# CHAPTER II

## REVIEW OF RELATED LITERATURE

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CHAPTER II

REVIEW OF RELATED LITERATURE

2.0: INTRODUCTION

Review of literature pertaining to a problem makes the investigator familiar with the summary of previous research, the writings of recognized professionals, what is already known, and what is still down and untested and thus provides a background for the development of the study undertaken. This brings the investigator to the proximity of the solution. It is in this context that studies on under achievement and instrument through computer are reviewed in the following pages in view of their relevance to the present study.

2.1: RESEARCH ON THE EFFECTIVENESS OF COMPUTER-ASSISTED INSTRUCTION (CAI)

A number of studies have been undertaken on CAI in almost all sectors of learning in the developed countries. Many studies have proved that computer with its attributes of motivational sound, animated graphics and dynamics display of visuals can be used for class room instruction. CAI has also been proved to provide many elements of instruction necessary for aiding the disabled students. The aspects of repetition, motivation and
immediate feedback have been found to increase retention more effectively with low ability than high ability learners.

Moreno, Roxana (2002-06) presented a cognitive theory of multimedia learning from which predictions on individual differences in learning are derived and tested. Elementary students learned how to add and subtract integers with an interactive multimedia game that included visual and symbolic representations of the arithmetic procedure.

Chang et.al (2005-09) investigated the effects of a teacher-centered versus student-centered computer-assisted instruction (CAI) on 10th graders' earth science student learning outcomes. This study also explored whether the effects of different forms of computer-assisted instruction (CAI) on student learning outcomes were influenced by student preferences of learning environment (PLE).

Ortega et al (2006-08) explored the extent to which computer-assisted teaching facilitates the learning of basic mathematical concepts and skills in children with Down syndrome (DS). Thus, the effectiveness of a multimedia teaching method is compared with a traditional one in the teaching of counting and cardinality abilities and concepts.

Zhang et al (2007-07) examined the comparative efficacy of face-to-face and computer assisted library instruction were reviewed. Differences in study methodology and lack of quality made meta-analysis impossible; however, the two methods appear to be equally effective for teaching basic library skills.
Fund, Z (2007-10) examined the effect of scaffolding learning components in a computerized environment for students solving qualitative science problems in a simulation of laboratory experiments.

Kariuki et al (2007-11) examined the effects of teacher mediation on the mathematics learning of kindergarten students in a computer-assisted learning environment. A sample of 26 students was randomly selected and assigned into experimental and control groups. The experimental group was mediated by a teacher during the computer-assisted learning activity. The control group received no teacher mediation. The results indicated a significant difference between experimental and control groups on levels of activity enjoyment. The experimental group showed higher levels of enjoyment compared to the control group.

Huang et al (2008-01) focused on the effects of the CAL system constructed via cognitive conflict of decimal numbers for the sixth graders. Research objects of this study were sixth-grade students from an elementary school in Taipei. The study took a quasi-experimental approach that employed pretest-posttest, non-equivalent-group design. The result of the experiments showed significant improvement following the use of the computer-aided learning system.

Marbach et al (2008-03). Their main goal in this study was to determine whether the use of computer animation and illustration activities in high school can contribute to student achievement in molecular genetics.
Kopcha et al (2008-06) examined the effects of prior knowledge, learner preference for control, and type of control (learner or program) on the achievement of middle-school students in a computer-based instructional program on adding and subtracting integers. The overall results indicate that matching learner preference to the type of program they receive is an effective strategy for high-prior-knowledge students but not for those with low prior knowledge.

(1) "Introduction: Technology, The Great Equalizer" (Lynn K. Wilder); (2) "Project PEGS! Interactive CDs for Practice in Effective Guidance Strategies: Using Technology To Train Teachers in Applying Positive Behavioral Interventions" (Mary M. Wood and others); (3) "Using Interactive Media To Teach Behavior Intervention Planning" (Carl J. Liaupsin and others); (4) "Delivering 500 Provide and Practical Interventions through CD-ROM and Online Technologies" (Ray Beck); (5) "Use of PowerPoint To Increase Reading and Language Skills; A Research-Based Approach" (Francie Murry); and (6) "Hypermedia and Students with E/BD: Developing Untapped Talents and Fostering Success" (Matthew J. Mayer and Peter E. Leone).

These six papers highlighted how educational technology can benefit students at risk of school failure, particularly students with emotional/behavioral disorders (E/BD). It discussed how technology can improve student motivation to learn, increase engagement in learning, improve academic outcomes, meet the needs of tactile/kinesthetic learners,
and link incarcerated youth with community support services. The effects of computer-mediated instruction on the learning of students with mild and moderate disabilities are synthesized by Fitzgerald, Gail; Koury, Kevin; Mitchem, Katherine (2008) from 1996.

2.2: RESEARCH ON THE EFFECTIVENESS OF CAI IN INDIA.

In India only a few studies have been undertaken in the area of CAI and they mostly deal with academic achievement of the high, average and low achievers.

Chandra (1986) did a comparative study on CAI, CCTV and traditional instruction in chemistry on standard XII pupils. Her study showed that learning was better through CAI.

Sivaraj (1986) studied the effectiveness of CAI programs on learning properties of Triangles at XII standard level. His study proved the supremacy of the CAI method and that the variables sex, TV watching and socio-economic status has no influence on the achievement of the experimental group.

Sharma (1987) studies the effectiveness of CAI on learning mathematics at XII standard level. He designed two other instructional strategies and his objective was to study the relative effectiveness of CAI as compared to the other two strategies. He concluded that there was significant difference between the learning strategies in favour of CAI. His study also proved that there was significant difference in the achievement of boys and girls.
Palaniappan (1988) studied the effectiveness of CAI on mathematics learning. He found out that the group that was exposed to CAI performed significantly better.

Mitra (1988) studies the CAI strategies for computer literacy programmes. She suggested that games can be used as a motivating factor.

Singha (1988) studied the effectiveness of CAI in Chemistry at high school level. Analysis of covariance proved that CAI enhanced students' achievements significantly high for both male and female students.

Stella (1989) studied the effectiveness of CAI program on learning set Theory at VIII standard level. Her study concluded that the CAI was a more effective method than the conventional method. She proved that irrespective of the variable sex the experimental group performed significantly better than the control group taught by the traditional method.

Nachimuthu (1989) developed and validated CAI software in Botany on the topic "Leaves". He proved the supremacy of CAI with reference to the select software.

Shanmugasundaram and Stella (1990) studied the effectiveness of CAI on learning English grammar. They found out that the CAI group performed significantly better than the control group that was taught by the traditional method.

Purushothaman and Stella (1991) in their study found out that CAI group performed significantly better in Mathematics learning and that the
time taken by the CAI group was nearly two-third of the time taken by the traditional group to complete the instruction on the select topic.

Purushothaman and Stella (1991) in another study found out that CAI is more beneficial to average and low achievers than the High achievers.

Rangaraj .K.R. (1995) studied the effectiveness of Computer Assisted Instruction in Teaching Physics at Higher secondary stage. He concluded that CAI as support system to teachers’ class room instruction is the most effective instructional strategy when compared to conventional lecture method and CAI as individualized instruction in achieving the instructional objectives in Physics at standard XII.

2.3: RESEARCH ON THE EFFECTIVENESS OF COMPUTER-ASSISTED INSTRUCTION (CAI) IN CHILDHOOD EDUCATION.

Early research results suggested that computers enhanced social interaction among young children (Muller & Perlmutter, 1985; Natasi, Clements & Battista, 1990).

Some researchers have suggested that it is no longer necessary to question whether the use of technology is appropriate in early childhood education. (Clements & Swaminathan, 1995)

The use of computers in the early childhood classrooms has become commonplace in recent years. With the advent of the relatively low-cost, personal microcomputer in the late 1970s, computer-assisted instruction moved from the college campus all the way to the elementary school. Subsequently, research results regarding the effectiveness of computer-
assisted learning have been mixed. Early research touted the usefulness of the computer technology in classrooms (Kulik, 1998); however, other studies indicated that computers may not be useful in enhancing student learning and cognitive development (Salomon, 2000; Healy, 1998).

Cherry et al (1999-06) Computer simulations are one promising tool for supporting learning at all levels—from elementary school to workplace learning. This paper describes a number of simulations that have served as tools for a variety of lifelong learners, ranging from elementary school students to professionals. These simulations were all created with the Visual AgenTalk language (VAT) employed by the AgentSheets system.

Cordes & Miller (2000) cited several hazards to computer usage in childhood, including risks to physical health, emotional and social development, moral development, and creativity and intellectual development. Regarding intellectual risks, they cited stunted imaginations, impoverished language and literacy skills, poor concentration, intolerance for the hard work of learning, plagiarism, and distraction from meaning. They criticized the quality of research into the effects of computers on academic achievement, noting that much of the evidence cited was anecdotal.

More recently, computer-based instruction has been credited with enhanced development of reading skills and other learning development situations (Clements & Sarama, 2003).

A review of six research studies conducted over the last twenty years regarding the use of computers by young children found that the body of
evidence was inconclusive (Campbell, Milbourne, Dugan & Wilcox, 2006). The authors cited both the small number of studies and design deficiencies as possible causes for the inconclusive results. Others have taken a more critical view of the appropriate role of computer technology in the classroom.

Another study examined fun, usability, and learning with regard to educational software (Sim, MacFarlane, & Read, 2006). Subjects were 25 English primary school children ages seven and eight. Three science software packages were evaluated using pre- and post-tests to measure learning effects. The subjects were surveyed to assess usability and fun of each package. The findings of this study indicated that while the students found the packages usable and fun, there were no significant learning effects. Significantly, for one software package, the average post-test score was lower than the average pre-test score.


Liao et al (2008-01) performed a meta-analysis to synthesize existing research comparing the effects of computer applications (i.e., computer-assisted instruction, computer simulations, and Web-based learning) versus traditional instruction on elementary school students' achievement in Taiwan. The results suggest that computer application instruction is more effective than traditional instruction for elementary school students in Taiwan.
2.4: RESEARCH ON THE EFFECTIVENESS OF CALL (Computer-Assisted Language Learning)

Computer-Assisted Instruction in the Schools: Potentialities, Problems, Prospects Psychology Series - Suppes, Patrick (1965-10). Computer-assisted instruction has many potential applications, particularly at the elementary level, in the teaching of skill subjects such as mathematics, reading, and foreign languages. Since 1963 at Stanford a study has been made of programming a total curriculum for elementary mathematics, grades one through six, and for reading, grades one and two. The main problems encountered and envisaged are machine reliability, stimulus deprivation, costs of equipment, difficulty in communicating appropriate audio messages to the pupils.

The Construction and Evaluation of Two Methods of Listening Skills Instruction and Their Effect on Listening Comprehension of Children in Grade 1 – a study done by Kranyik, Margery A (1972). This study constructed and evaluated a program of listening skill activities for first grade children who had not yet developed skill in reading. The skills included were: (1) following directions, (2) listening for the main idea, and (3) listening for details. Three groups were tested: an experimental group taught by teachers; an experimental group taught by tape-recorded instruction; and a control group which had no formal listening skills instruction.

An analysis of data, with mental age listening pretest as covariates, indicated (1) a significant difference in adjusted posttest means between the two experimental groups and the control group; and (2) no significant
difference in adjusted listening posttest means between the two experimental groups. It was concluded that listening could be taught to first graders who had as yet no skill in reading, but that taped instruction was not more effective than instruction by teachers.

"What Problems Do American Indians Have with English?" - Fletcher, J. D (1983) A literature survey of more than 800 sources, approximately 140 of which were judged to be relevant, assessed problems Alaska Natives and American Indians experience in learning English language skills required for survival and success in a modern, technological culture. Since the survey was to guide the adaptation and development of instructional materials for elementary and junior high school reading presented by computer, results emphasized receptive rather than expressive language. To some degree the problems of phonology, morphology, syntax, and semantics identified were problems facing not only American Indians, but any students learning English as a second language.

Morphology problems included American Indian use of inflections to indicate syntactic role of words, use of gender, and representation of noun modifiers by inflections in nouns. Semantic problems concerned concept development rather than vocabulary growth, particularly in color words and words concerning coercion and duty. Recommendations included providing computer practice with selected minimally contrasting vowel pairs; selected minimally contrasting consonant pairs; final consonants and consonant cluster; selected phonemes that do not exist in some American Indian
languages; irregular plural noun forms; selected verb tense forms; determiners; third person singular pronouns; semantic implications of juncture; prepositions, verb-preposition combinations, and idioms; passive and wh- transformations; and basic vocabulary.

Introducing Computer Education into an Early Elementary Curriculum
Jaworski, Anne Porter; Brummel, Brenda (1984-01) In addition to reviewing the literature on the pros and cons of computer use in the schools, this document reports the results of a research project in which 13 pairs of first graders learned to use the LOGO computer language over a 10-week period as part of their classroom activities. The 11 research hypotheses concerned the ability of children to learn skills specific to controlling the computer as well as cooperative and individual problem-solving strategies, creative expression in a new medium, and abstract math and geometric principles.

“Using Computers to Promote the Development of English as a Second Language” - Johnson, Donna M (1985-11) The status of computer-assisted language learning for elementary and secondary school limited-English-speaking students is reviewed, and recommendations for further research and development are proposed.

Becker, Henry Jay (1986-06) The Second National Survey of Instructional Uses of School Computers gathered information from more than 10,000 principals and computer-using teachers in a probability sample of over 2,300 U.S. elementary and secondary schools during the spring of 1985. In a typical school, during the 1984-85 school year, nearly half of the
elementary and middle school pupils and as many as one-third of the high school students made some use of computers at school. One-fourth of all U.S. teachers used computers "regularly" with students during the year, and the amount of experience that any one computer-using student had with school computers doubled between 1983 and 1985. Mathematics, language arts, computer literacy, programming, and business education were the major subjects for which computers were used.

Chamberlain, Ed (1986-87) conducted a cost benefit study to determine the effectiveness of a computer assisted instruction/computer management system (CAI/CMS) as alternative to conventional methods of teaching reading. Comparative analysis between Regular and CAI/CMS units was examined in terms of enrollment, attendance, and achievement. Findings indicated that the per-pupil cost was greater in the CAI/CMS groups than in the regular groups at all three levels. The CAI/CMS groups surpassed the Regular group in achievement at the middle school level and in grades four and five, while a negative change occurred at the high school level.

Bennett, Ruth (1987) In a cooperative task, American Indian elementary students produced bilingual natural history dictionaries using a Macintosh computer. Students in grades 3 through 8 attended weekly, multi-graded bilingual classes in Hupa/English or Yurok/English, held at two public school field sites for training elementary teaching-credential candidates. The goal of producing a dictionary dealing with plants and animals known to local tribes allowed students to use knowledge obtained
from family and other tribal members. The computer provided concrete 
realization of abstract concepts and a self-directed interactive learning 
environment. The success of this project points to the importance of 
implementing a teaching methodology compatible with the learning style of 
the home culture.

Early Childhood Classrooms and Computers: Programs with Promise. 
Hoot, James L.; Kimler, Michele (1987) Word processing and the LOGO 
programming language are two microcomputer applications that are 
beginning to show benefits as learning tools in elementary school classrooms. 
Researchers believe that while the graphics-oriented programming language 
LOGO does not teach the planning skills necessary for programming, it can 
help young learners by: developing problem-solving abilities; facilitating 
learning of mathematical concepts; and encouraging collaboration, social 
development, creativity, spatial relation development, and overall cognitive 
development--especially in special needs children.

“Keyboarding, Reading, Spelling (KRS)” A Validation Study done by 
Reid, Ethna R (1987). The major developmental goal of the Keyboarding, 
Reading, Spelling (KRS) program was to teach reading and language skills to 
elementary school students by integrating computer assisted instruction with 
an instructional method which: is superior to existing programs; takes 
maximum advantage of the computer's potential; and teaches keyboarding 
and computer usage skills. A pre-post comparison group design was used to 
assess the KRS program on each of four outcomes (reading, language,
keyboarding, and computer operations). Results indicated that in the four months of treatment, KRS students grossly out-gained the scores posted by the normative group. Results also indicated that KRS students demonstrated meaningful improvements in the keyboarding and computer operation skills.

Microcomputers in the Classroom - Heller, Rachelle S (1987) addressed various issues concerning the use of microcomputers in the classroom. One focused on the attitudes and concerns of teachers regarding the use of innovation, such as microcomputers, in instruction; the second explained the integration of Logo learning environments into the mathematics curriculum of primary schools in Belgium.

Computer-Assisted Meta cognitive Strategies and the Reading Comprehension Skills of ESL Elementary School Students - Carrasquillo, Angela; Nunez, Dulcinea (1988) investigated the effectiveness of two computer-assisted Meta cognitive strategies on the development of sequential reading skills of ESL fourth grade students, 68 randomly selected Spanish-speaking students from a public school in a low socioeconomic setting in Puerto Rico. The Tutorial-Direct Monitoring Strategy (TDMS) consisted of A. S. Palincsar and A. L. Brown's three-step monitoring technique, skill modeling reading texts, and comprehension exercises, whereas the Schema-Direct Monitoring Strategy (SDMS) used reading texts, comprehension exercises, and a monitoring strategy in flowchart form. The results of the study demonstrated significant differences in favor of the TDMS.
Five experiments were carried out by Palmberg, Rolf (1988) to gain insight into foreign language learning as it takes place in the classroom environment, and to create optimal learning conditions for beginning Swedish-speaking learners of English as a Foreign Language. The first experiment tested the uninstructed students' ability to identify aurally common English words and expressions, and the second experiment investigated the English-instructed students' ability to understand passages from fairy tales. The third experiment tested the uninstructed students' ability to make lexical inferences from a text in which Swedish-English cognates were maximized and "false friends" excluded. Experiment four required the English-instructed students to write as many words as possible beginning with a particular letter, with the language unspecified. The fifth experiment studied the effect on vocabulary learning of playing a computer game with English vocabulary, in which new vocabulary was defined on-screen.

Analysis of the five studies' results suggests that Swedish-speaking students have an English vocabulary of varying size when they begin English language study in school, and that the quality of the vocabulary depends on the type of input available to each learner, with input on topics of interest learned more readily.

Swan, Karen (1989-03) The Computer Pilot Program of the Division of Computer Information Services of the New York City Board of Education was designed to investigate the claim that comprehensive computer-based instruction (CBI) might best be used to improve the basic skills of
educationally disadvantaged students. In the 1987-88 school years, 13 programs were placed in 26 elementary and secondary schools in New York City. The programs were generally well received by both staff and students, and their use generally resulted in significant achievement gains; however, students in the lower grades tended to show greater gains than students in the higher grades.

The Impact of Microcomputer-Based Instruction on Teaching and Learning: A Review of Recent Research Roblyer, M. D (1989-12) Thirty-eight published and 44 dissertations were reviewed. While computer-based instruction was shown to be potentially effective in most educational applications, computer-using educators are advised to keep the following in mind: (1) since significant results have been found at all grade levels, current data cannot be used either to increase or decrease use of computer applications at any particular grade level; (2) computer uses in all content areas except English as a Second Language (ESL) seem productive, and science may be an especially promising area; (3) using computer applications seems to significantly improve students' attitudes toward school and subject matter, but insufficient data exist to indicate that better attitudes have any impact on achievement or on dropout rate; and (4) while most types of skills profit from computer applications, word processing and use of Logo to enhance creativity and problem-solving skills are especially promising.

Computer Use in the Classroom--II an Assessment of Using the Computer as a Tool and as Tutee by Chan, Christine (1989) Discussion of the
use of computers in elementary schools highlights a study of four districts in Canada. Topics discussed include the use of word processing; the use of LOGO for tutoring purposes; the role of the teacher; and guidelines for integrating computer-assisted learning (CAL) into the elementary school curriculum.

A 10-week practicum intervention was designed by Houghton, Brenda L (1990-08) to improve second graders' spelling skills. The intervention consisted of the implementation of a spelling program that focused on the interweaving of traditional methods of teaching spelling, modality-based instruction, the use of computers, and a whole language approach. Computer activities designed to aid visual memory of spelling words and heighten student motivation were made available. Comparison of pre- and posttest evaluation data indicated that students' achievement in spelling and attitudes toward spelling improved. It is concluded that the success of the program shows that spelling must have a meaningful and motivational purpose in students' daily work.

Drexler, Nancy Gadzuk (1990) in their paper discusses the impact of computers on student learning as reported by teachers participating in a study of a computer-based language arts instructional program for the early elementary grades--the Apple Learning Series: Early Language (ALS-EL). Although they found the program difficult to evaluate, some teachers stated that the ALS-EL program had a positive impact on student writing but less impact on student reading skills. They also reported that non-literacy
outcomes such as enhanced student self-esteem, attitudes toward school, cooperative behavior, and motivation, all appeared to be positively influenced by use of the ALS-EL program.

Kenyon-Nord, Anne (1990) introduces a computer lesson for use with elementary ESL students when they first arrive at school to help them feel more comfortable in their new surroundings. Describes how the lesson introduces students to simple vocabulary they can use in everyday situations along with the corresponding written words.

Thurston, Linda P (1990) in their research has revealed that more males than females participate in computer learning environments. Rural young women in home and school are conditioned to accept outdated role definitions and may be limited in career and life choices by restricted access to technology.

Early Literacy Instruction with Computers and Whole Language: An Evaluation of the Writing-To-Read Computer Program with Disadvantaged Minority Children - Decker, Barbara C (1991-05) examined the effectiveness of the Writing-to-Read Computer Program in elementary school language arts education. The program is designed to teach children to read through interacting with a computer by learning sound/symbol relationships and by composing stories. Results indicated that the Writing-to-Read Program produced significant gains in language and spelling which hold up over time.

Integrating English as a Second Language Instruction with the Regular Elementary and Middle School Curriculum: Can It Work? Jama, Virginia
A discussion of elementary and middle school curriculum design to meet the needs of students learning English as a Second Language (ESL) focuses on the ways in which ESL instruction can be incorporated into the curriculum. It begins with a brief review of statistics on the population of limited-English-proficient (LEP) students in the schools and their educational needs. It is concluded that certain strategies are particularly promising for productive mainstreaming, including computer-assisted instruction, bilingual and pull-out programs, the whole language approach to English teaching, and cooperative learning.

Bueno et al (1993) Discussion of computer-based second-language learning focuses on a study of elementary school students in grades four through six who used a contextualized computer environment that was designed to provide pre communicative practice with Spanish. Highlights include student roles in small groups, cooperative learning, and the teacher's role.

Three Approaches to Teaching Reading: Basal, Language Experience, and Computer-Assisted Instruction – Van Prooyen et al (1994-03). Student use of computers in elementary school involves drill-and-practice, tutorial, computer-assisted instruction, discovery learning, and word processing. The most important values the computer can add are immediate feedback, intentional focus, diagnosis, and a wide variety of laboratory or discovery environments. Children learn to read and write with computer assistance, and
results compare favorably and sometimes above average with other reading methods.

Eraut, Michael (1994) summarizes work from the Sussex component of a three-year project involving London and Sussex Universities and 12 schools in six districts. In British primary schools, it is unusual to find more than one computer in a classroom. As a result, children are assigned to small groups to use the computer. This research reported here sought to explore the characteristics of group work with computers and to provide guidance to teachers on computer use issues. The children observed in the study were between 8 and 12 years of age. Data for the case studies were gathered by observation, interviews, questionnaires, school records, and, in some cases, tests of pupil performance.

Improving the Literacy Growth of Second Grade Students through the Use of Whole Language, Peer Tutoring, Cooperative Learning, and Computer-Based Instruction - Meroney, Barbara (1994) The strategy used with 22 students in one classroom was to combine research-based whole language approaches with cooperative learning activities, peer tutoring experiences (as tutors and tutees), and computer-based instruction. Findings suggest that the planned program of instruction helped the students improve literacy growth with confidence.

Johnson, D. C. (1994) describes the ImpacT study that was conducted in England and Wales to evaluate the effect of information technology (IT) on elementary and secondary school students' achievements in English,
geography, math, and science. Research design and methodologies are explained, and results are compared with students not using IT.

Mercer, Neil (1994) Describes findings of the Spoken Language and New Technology (SLANT) research project, which studied the talk of primary school children in the United Kingdom who were working in small groups at computers with various kinds of software. Improvements in the quality of talk and collaboration during computer-based activities are suggested.

The Computer in the English Language Classroom - Ganszauge, Mika (1994) an attempt to integrate computer-assisted instruction with present classroom practices among 94 Finnish students and the curriculum in English-as-a-foreign-language classes is described.

The relationship between computer-administered instruction and phonological awareness was examined by Foster, Erickson, Foster, Brinkman & Torgesen (1994). In their study, the Daisyquest software program was examined in two experiments. In the first experiment, one group of 12 kindergarten students was instructed using the Daisyquest software. A second, control group of 12 received no Daisyquest training. Subjects from the trained group showed significantly greater gains in two different tests of phonological awareness.

On the Effect of Multimedia Computer Programs: Gains Made by Children with Autism in Reading, Motivation, and Communication Skills – Heimann, Mikael; (1995-03) An interactive multimedia program to facilitate
the acquisition of reading, writing, and overall communication skills in children with significant language delays was developed and evaluated in Sweden with two studies. The software allows for adjustment to individual learning needs and the combining of various language modes. Both studies unambiguously demonstrated that an interactive microcomputer learning environment facilitated language learning for children with autism.

Project CHILD (Computers Helping Instruction and Learning Development) is an innovative computer-integrated instructional program created by Butzin, Sarah M (1995) for the elementary school that offers a restructured framework for technology integration in grades K-5 encompassing the subject areas of reading, language arts, and mathematics. The model and materials, teacher role, and effectiveness are discussed.

The Effects of Computer-Enhanced Vocabulary Lessons on Achievement of ESL Grade School Children - Kang, Sook-Hi; Dennis, J. Richard (1995) Discussion of second-language learning and the use of computer-assisted language learning (CALL) focuses on a study in an elementary school in Seoul, Korea, that determined ways in which computers can best be used to enhance language learning by evaluating the relative effectiveness of contrasting instructional approaches for designing CALL environments. Examined the effectiveness of four instructional approaches for teaching English vocabulary to Korean elementary school students: (1) paper and pencil, (2) computer-based word-for-word, (3) computer-based
word-for-word plus picture, and (4) computer-based context. Found that the computer-based context group outperformed the other groups.

Chou, Huey-Wen (1999) compared the effects of two cooperative computer-assisted language learning (CALL) environments—face-to-face and distance cooperative CALL—on learners' spelling performance and learning attitude. Traditional classroom lecture learning and self-directed CALL environments were employed as control groups. Learning performance and learning attitude, including interpersonal relationships, learning interests, and self-esteem, were the dependent variables. Sixty-four seventh graders from a local public junior high school were randomly assigned to four treatments.

A 10-day experiment was conducted with one 30-minute learning session each day. No significant group differences were found in any dimension of attitudinal measures. Significant performance differences were revealed among the different learning environments. Plausible explanations include: (1) there may exist a threshold for accumulated learning performance to be significant, and the eight-day learning task may not be long enough to achieve this threshold; (2) the amount of various active learning time may contribute to learning performance; and (3) the actual cooperative level may vary.

Herselman, Marlien E (1999) reported results of an investigation into how educational computer games could benefit resource-advantaged (RA) and resource-deprived (RD) learners in English second-language teaching at Grade 6 in the primary school in South Africa.
Meskill et al (1999) investigated how technologies such as computers, multimedia, and telecommunications can be effective tools for English-as-a-Second-Language (ESL) instruction. Both ESL and non-ESL teachers are coming to view these technologies as a means by which ESL learners who cannot otherwise participate in class activities can be actively involved in language and literacy practice. A recent survey indicates that ESL teachers are effectively using software designed for native speakers of English—software that is academic, is content-rich and, when their use is coordinated with mainstream academic content, helps to support the interplay of linguistic and conceptual development. Overall, this report surveys and documents the very innovative use of cutting edge information and communications technologies in ESL education.

Fitzpatrick et al (2000) studied the social interaction of 7- and 9-year-olds working in the same or mixed gender pairs on language-based computer and non computer tasks. At both ages, mixed gender pairs showed more assertive and less collaborative interaction than same gender pairs on both tasks.

Meskill et al (2000) presented preliminary research concerning learners whose native language is not English and who attend public school in New York State. Research focused on how English as a Second Language (ESL) teachers in the state view and use technologies to help develop their students' literacy skills. They discussed data from a statewide survey and from initial interviews with 56 ESL teachers who use technologies in their teaching.
Lewis, Rena B (2000) in a final report described activities and accomplishments of a 3-year federally funded project, Project LITT (Literacy Instruction Through Technology), which focused on developing the reading skills of elementary and middle school students with learning disabilities (LD) by using hypermedia-based children's literature. Findings indicated that when LD students engaged in unstructured interactions with talking storybook software their reading performance was not enhanced but when structured support was provided their time on task increased, as did gains in reading skills. Specific recommendations are offered for selecting talking storybook programs and for classroom reading instruction.

Fan et al (2001) presented a study on the implementation of a constructivist approach to using multimedia technology in two advanced language arts classrooms in a public middle school. Because the principal content consisted of written material the authors examined pre- to posttest improvement in writing ability as measured by trained raters of essays.

Timucin, Metin (2006-07) investigated about “Implementing CALL in an EFL Context”. Not only the teachers but also the administrative boards of many educational institutions are keen on the idea of adopting technology for teaching purposes. This paper presents a case study of the implementation of an EFL innovation in the form of CALL (Computer Assisted Language Learning) in a Turkish State University’s EFL Preparatory School. It is argued that teachers should be engaged participants in the change process and
that this increases the chance of successful implementation of the innovation concerned.

Tsou et al (2006-08) have developed a multimedia Storytelling Website to study how web-based technology can assist overcoming the obstacles in EFL classrooms. The website contains an accounts administration module, multimedia story composing module, and story replaying module. In order to demonstrate the effectiveness of this Website, it was implemented in one elementary school to test its effectiveness in instruction and in resultant student learning. The results of the study support the significance and the education value of the multimedia Storytelling Website on EFL teaching and learning.

O Donaill et al (2006-10) explored the issue of the availability and suitability of language learning materials for third level Irish language degree programs. A general outline of resources currently available is given and some tentative ideas are put forward on how the resource gap may begin to be bridged using CALL. Two trialed methods that explore lexical acquisition and conversational output, both with and without computer assistance, are detailed and an analysis of their relative success from both the teacher's and the students' point of view is presented.

Almekhlafi, Abdurrahman Ghaleb (2006) investigated the effect of Computer Assisted Language Learning (CALL) on elementary-prep school students' improvement in English as a foreign language (EFL). Eighty-three students in Al-Tamayoz Elementary-prep School, United Arab Emirates,
were selected and divided into experimental and control groups (43 and 40 participants respectively). Results of Analysis of variance (ANOVA) showed a significant difference between CALL users and nonusers in favor of the experimental group. In addition, a questionnaire was administered to CALL users to investigate their attitude, perceived utility, and intention to use CALL in the future. Students in the experimental group had a positive attitude toward CALL, perceived its utility for helping them learn EFL, and had a strong intention to use it in the future. Results of this study have provided evidence of the effect of CALL on learning English as a foreign language.

Christensen et al (2007-02) compared the impact of a computer-based diglot reader with that of a sophisticated, computer-based, drill and practice program on second language acquisition. The affective benefits as well as depth and breadth of vocabulary development were examined. The diglot method, originally conceived by Burling, introduces second language vocabulary within the context of a familiar first language text, thus allowing the reader to acquire the second language incidentally while lowering the affective barrier to language acquisition. This research study reaffirmed the positive affective benefit of the diglot method and showed that the diglot reader was equally as effective as the drill and practice program in facilitating vocabulary acquisition.

Lai et al (2007-03) examined the effects of gender differences on the application of CALL programs for second language acquisition. Gender
difference is an important theme in linguistic education because it influences the design of curriculum, teaching method, instructional strategy, and students' learning processes. This study applied a mixed-methods design, using both quantitative and qualitative methods, both descriptive and comparative in design. The participants were 200 students (male=34, Female=166) taking EFL courses and CALL programs in Wenzao Ursuline College of Languages in Taiwan. Findings from the study indicated that although 94% students (N=188) acknowledge that learning English with CALL programs can increase the efficacy of English learning, more 57.2% female students (N=95) than 11.7% male students (N=4) felt that learning English with computer is difficult because it requires the basic computer knowledge.

Early and intermediate second language (L2) learners often encounter difficulties when engaging in introductory social conversations, typically having had little opportunity to practice such interactions. Stewart, Iain A. D.; File, Portia (2007-04) designed a project Let's Chat, A Conversational Computer Dialogue System for Second Language Practice which would allow learners to rehearse social conversations without a human partner.

Formal and Informal CALL Preparation and Teacher Attitude toward Technology Kessler, Greg (2007-04) suggested that there is a general lack of a computer-assisted language learning (CALL) presence in teacher preparation programs. There is also evidence that teachers obtain a majority
of their CALL knowledge from informal sources and personal experience rather than through formalized preparation.

Zapata et al (2007-04) examined the effects of an online workbook and a paper workbook on L2 vocabulary acquisition. The results showed no significant differences between the online and the paper workbook groups after one semester of instructional treatment. However, the online workbook group proved better than the paper workbook group in the second semester. These findings confirm results of previous studies on the beneficial role of CALL on L2 vocabulary acquisition, and they point to the pedagogical advantages of online workbooks for large language programs as long as enough length of exposure to the online environment is allotted.

Eristi, Suzan Duygu (2007-05) focused on the effectiveness of interactive instruction CDs which was designed for pre-school students. Sixty-seven second grade students who were taking "Computer Teaching in Pre-School Education" at Anadolu University, Education Faculty Department of Pre-school Education participated in the current study. The data were collected in the fall semester of 2006. The data collection procedure lasted for 14 weeks. "Computer Aided Instructional Tool Evaluation Scale" was developed to analyze the current data. The aim of the scale instrument is to determine the effectiveness of interactive instructional CDs designed for the pre-school students. Descriptive survey was used to examine the resulting opinion of the students. For the research question, Arithmetic Mean (X), Frequency (f) and percentage (%) scores was used.
It is widely accepted by the researchers conducting studies in the field of CALL in Turkey that technology is not being used in the majority of the classrooms all over the country. Research on teachers' beliefs has established that stereotypes of teachers can be one of the most effective influences on their practices. Guneyli, Ahmet; Ozgur, Birikim (2007-05) intended to determine the use of and beliefs about computers of teachers in a private educational institution in Turkey which is namely TOMER.

Sarmasik et al (2007-05) designed “Computer Aided Lip Reading Training Tool” for hearing impaired children with hearing aids or cochlear implants, aims to teach lip reading, by using characteristics of a word and will not be presented on its own but within a sentence. Worldwide auditory-verbal education is becoming widespread for deaf children. Lip-reading skill remains to be important for oral education programs of hearing impaired.

A Study of Web-Based Oral Activities Enhanced by Automatic Speech Recognition for EFL College Learning by Chiu, Tsuo-Lin; Liou, Hsien-Chin; Yeh, Yuli (2007-07) Recently, a promising topic in computer-assisted language learning is the application of Automatic Speech Recognition (ASR) technology for assisting learners to engage in meaningful speech interactions. In this study, a web-based conversation environment called "CandleTalk", which allows learners to seemingly talk with the computer, was developed to help EFL learners receive explicit speech acts training that leads to better oral competence. The results of the study showed that the application of ASR was
helpful for the college freshmen in the teaching of speech acts, particularly for the non-English major students.

Engwall et al (2007-07) summarized how pronunciation feedback on the phoneme level should be given in computer-assisted pronunciation training (CAPT) in order to be effective.

How Do We Know What Students Are Actually Doing? Monitoring Students' Behavior in CALL - Fischer, Robert (2007-12) Adopting both quantitative and qualitative methods, researchers have found that students often use software in unexpected ways, a finding which has consequences for the notion of learner autonomy and underscores the need for learner training. Finally, comparison of students' actual use of software and their self-reported use of software reveals the danger of over reliance on self-report data.

Computer-Based Spelling Instruction for Students with Developmental Disabilities Vedora, Joseph; Stromer, Robert (2007) Learning to spell on the computer may lead to functionally useful writing skills. Alan and Suzy, teenagers with developmental disabilities, were already proficient on a variety of naming and matching tasks but had difficulties spelling; Suzy also made errors reading orally. In Experiment 1, computer teaching led to new anagram and written spelling performances. Suzy's reading also improved. On tabletop tasks, Alan and Suzy sorted and retrieved objects to a list they wrote and read aloud. When the tabletop tasks were repeated weeks later, Alan's spelling accuracy declined but Suzy's was nearly perfect. In Experiment 2, using a different and refined teaching format, Alan relearned
his old words and Suzy learned to spell new words. Immediately afterwards, and weeks later, both Alan and Suzy performed nearly perfectly on the tabletop matching, sorting, and reading tasks. The results replicate previous research and extend it with a refined package of computer methods that establishes durable and potentially functional writing skills. The possibility that learning to spell also improves oral reading is worthy of further research.

Poulsen et al (2007) compares the classroom standard practice of sustained silent reading with the Project LISTEN Reading Tutor, which uses automated speech recognition to "listen" to children read aloud, providing both spoken and graphical feedback. In this study 34 Hispanic students spent one month in the classroom and one month using the Reading Tutor for 25 minutes per day. The Reading Tutor condition produced significant learning gains in several measures of fluency. These dramatic results from a one-month treatment indicate this technology may have much to offer English language learners.


Akbulut, Yavuz (2008-01) expanded the design of Warschauer (1996) surveying freshman foreign language students at a Turkish university. Findings suggest that learners have positive attitudes towards CALL because of computers' potential to sustain independence, learning, collaboration, instrumental benefits, empowerment, comfort and communication.
2.5. CONCLUSION

From the above mentioned studies the following points were made clear:

Though there are contradictory findings with respect to the significant impact of CAI on the learners, most of the findings say that CAI enhances academic achievement. The single greatest problem facing a systematic assessment of the impact of the microcomputer revolution on teaching and learning is the lack of sufficient numbers of research studies in key areas. Findings indicate that computer applications have an important role to play in the future of education, but the exact nature of that role has only begun to be explored. Opportunities for using technology to make an impact on education have never been greater, and neither have opportunities for research. The next decade must be a time for taking full advantage of both.

The studies done at abroad, highlights the computer as the effective medium. English learning software for young learners provides entertaining immersive environments which help students learn English by participation. Most include pronunciation help and a few provide assistance in the learner's native language. However, in the Indian context, technology alone cannot solve all of the problems faced by the schools; nevertheless, if schools either do not invest in technology at all or invest only in low-level remedial programs, they will leave their students ill-prepared for an increasingly technological future. To accomplish the educational objectives, technology must be made an integral part of the entire instructional process. Considering the above points and taking guidance from the earlier researches, a software
package was specially created associated with the existing curriculum and the study has been done on “the effectiveness of CALL on recognition, listening and reading skills of first standard students in English”.
