

ROLE OF INTERACTIVE MULTIMEDIA FOR ENHANCING STUDENTS' ACHIEVEMENT AND RETENTION

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ABSTRACT

This paper argues about the role of interactive multimedia and conventional direct method of teaching English in relation to student's achievement and retention. The interactive interface with the student is possible through computer, laptop and palmtop then any other media. The present experimental study compared the effectiveness of interactive multimedia and conventional direct method of teaching English in relation to students' achievement and retention. Initially 154 students of class VII of aged 12-14 years was selected for the study and two groups were formed of 50 students each in controlled group and experimental group. Experimental group was taught through the interactive multimedia and control group was through the conventional direct method for teaching English.

It is concluded that both the methods taken for study are quite effective for teaching the English language to class VII students but however, out of these two methods, interactive multimedia method was found more suitable with respect to the marks achieved by them in English. When students were taught through both direct conventional method & interactive multimedia method it was found that the acquired retention was better in case of interactive multimedia method.

Keywords: Interactive multimedia, Conventional direct method, Student's achievement, Retention

INTRODUCTION

Education is mainly concerned with the ways and means of teaching and learning. Even of these two, the latter appears to be more vital as it is not only concerned with what the teacher does but also with what knowledge he transmits to the students and what the student does to assimilate the knowledge. For a very long time, it was understood that more information transfer was teaching. Traditional education was operated on the assumption that the time-consuming steps of learning could be bypassed; that the final knowledge could be transmitted to the learner through a sort of intellectual feeling process. Thus, schools were considered knowledge shops and the process of education was only unidirectional. Subjects were taught according to the will of teacher and little attention was paid to the eagerness, curiosity and capability of the pupils.

The Goal of our government to provide equal opportunity and will remain as day dream unless problems associated with regular classroom are not overcome. It is very difficult task for teacher to take care of each and every student in a heterogeneous classroom comprised of many individual differences among the students. It is impossible for teacher to teach every individual according to their pace of learning and level of understanding in as limited time period. In a traditional classroom it is not possible for a teacher –

- to provide teaching material according to the need of each student
- to teach every student according to his/her own pace of learning.
- to provide teaching material for as much time as the student review.
- to access the learning of all individuals and keeping records of them.

- to guide the students keeping in view their individual differences

The greatest contribution of Information technology is the development of computer and its use in all sectors of life. They have become more powerful (i.e., able to process and store much more data), faster, cheaper, portable, easy to use and more convenient. Personal computers (PCs) and laptop are now within the reach of even ordinary people. In recent years, accessories such as- hard disk, CD- ROMs, flash drive, printers used with computers had also developed rapidly. Using these, a computer program can handle sound, picture and video along with text. "Multimedia" is a buzzword today in the field of computer. Multimedia involves combining text, sounds, still pictures and video etc.

This means that the world of computers is getting easier to the world of human beings. As the hardware develops, computer displays become more realistic and cheaper. The computer with its virtually instantaneous response to the student input, its extensive capacity to store and manipulate information its unmatched ability to serve many individual students simultaneously is widely used in instruction. The computer has the ability to control and manage a wide verity of media and learning material – films, filmstrips, videos, slides, audiotapes and printed information.

Now days in teaching learning process are used various of media like Computer, Multimedia, Radio, TV etc. Among all of them computer plays tremendous role in teaching – learning process. It provides a dynamic interaction between computer and students. Computer used as a delivery tools present information, receive the response, analyze the response and give immediate feedback to the students. The process is known as Computer assisted instruction (CAI).

At the Government level, computerization in India was promoted through its National policy on Education, 1986.;" The policy laid emphasis on the role of computers in enhancing the efficiency of the learning process in making children more creative and in providing them with an individualized learning environment.

At the academic level, CLASS project was initially introduced as a pilot project during the year 1984-1985 by the NCERT in the wake of the British aid of BBC microcomputers was the first step in promoting the use of microcomputers in Indian secondary schools. The objectives of project were to create the awareness among the school students about the computer and its use in teaching learning process. So that students make full benefit of information and communication technology in their daily life and in education at every level.

The follow-up programme of MHRD, CLASS 2000, has three components, viz computer literacy in 10,000 schools, computer aided learning in 1000 schools and computer based learning in 100 smart schools (Mallik, 2001) and CLASS 2002 the project has intended to accelerate the pace of introduction of IT in schools and create models of school computer education - so as to achieve the goals of universalisation of computer literacy among school passed outs within next five years. By 1990, the NCERT hopes to have spread its CLASS programme, to nearly 14,000 higher secondary schools in the country.

In the present age of science and technology computers and computer – based technology are being used in every walk of life and even in classroom teaching. In classroom teaching, the instructions are imparted through computers. But even today the educationist, teachers and researchers are not sure whether computer based teaching approach is more effective than the traditional classroom teaching or the traditional class room teaching methods are more effective than computer based teaching approaches.

Before starting the research work, researcher goes through the researches already done in this area and presenting you few researches which is related to the compression of Multimedia and traditional methods of teaching. In this regard, Yune-Kuang Cliff Liao (2007) investigated a meta analysis to synthesize research comparing the effects of CAI and traditional instruction on students' achievement in Taiwan and suggested that CAI is more effective than traditional instruction in Taiwan and had positive effects on achievements. Positive outcomes were found for students with CAI were reported by Blok et. al.(2002), soe et. al.(2000). chiu (2002), and Ho (2000).

Edwards, et.al (1975) reviewed some researches on the effects of CAI on achievement, retention and learning rate and its effects on students of different ability levels and revolved that CAI as supplement to traditional teaching in terms of achievement and learning rate. Hasselbring (1984) summarize results of research studies and meta analysis on the effects of computer based instruction on student achievement and attitudes and result favored the use of CAI over the traditional instruction. Wu (2002a), Wu (2002b) were reported similar findings. Dacany & Cohen (1992), Roblyer et.al. (1992) were found the similar finding in their researches and supports the computer based individualized instruction. Lie (1998), Li (1994), Huang (2003) shyu (1996), Zhau (1986) all reported significant gain for CAI over traditional instruction. But on other side Hsiao (2002), Hus (2000), Huang (2003), Lai (2002), Liu (2001) and Yu (2002) have found no significant difference between CAI and traditional instruction.

Bhatt (2002) investigated the effectiveness of multimedia package on atomic structure and chemical bonding and reported that both method CAI and traditional was equally effective. Naevdal (2007) investigated the relationship between home computer use and performance in English at school. The sample consists a 656 10th class students of age grouped 10 to 16 years in upper secondary schools in Bregen, Norway. Researcher reported that both boys and girls who seldom used home computers achieved low scores in English. However those students who spent two or more hours per day on computer, girls performed very well in English while boys failed.

Zigic et. al. (2007) developed an interactive computer based learning strategy to assist in teaching water quality modeling to out Computer Based Instruction (CBI) effects. In the study CBI aid comprised a hyper text markup language (HTML) module and concluded that all the students found CBI aid helpful and easy to follow also felt they were able to complete their project with minimum supervision.

Singh, Y.P. (2007) conducted a comparative study of learning English spelling through computer and traditional method and revolved that CAI method was found superior than traditional method to teach English. Similar findings was reported by Singh, Y.V. (2007) when investigated the effectiveness of computer assisted instruction Vs traditional method in teaching science at upper primary level. In another study, Rani (2007) investigated the effects of CAI on language achievement of children with learning disability and reported that CAI method was found highly superior than traditional method for disabled students and also reported that no gender difference was found.

Nematullah et. Al.(2008) investigated the classroom interaction with reference to gender and technology. The study data were gathered through partial ethnography by a non-participant observer; two sessions of the course language laboratory that were carefully observed and notes were taken a focus on the nature of interactions. Results of the study show that the interaction patterns are gender –related only to some extent. Also, the interaction pattern in the laboratory classes is similar to, but not the same as, the whole-class discussion patterns proposed in earlier literature. Khoo(2008) investigated that the primary objective of teaching activities is the flow of information between teacher and students. Direct and indirect methods of instruction are two main categories that many

educators find useful for classifying teaching methods. No single method of instruction is ideal for a given topic of discussion. Traditional methods have the advantages of delivering very specific learning targets, where students are explained the importance of a subject with examples, logical reasons can be stressed upon to provide experiences that can inspire learning processes. However traditional teaching is highly developed on knowledge base and skill of the teacher. Communication is mostly one way and often requires some level of imaginative perception from the students.

Nwaocha (2010) carried out a study in Nigeria to Enhance students interest in mathematics via multimedia presentation and reported multimedia presentations can improve students' understanding, enthusiasm, class attendance and satisfaction. Kumar and Tiwari (2011) has done a study to the effectiveness of computer assisted instruction program and traditional method of teaching English in standard –9th. In the study effect of gender, and methods on teaching English in class 9th evaluated. Investigator perform this study on 90 students on the basis of the results investigator not found any significant difference between gender and methods. Vivien et. al. (2011) invested a meta analysis on "Are Multimedia resources effective in Life science Education?" and concluded that multimedia learning was more effective than many traditional educational methods.

Sharma (2012) investigated a comparative study of the effectiveness of Language lab and conventional method of teaching English in developing oral communication skills among secondary school students and concluded that Language methods is more suitable for secondary level students as far as teaching English in developing Oral communication skills is concerned. Therefore it is very essential for teachers to change their traditional view about Computers & adopt language lab method of classroom teaching. Chen (2012) carried out a research on the learning effects of multimedia assisted instruction using information technology model. And in the study researcher favored multimedia assisted instruction to improve the information literacy. Yet the findings of these researchers are not consistent and definite. Therefore, there was an emergent need to conduct more researches in this direction. In the present investigation the relative effectiveness of computer- based interactive multimedia method and conventional direct method of teaching is compared.

Furthermore, in the teaching-learning process, the pace of learning, achievement and retention of the student depends on factors like method of teaching, instructional materials, facilities available both at school and college level, characteristics of the learners etc. Looking to the importance of learner's characteristics in the teaching – learning process, in the present study, the relative effectiveness of interactive multimedia programme and conventional direct method is studied in relation to student's academic achievement and retention power.

OBJECTIVE OF THE STUDY

The major objective of this research paper is to find out the effectiveness of interactive multimedia Programme and conventional direct method of teaching English at secondary level, in relation to student's achievements and retention of acquired knowledge.

METHODOLOGY

The present study is a quantitative research where an analytical comparison of two methods of teaching by using data. Where we will compare the effectiveness of "Interactive Multimedia programme to conventional direct method of Teaching", in understanding of English language. The nature of this study is experimental, therefore experimental method with pre-test, post-test, randomized group design has been used.

Initially, 154 students of class VII of aged 12-14 years was selected as the sample of the study who were able to read and understand English language. To fulfill the objectives of the study, these students were randomly divided into two equal groups and matched grouped experimental technique was used to obtain more reliable and validate results. These groups were made equivalent on the basis of student's intelligence and scores achieved in pre-test achievement. For this purpose General Intelligence test (6/166) by S.M. Mohsim & achievement test which was developed by the researchers administrated on the entire sample. During the group matching, to balance the group some students have dropout, then finally 50 students remained in each group i.e. total 100 students of class VIIth were considered the present study.

Table: 1
IQ Scores of students

<i>Test Category</i>	<i>N</i>	<i>M</i>	<i>S.D.</i>	<i>t'</i>
Group -A	50	98.09	17.92	.008*
Group- B	50	98.21	16.25	

It is clear from table -1 that the mean IQ score of students of Group -A and Group- B were 98.09 & 98.21 respectively & the calculated value of 't' of 0.008 is less than the table value of 2.63 at 0.01 level of significance and 98 df, which indicates that there exist a no significant difference between the means IQ scores of students of both group.

Table: 2
Achievement scores of students Group-A and group -B on Pre-test

<i>Test Category</i>	<i>N</i>	<i>M</i>	<i>S.D.</i>	<i>t'</i>
Group -A	50	22.50	1.79	1.90*
Group- B	50	24.92	1.86	

Table -2 state that mean scores achieved by students of Group -A and Group- B on pre-test 22.5 & 24.92 respectively & the calculated value of 't' of 1.90 is less than the table value of 2.63 at 0.01 level of significance and 98 df, which indicates that there exist a no significant difference between the means achievement scores of students of both group. On the basis of the above finding, it is obvious that at the initial level previous subject knowledge of both group were same.

The Interactive multimedia programme used in the present study was developed by Brepo Systems (INDIA) Pvt.Ltd., Delhi and General Intelligence test (6/166) by S.M. Mohsim Rest of the tools used i.e. Lesson Plan (Conventional Direct method), Personal Data Schedule, Achievement Test in this study were standardized test developed for the specific purpose. Post achievement test was administrated immediate after the experiment is over and retention test was administrated one month later of post achievement test. The data were analyzed with 't' test and ANOVA test.

Table: 3
Achievement of students of Conventional Direct Method (CDM) group on pre-test and Post test.

<i>Test Category</i>	<i>N</i>	<i>M</i>	<i>S.D.</i>	<i>t'</i>
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Pre-test	50	22.5	1.80	11.82*
Post-test	50	28.8	3.31	

Data displayed in table: 3 shows that mean achievement scores of students taught through Conventional Direct method (CDM) on pre-test and post-test 22.5 and 28.8 respectively. The difference in the means scores between these two tests was highly significant ($t=11.82$, $p=0.01$). This infers that when the students were taught through Conventional Direct method (CDM), they understood the concepts of English clearly. The significant going in student achievements concludes that Conventional Direct method (CDM) was found effective in teaching of English to class in VII students.

Table: 4
Achievement of student of Interactive Multimedia Method (IMM) on Pre-test and Post-test.

<i>Test Category</i>	<i>N</i>	<i>M</i>	<i>S.D.</i>	<i>t'</i>
Pre-test	50	24.92	1.86	18.15*
Post-test	50	41.26	6.09	

A perusal of table-4 reveals that mean achievement scores of the students taught through Interactive Multimedia Method (IMM) on pre-test and post-test were 24.92 and 41.26 respectively.

The obtained 't' value ($t=18.15$, $p=0.01$) was highly significant. It concludes that Interactive Multimedia Method (IMM) also helped the students in under standing the English Grammar (Tenses).

Table: 5
Achievement of student of Post-test of Conventional Direct Method (CDM) and Interactive Multimedia Method (IMM)

<i>Test Category</i>	<i>N</i>	<i>M</i>	<i>S.D.</i>	<i>t'</i>
CDM	50	28.80	3.31	12.71*
IIM	50	41.26	6.09	

Table-5 concludes that mean achievement scores of Conventional Direct Method (CDM) and Interactive Multimedia Method (IMM) students scored on post-test were 28.80 and 41.26 respectively. This difference between the mean scores was found to be significant ($t=12.71$, $p=0.01$). It infers that both the teaching methods (CDM & IMM) were proved to be different effective in teaching of English.

It is obvious from the above table that mean achievement scores on post-test of Interactive Multimedia Method (41.26) is higher than the mean achievement scores on post-test of Conventional direct group (28.80). Hence, Interactive Multimedia Method (IMM) was more effective for English teaching in comparison to Conventional Direct Method. IMM group students achieved better than the CDM group students. Similar

findings were observed by Panda (2000), Kumar (1981), Agarwal (1998), Cohen (1992) and Roblyer et. al. (1992) in different school subjects.

Table: 6
Retention of students of Conventional Direct Method (CDM)
and Interactive Multimedia Method (IMM)

<i>Test Category</i>	<i>N</i>	<i>M</i>	<i>S.D.</i>	<i>t'</i>
CDM	50	21.02	3.014	15.64*
IMM	50	35.80	5.97	

The mean retention scores of students after learning through conventional & interactive multimedia method were 21.02 & 35.80 respectively. The difference in mean between these two retention scores was highly significant ($t=15.64$, $p=0.01$). From above data it is clear that as far as the retention is concerned multimedia method of learning is far better than conventional direct method. This is probably due to the fact that interactive multimedia method learning is activity based learning. Moreover in this method the students are able to get instant feedback. In this method student gets reinforcement at every right step which is not possible in conventional direct method. Interactive multimedia method of learning has the extra benefit for the help of students in the form of animation, graphics, pictures, sound, charts & tallies etc. - which is not there in conventional direct method.

Similar findings were observed by Kulkarni (1969) that retention scores of Experimental group was better than those of the control group.

Capper & Copple (1985) also found that computer assisted instruction (CAI) was beneficial for retention of the students. Nwaocha (2010), Kumar & Tiwari (2011), Vivien et. al. (2011), Sharma (2012) and Chen (2012) reported the similar output and favored the use of multimedia in education.

FINDINGS & CONCLUSIONS

When the English language were taught to the students of class VII students through either conventional direct & interactive multimedia method, in both the cases remarkable differences were found between their pre-test & post-test achievement scores.

Overall if we compare both the methods with respect to the marks achieved by them through post-test, it was evident that students performed better on post-test in comparison to their pre-test marks when they were taught through interactive multimedia method. Also, more consistency was found between the significant difference of pre-test & post-test achievement marks in case of multimedia method.

Hence, it is concluded that both the method taken under this study are quite effective for teaching the English language to class VII students but however, out of these two methods, interactive multimedia method was found more suitable with respect to the marks achieved by them in English.

When achievement of students of class VII students in English was compared on post-test taught through conventional direct method of teaching and interactive multimedia

programme, than there was found a significant difference in the achievement scores of the above two groups.

Interactive multimedia group students performed better than conventional direct method groups students on post-test. Thus interactive multimedia method proved to be better than conventional direct method of teaching English to class VII students. When students were taught through, both direct conventional method & interactive multimedia method than it was found that the acquired retention was better in case of interactive multimedia method.

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REFERENCE

Agarwal, Y. P. & Manisha M., (1998). Effectiveness of Multimedia, programmed learning and traditional methods of teaching, A meta-Analytical Study on Indian Researches. *Indian Education Review*, Vol. 34, pp. 57-65.

Bhatt, B.C. (2002): A Study of effectiveness of Multimedia package on atomic structure and chemical bonding. Dissertation, MJP Rohilkhand University, Bareilly.

Blok, H., Oostdam, R., Otter, M. & Overmaat, M. (2002). Computes Assisted instruction in support of beginning reading instruction: A review. *Review of educational Research*, 72(1),101-130.

Capper, J. and Copple, C. (1985). *Computer use in education: Research Review and Instructional Implications*. Washington, DC : Centre for Research into Practice.

Chen-Yuan Chen (2012). Research on the learning effects of multimedia assisted instruction using information technology model, *International Journal of Education Administration and Policy Studies* Vol.4(3), pp.84-86, 5 March 2012. available online at <http://www.academicjournals.org/IJEAPS>.

Chiu, M. (2002b). Computer animations aid teaching about electrochemistry and its effect on junior high school students' Rivement. Unpublished master's dissertation, National Tiwan Normal University, Taipli, Taiwan.

Cohen Peter A., Decanay Lakshmi S. (1992). A Meta-analysis of individualized Instruction in dental education. *Journal of Dental Education*, 56, 3, 183-89, March.

Edward, J., et. Al. (1975): How effective is CAI ? A review of the research. *Educational Leadership*, 33, pp. 147-153.

Garg, R. (2000). *Development of Multimedia package on part of speech.* M.Ed. Dissert., MJP Rohilkhand University, Bareilly, UP.

Goldenberg, E. P. (1979): *Special technology for special children*, Baltimore, Park Press.

Hasselbring, T. (1984). Effectiveness of computer based instruction: A Review Technical Report No. 84. 1. 3. Nashville, TN: George Peabody College for teachers, Learning Technology Centre, (Ed 262 754).

Hsiao, T. (2002). A Study of fifth graders for learning equivalent fraction in dynamic linked multiple representation window environment. Unpublished Master's Dissertation. National Tainan-Teacher College, Tainan, Taiwan.

Hsu, C. C. (2000) : Computer-assisted France learning : a case of France pronunciation in the senior high school. Unpublished Master's dissertation, FU Jen Catholic University, Taipei, Taiwan.

Huang, J. (2003). The study of the influence of CAI software on middle school students' learning of buoyancy concept. Unpublished Master's dissertation, National Changhua University of Education, Changhua, Taiwan.

Huang, C. (2002). The study of the efficiency of applying animation multimedia for assistance of teaching of Physics and Chemistry in Junior High School. Unpublished Master's dissertation, Changhua University Hsinchu, Taiwan.

Ho, J. (2000). The study of multimedia CAI Volleyball overhand serves teaching system. Unpublished master's Dissertation, National College of Physical Education and Sport, Taipei, Taiwan.

Huang, J. (2003). The study of the influence of CAI software on middle school students' learning of buoyancy concept. Unpublished Master's dissertation, National Changhua University of Education, Changhua, Taiwan.

Khoo E.M. (2008). Teaching Methods used in primary care. *Malaysian Family Physician*, 3: pp. 42-44.

Kulkarni, P.V. (1969): To prepare programmed learning material and to study in what different ways it can be used, Ph.D. Edu., Poona University.

Kumar, A. (1981). An Experimental Study of the Relative Effectiveness of three methods of instruction- Exposition method, Programmed Learning Method and Multimedia method in Science Education. Ph.D. Edu., Kurukshetra University, Kurukshetra.

Kumar A., Tiwari J. (2011). A comparative study of the effectiveness of CAI programs and Traditional methods of teaching – English in Standard – IX., *International Referred Research Journal*, vol.-III, Issue 27, pp. 120-32.

Lai, Y. (2002). Applying fuzzy inference rules on the study of the learning style in a web-based virtual science lab]. Unpublished Master's dissertation, National Changhua University of Education, Changhua, Taiwan.

Lei, K. (1998). The study of effect of "Multimedia computer-assisted instruction" can assist students with mental retardation in junior high school to learn sexuality knowledge and to have correct sexuality attitude. Unpublished Master's dissertation, National Changhua University of Education, Changhua, Taiwan.

Li, F. (1994). *Computer-assisted instruction applied to mastery learning in mathematics for elementary school students* (NSC No. 82-0111-5-024-005).

Liu, P. C. (2001). Using computer-assisted software "Interactive Physics" on the study of dynamics concept in the Physics-Chemistry course in the junior high school. Unpublished master's dissertation, Changhua University, Hsinchu, Taiwan.

Mallik, U. (2001). Computers in Indian schools : A road ahead. *Journal of Indian Education*, vol- XXVII, pp. 5-12.

Mc Donald, D. S. (2004). The influence of multimedia training on users' attitudes: lessons learned. *Computer & Education*, 42, 195-214.

Mehta, J. M. (1985). Construction of different types of programmes on the until of interest in mathematics of standard IX and study of relative efficiency of these. Ph.D. Edu., Saurashtra University.

Mrogan, R. M. (1978). Educational technology - adolescent to adulthood, *Educational Communicational and Technology Journal*, 26, 142-185.

Naevdal, F. (2007). Home-PC usage and achievement in English. *Computer & Education*, 49, 1112-1121.

Nematullah S., Mohammad A., Saeed K. (2008). Classroom Intraction Mediated By gender and technology: The Language Laboratoty Course, *Novitas-ROYAL*, vol. : 2(2).

Nwaocha V. O. (2010). Enhance students interest in mathematics via multimedia presentation, *African Journal Of Mathematics And Computer Science Research*, Vol.3(7), pp. 107-113, July 2010 available online at <http://www.academicjournals.org/AJMCSR>

Panda, S. et. al. (2000). Effect of computer assisted learning in achieving higher cognitive skills. *Indian Educational Abstracts*, Vol. 2, No. 2, July 2002, P. 25.

Reblyer, M.D. et.al. (1992). Assessing the impact of computer based instruction: A Review of Resent Research. *Computer in the Schools*, 5, 3-5.

Rani, K. (2007). Effect of CAI on Language Achievement of Children with Learning Disability. Dissert., MJP Rohilkhand University, Bareilly.

Saini. J. K. (1978). A comparative study of the effectiveness of the programmed learning and textbook material presentation of sociological concepts at the secondary stage. Ph.D., Edu., HP Unversity.

- Sharma S. (2012). A comparative study of the effectiveness of Language lab and conventional method of teaching English in developing oral communication skills among secondary school students, Ph.D., MJP Rohilkhand University, Bareilly UP.
- Singh, Y. P. (2007). A comparative study of learning English spelling through computer and traditional method". Dissert., MJP Rohilkhand University, Bareilly.
- Singh, Y. V. (2007). A study of learning effectiveness of computer assisted instruction and traditional in teaching science at upper primary level. Dissert., MJP Rohilkhand University, Bareilly.
- Sharma, D. (1999): Development and validation of CAI Package on set theory. Dissert., MJP Rohilkhand University, Bareilly,
- Shyu, H. (1996). *The study of video-disc-based anchored instruction for Chinese elementary students (II): Experimental Study* (NSC No. 84-251)- 5032-001-CL).
- Soe, K., Koki, S., & Chang, J. (2000). *Effect of computer-assisted instruction (CAI) on reading achievement: a meta-analysis*. Honolulu, HI: Pacific Resource for Education and Learning (ERIC Document Reproduction Service No. Ed 44 (8079).
- Vivien ER, Douglas G. (2011). "Are Multimedia resources effective in Life science Education ? A meta analysis", www.bioscience.heacademy.ac.uk/journal/vol18/beej-18-3.pdf
- Wu, L. (2002a). The development and effectiveness of a web-based Chinese learning system. Unpublished Master's dissertation, National Teachers College, Tainan, Taiwan.
- Wu, W. (2002b). The effects of type conceptual model use on learning programming control structures. Unpublished Master's dissertation, National Taiwan normal University, Taipei, Taiwan.
- Yu, J. (2002): Applying artificial rural network on the study of the learning style in a web-based virtual science lab. Unpublished Master's dissertation, National Tainan Teachers College, Tainan, Taiwan.
- Yuen Kuang Cliff Liao (2007). Effects of Computer-assisted instruction on students' achievement in Taiwan: A Meta- analysis. *Computer Education*, 48, 216-233.
- Zhou, F. (1986). The Study of Computer-assisted educational games on chemistry in the junior high school. Unpublished Master's dissertation, National Tainan Teachers College, Tainan, Taiwan.
- Zigic, S. C. J. Lemckert, (2007). Development of an interactive computer-based learning strategy to assist in teaching water quality modeling. *Computer & Education*, 49, 1246-1257.