	%	%
J Match	%	%
J Mix (b)	%	%

(Fig.4) The result of the multimedia courseware language learning exercises



<Table 4> Summary of ANOVA of learners' feedback on the usefulness and effectiveness of the multimedia courseware means in English vocabulary learning

	Total Participants (n=300)		Group A		Group B		Group C		df	p
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
Helps & motivates learners in learning vocabulary	2.47	.973	2.30	1.25	2.60	.966	2.50	.707	29	.793
Learning vocabulary through multimedia is effective	1.60	.563	1.20	.422	1.80	.632	1.80	.422	29	.017
Interests & motivates learners	1.90	.803	1.50	.707	2.40	.966	1.80	.422	29	.032

\* 1= strongly agree 2= agree 3= neutral 4= disagree 5= disagree

## 5. Conclusion

The purpose of this study is to help learners strengthen their vocabulary usage. The results of this study, through the experiment, survey analysis, and multimedia language courseware learning exercises are as follows:

1) The multimedia courseware program used, for the learning of English vocabulary, had a positive effect on the young learners' interest (Group A). This was a result of their freedom to choose their favorite text materials, from a web-site which they are not familiar with. Vocabulary learning, using 2 or 3 syllable words, was more effective in the younger group. A suggestion for teachers would be to use every day themes, for more efficient vocabulary learning, among younger learners.

2) Multimedia exercises enhances the learners' reading speed and comprehension, and strengthens their writing skills. This was more noticeable in Groups B and C, as learners became more familiar with the use of terms used in the topics chosen. The study suggests that guessing the meaning of the words from the context and repetition, through reading, can develop both B and C

learner groups comprehension levels.

3) The multimedia program used can be self-directed. The multimedia courseware program was designed to fit into a pre-intermediate level program. Adopting listening exercises would have been more practical and efficient in developing the learners' listening skills, in their learning of vocabulary. For example, if some listening exercises were included, such as adding sound files related to a conversation or story telling section of the lesson, from web-sites (e.g. Wimba.com), learners would improve their listening comprehension through simply listening. In that way, the learners would improve their vocabulary skills, and become more confident in both listening and speaking.

Since each learner is different, teachers must think about how to adapt and apply computer-based programs, considering the class level, to effectively utilize the level of the learners' English competency, in the classroom. In terms of the four language skills, the current study suggests teachers plan learning outcomes, or purpose and needs, of learning multimedia lessons with their learner's vocabulary size in mind.



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