INTRODUCTION:

The purpose of the literature review is to expand upon the context and background of the study, to help further define the problem and to provide an empirical basis for the subsequent development of hypothesis. Good, Barr and Scate have also emphasized the need of related studies in the field to avoid duplicate any unnecessary group in the dark. This has also been visualized at another angle, as such studies will provide ideas, theories, explanations or hypothesis, valuable in the form of problem, so, review of the related literature is an essential aspect of the research project.

Keeping the above facts in the investigator strive to assimilate the knowledge of all the related literature. At the very outset, it may be noted that very little information about the effectiveness of teaching through CAI followed by Discussion method, CAI followed by Demonstration Method & CAI followed by Activity Method is available in our country.

GAGNE AND BROWN [Ibid; p.470] state: “discovery as a method appears to gain its effectiveness from the fact that it requires the individual learner to reinstate the concepts he will later use in solving new problems.” In India research workers in the field of education and psychology have not paid sufficient attention
compare the effectiveness of teaching through overhead project transparencies and lecture cum demonstration strategies.

This is quite in contrast to the systematic research that has been conducted in foreign countries. Therefore the investigator surveyed the available literature with a view to build a correct perspective and examine the tenability of hypothesis and methodology employed in the study. In order to the study the researches conducted in this field the total work available from various sources i.e., books, journals etc can be divided into two main categories for the sake of convenience –

2.1 STUDIES CONDUCTED ABROAD

2.2 STUDIES CONDUCTED IN INDIA

2.1 STUDIES CONDUCTED ABROAD:

Those studies, in which the effectiveness of different methods have been studied, are proposed to be presented under the following sections. The studies below have been given and discussed according to the academic level used in the study –

The Seventh School Curriculum Reform in Korea was introduced in 2000 to prepare school-aged Koreans for an information and knowledge-based society. The reform effort emphasizes information and communication technology (ICT) in the K-12 curriculum and a learner-centered pedagogy. This study examines the contributions of ICT, specifically, computer-assisted instruction (CAI), in Korean science classrooms. A sample of 234 Korean middle school students was categorized into five achievement groups. Data were collected from pre- and post-achievement test scores and pre- and post-questionnaires for attitudes toward science, future course selections, and career aspirations in science. Findings include: (1) the lowest achievement group showed the most significant improvement after CAI (p=.000); (2) improvement in student achievement in science significantly influenced students’ attitudes toward science (p=.019), future course selections, and career aspirations related to science (p=.000); and (3) boys tended to perform better with CAI than girls.

This research provides evidence that CAI has the potential to help lower achieving students in Korean science classes and may encourage enrolment in science.

This study attempted to identify those interventions that facilitate persistence and eventual course completion of courses. This study examined those factors that serve as barriers and facilitators to persistence and achievement of a web-based instruction course in higher education. This research also addresses alternative web-based instructional models including that of an online teaching model known as the Internet Mirror Model (moving freely, parallel, from lecture or Internet-based content during the same semester). This study was based on data previously gathered from seven semesters of an undergraduate Principles of Physiology course. This study was based on two hypothesized models from past research of conceptual frameworks and procedural hybrid teaching models. Model #1 analyzed individual achievement (exam scores divided by the number of tests taken) and persistence (weeks of course completion). Model #2 analyzed course persistence and course achievement data. Key variables for both models included course characteristics and learner characteristics including instructional strategies. This study showed that persistence and achievement tend to go hand in hand. With respect to learner characteristics, predictors of individual achievement included Freshmen who had the lowest achievement and persistence scores and Junior who had the highest achievement and persistence scores. In addition, students who had previously used the Internet achieved better than those who had little Internet experience. With respect to course characteristics, the persistence and achievement mean scores were both predicted if the course was required. One semester students had low persistence scores and low achievement scores.
while another had high achievement scores. In each case, the classes had an atypical array of students


Three years of graduating business honors cohorts in a large urban university were sampled to determine whether the introduction of ubiquitous laptop computers into the honors program contributed to student achievement, student satisfaction, and constructivist teaching activities. The first year cohort consisted of honors students who did not have laptops; the second and third year cohorts were given laptops by the University. The honors students found that their honors classrooms were statistically significantly more constructivist than their traditional (non-honors) classroom. The introduction of laptop computing to honors students and their faculty did not increase the level of constructivist activities in the honors classrooms. Laptop computing did not statistically improve student achievement as measured by GPA. Honors students with laptops reported statistically

EL-Deghaidy, Heba N., Ahmed, “Effectiveness of a Blended learning Cooperative Approach in an Egyptian Teacher Education Programme.” Department of Curriculum and Instruction, School
This paper describes the results and implications of a study into the effectiveness of a blended e-learning cooperative approach (BeLCA) on Pre-Service Teacher's (PST) achievement, attitudes towards e-learning and cooperativeness. Quantitative and qualitative methodologies were used with participants of the study. Twenty-six science PSTs, enrolled in an Egyptian university, represented the study's experiential and control groups. Pre and post-tools were administered to participants in the two groups in a quasi-experimental design. Instruments to measure dependent variables of the study were developed by the authors in light of relevant previous studies. The findings suggest that PSTs in the experimental group have higher achievement levels in their post overall-course-test, 'comprehensive-score', and attitudes towards e-learning environments compared to those of the control group. The specific design of the course may be responsible for these changes. Future implications and suggestions for teacher educational programmes are presented. (PsycINFO Database Record (c) 2008 APA, all rights reserved) (from the journal abstract)

In today's studies of how computer technologies are used in college art lessons, limited examples are focused on both digital instructional technology design and learning achievement. The study attempts to measure the learning achievement of college students from two intact groups in an art class when a multimedia form of instruction was utilized in place of traditional instruction. The researcher developed an instructional CD-ROM followed by the steps of the Analyze, Design, Develop, Implement, and Evaluate ([ADDIE], Hall, 1997) instructional model. Only the experimental group received digital content-based instruction and the three-dimensional visualization module. A pretest and posttest instrument was utilized for both the experimental group and the control group. A one-way ANOVA was used to determine significant differences between groups. The usage of the three-dimensional visualization module (the experimental group) produced a significant difference in student performance compared to traditional instruction.


The aim of this research is to determine the retention effect of Computer Assisted Instruction (CAI) on students' academic achievement for teaching the Physics topics. The research includes the Force and Pressure units of 7[th] grade Science Lesson. In this research, 132 students were structured as both control and experiment groups. Traditional instruction (TI) method
is used for control group while traditional instruction with teacher supervised CAI method is used for experiment group. Scientific subject test was applied as pre-test and post-test to both groups. 5 months latter, the Science Subject test was applied to both groups again. Significant differences between the Science Subject test scores of experiment and control group were found in favor of experiment group.

**Pryor, Caroline R Bitter, Gary G,** “Using Multimedia to Teach Inservice Teachers: Impacts on Learning, Application, and Retention.” *Computers in Human Behavior*; Sep 2008, Vol. 24 Issue 6, p2668-2681, 14pAbstract: This study investigated teachers’ ability to learn, apply in lesson plans, and retain knowledge of classroom discourse from a single module of multimedia professional development program, used with 39 K-12 teachers enrolled in two graduate courses. Data collection and analysis included: (a) teacher development of – and panel review of – lesson plans integrating discourse, and (b) follow-up teacher interviews one year later. The study found: (a) the video modeling in the module was effective in helping teachers learn, and (b) discourse strategies were learned, applied, and retained. Implications for professional development with multimedia to teach classroom discourse include: (a) recursive use, (b) reflection, (c) multiple examples, (d) counter examples, and (e) prompts for observation. [Copyright 2008 Elsevier] Department of Curriculum and Instruction, Southern Illinois University Edwardsville, School of Education, Edwardsville, Illinois 62026, USA Arizona State University, Mary Lou Fulton College of Education,
García, J. **Moreno A., Reina F. J., Menayo R., Fuentes R.J.**, “Analysis of Effects of Distribution of Practice in Learning and Retention of a Continuous and a Discrete Skill Presented on a Computer.” *Perceptual & Motor Skills*; Aug 2008, Vol. 107 Issue p261-272, 12p, This investigation examined the effects of distributed and massed practice on the learning and retention of a discrete computerized skill (Exp. 1) and a continuous computerized skill (Exp. 2). 40 men were randomly assigned to one of four groups, of which two groups took part in Exp. 1 and two groups in Exp. 2. Performance was assessed at various points during acquisition and then on 8 retention tests conducted at varying times after acquisition. Learning curves for practice were highly similar for the two conditions. Participants in the distributed practice group performed significantly better than those in the massed-practice group at the end of practice on both the discrete and continuous skills. However, participants in the distributed practice group performed significantly more poorly on retention during 24 hr. and after acquisition. Participants in the massed practice condition performed significantly better on retention tests than did those who learned in the distributed-practice condition.

has become an accepted form of education for some students, but as many as 50% continue to leave this form of instruction. Neither instructor nor student experience predicts learning success although many complex factors are involved in creating successful learning conditions. This study discusses the strategies found in recent text books and attempts to align them with instructional strategies suggested by past distance learning experts, recent research papers written by well known research authors, as well as current authors of best practices. Attention is given to student motivation and satisfaction in a search for criteria that represents conditions for students continuing their online courses toward completion particularly among their first few courses. Other more experienced students are concerned with having up-to-date quality and self-accomplishment standards continue throughout their studies. 14% of the students who attended OL courses during 2005 at a local community college responded to a 67 item survey that profiles their varying reactions and preferences. Students who take only online courses one at a time are included with those who attend a mixture of online and traditional courses with full or part-time employment. As factors that impede or facilitate learning are examined, students answer questions that describe whether or not they wish to continue with the current a specific OL course and if they are likely to continue enrolling in OL courses that lead to graduation. The outcome encompasses the significance of peer-to-peer interactivity online, grades, motivational factors, academic preferences such as presentation style, and traditional background characteristics. One outcome suggests that many are ready for online student interactivity though many do not prefer interactiv
and may feel that it is not as useful as it could be. Another
outcome predicts which students are likely to continue in OL
courses regardless of whether they have high or low grades
have little experience. (PsycINFO Database Record (c) 2008 APA

Güler M. Hakan, Saðlam N., “The Effects of the Computer Aided
Instruction and Worksheets on the Students' Biology Achievement
and Their Attitudes Toward Computer.” Applied Sciences Year:
2008 Volume: 8 Issu: 6 PageNo. 1067-1072DOI:
10.3923/jas.2008.1067.1072

In this study, we aim to find out the effects of computer-aided
instruction (CAI) on the students' achievement in biology and their
attitudes toward the use of computers in biology courses as
compared to the traditional methods. In order to find out these
effects, an experimental study has been carried out in Kuleli
Military High School in Istanbul. The subjects of the study were 51
students of the first graders from the two sections of the high
school. In the control group, first the subject "enzymes" was taught
and then the students studied the subject through a traditional
method using worksheets. In the experimental group, CAI was
implemented. These students were given the chance of studying
the same subject through a selected courseware (Vitamin Biology,
a tutor) in the computer laboratory. An achievement test has been
designed to measure the success of the students and an attitude
scale has been used to display their attitudes toward computer
use. The test and the scale have been applied to both groups
before and after the instruction. The differences between the
means of the pre and post tests have been compared via t-test. No significant difference has been found out. It can be concluded that CAI does not have much effect on the students’ achievement in biology. The same procedure has been followed in interpreting the results of the attitude scale and no significant difference has been observed.

KEY WORDS: computer aided instruction, biology achievement, attitudes toward computer.


ABSTRACT As a result of their own sometimes frustrating educational experiences, and a growing discontent with the current teaching methods, the authors, in conjunction with another instructor, decided to try an experiment. With the goal of enhancing visualization and understanding, the instructors created several multi-path educational paths for the reinforced concrete class. These alternative paths or “roads” included electronic visits to the site of the construction of a concrete frame building, homework assignments based on the various building components, discussions with the project manager, and a “hands on” public service project. This paper details the traditional and multi-path educational delivery models in a concrete course, resources required to “construct” more roads to knowledge, tl
results of a short survey of student reaction, and a synopsis faculty comments on the effectiveness of the effort.

**Keywords:** Reinforced Concrete, Digital, Visualization, Simulation, Construction, Multimedia, Jobsite, Plans, Educational Delivery, Project Management. Journal of College Teaching & Learning – April 2008 Volume 5, Number 4

**Dennis L. Payette, Verreault, Daniel.** “Teaching Methods and Technologies: Aggregated Faculty Analysis, Conclusions and Recommendations”. Adelphi University, University of Tampa Journal of College Teaching & Learning – June 2007 Volume 4 Number 6

Abstract: This paper culminates three years of research on the use of various teaching technologies and methods by the faculty Adelphi University School of Business in Garden City, New York. Previously, papers on this research were published on the development of the research instrument, the administration and data analysis for full time faculty (Part II), and most recently the analysis of data from adjunct faculty (Part III). This paper (Part IV) includes a number of new faculty additions to the data set and analyzes and interprets the aggregated data. Our overall findings suggest a wide variety of soft and hard technologies where the aggregate group expressed a statistically significant higher perceived “value of use” than a “level of use”. Newer classroom types were also valued more highly than used. The research controlled for “department”, “status”, and “teaching experience”. Factors tended to be non-significant with some interesting
exceptions. We note our conclusions, make policy recommendations, and suggest opportunities for expanded research.


Problem Statement: Computers are now being used more and more in education environments. Teachers, students and parents are engaged in learning activities backed by computers. Computer has become an indispensable instrument of educational settings. There are many researches asserting that computer facilitates learning. Meanwhile, traditional education is going on. There are many teachers using the traditional education approach in classes. In their opinion, traditional education too is instrumental in increasing chances of success. There are scientific data supporting this thesis as well. Systematic learning developed by Sönmez, on the other hand, differs from these two. Researches made over a period of 10 years suggest that this is an effective approach to learning-teaching further enhancing success.

Research Question of Study: Are there significant differences among and within groups involved in traditional education, education by computer and systematic learning in terms of their total achievement averages 1. Is there any significant difference within each of groups involved in traditional education, education by computer and systematic learning in terms of pre-test and post
test scores? 2. Are there significant differences among groups involved in traditional education, education by computer and systematic learning in terms of total achievement averages?

Methods: Both qualitative and quantitative approaches are used together in this survey. Also, randomly selected pre-test and post-test control groups were used. There were three groups: in one systematic learning was experimented; while the second group was introduced education by computer the third group, which was the control group was given traditional education. 3 classes in first grade 3 in Yasemin Karakaya Primary School were randomly selected and, from this population, two groups were selected as experimental groups while the third was used as control group.

Findings/Results: In both hypotheses a significant difference was found in favour of group subject to systematic learning. The total achievement average of the systematic learning group is significantly different from total achievement averages of both traditional education and computer assisted education group. Based on this data, it can be concluded that systematic learning is more effective than both traditional education and computer assisted education. No significant difference was found between computer assisted education and traditional education.

Conclusions/Recommendations: Practice of systematic learning should be demonstrated to each teacher in class environment and teachers should be guided in practicing it. While organizing education environments, opinions of teachers and students may be taken. New comparative studies on the effectiveness of systematic learning may be launched to cover different courses.
classes and schools. Experimental surveys can be made on wide samples.

Ahmet Tekbiyik, Kader Birinci, Konur N. Pirasa. “Effects of Computer assisted Instruction on Students’ Attitudes Toward Science Courses In Turkey: A Meta-Analysis.” Rize University, Faculty of Education, Department of Primary Education, Rize /Turkey (2000 to 2007).

Many primary studies have been performed to reveal the effects of computer assisted instruction (CAI) on students’ attitudes towards science courses. In determining the effectiveness of these studies, gathering and evaluating of the studies at some characteristics play an important role. The aim of this study is to determine meta-analytically the overall effectiveness of CAI on students’ attitudes towards science courses from the years 2000 to 2007 in Turkey. This paper reported the results of 23 effect sizes included in 17 studies, since some studies performed multiple comparisons within the same study. The overall number of subject was 1583. Grand mean for 23 ESs was calculated as 0.68. When this mean ES was converted to percentiles, the percentiles on students’ attitudes towards science course were 75 for the CAI group and 50 for the TI group. In other words, an average student’s attitude towards science course moved from the 50th percentile to the 75th percentile when computer assisted instruction was used.

**Keywords:** CAI, Students’ Attitudes, Meta-analysis, Science Courses

This study investigated whether the use of the combination of the lecture, discussion and computer-assisted instruction (CAI) significantly improved the experimental students’ attitudes to biology and the computer/CAI and their understanding of reproduction in plants and animals. The sample comprised 77 Jamaican grade 11 female students from two traditional high schools in Kingston. Attitudes to a biology questionnaire, attitudes to the computer/CAI questionnaire and a biology achievement test (BAT) were used for data collection. The results indicated that the experimental subjects’ post-test attitudes to biology and the computer/CAI were significantly better than those of the control group subjects taught with the lecture and discussion methods; the experimental subjects significantly outscored the control group subjects on the post-test BAT; there were significant differences in their post-test BAT means based on their attitudes to biology in favour of experimental subjects with highly favourable attitudes to biology, but there were no significant differences in their means attributable to their post-test attitudes to the computer/CAI; there was a positive statistically significant but weak relationship
between the experimental subjects' post-test attitudes to biology and their post-test BAT scores.

DOI: 10.1080/713694977.

*Sally R. Beisser.* (2005). “An Examination of Gender Differences in Elementary Constructionist Classrooms Using Lego/Logo Instruction”. Department, School of Education, Drake University, Des Moines, IA 50311. by the Haworth Press, Inc.

Summary. Gender disparity exists in many educational environments despite conscientious attempts to equalize opportunities and outcomes. Research studies indicate females are less likely to effectively engage in the use of technology in problem solving. However, in a two-year study of a Midwest elementary multi-age classroom, researchers studied computer using activity of grade 1-5 students using Lego/Logo technologies. Teachers put in practice learning strategies that encouraged both sexes to engage in computer-oriented problem solving. Through an experimental design, observation, and teacher assessment, the results suggest that, in practice, females demonstrate significant gains in self-efficacy using computer technology in this computer-rich classroom and report positive perceptions of self. Girls report more positive assessments of female technological competence and current computer use while boys do not waver from a belief in male technological superiority. Observation and teacher assessment indicate females are solving...
problems without asking for help. Furthermore, girls suggest that males are not more technologically savvy than they are.

Ann E. Barron J. Christine Harmes Kate Kemker (2005). “Authentic Instruction in Laptop Classrooms: Sample Lessons that Integrate Type II Applications”. College of Education, University of South Florida, Tampa, FL 33620

Summary. Laptop computers and Type II applications can provide powerful tools for elementary classrooms, especially if they are combined with authentic instruction. This article provides information and lessons learned from a laptop initiative in an urban elementary school. The goal of the initiative was to develop lesson plans and document techniques that could be used to engage students in higher level thinking skills. Sample lessons are included to provide details related to the teacher’s role, hardware, software, and student outcomes. According to Maddux, Johnson, and Willis, “Computers have the potential to become education’s single most useful teaching and learning tool” (2001, p. 95). However, that potential cannot be reached unless the appropriate instructional strategies, hardware, and software are integrated into the learning process. This article presents sample lessons and classroom activities that combine three components—authentic instruction, Type II software applications, and laptop computers. Research related to each of these components has demonstrated increased student engagement and intellectual growth. Together, they form a solid, replicable formula for student success.
Jody S. Britten Jerrel C. Cassady (2005). “The Technology Integration Assessment Instrument: Understanding Planned Use of Technology by Classroom Teachers”. Ball State University, Muncie, IN 47306 (E-mail: jccassady@bsu.edu).

summary. Cognizant of the difficulty teacher’s face in attempting to integrate computers into instructional settings, the authors propose a new technology integration assessment strategy that can guide individual development or be used to track programmatic change. The Technology Integration Assessment Instrument (TIAI) explores seven dimensions of planning with specific attention to levels of technology integration. Repeated use of the TIAI is anticipated to promote individuals’ abilities to track their own growth, as well as provide a standard method for documenting the application of Type II uses of educational computing. This paper presents the TIAI, identifying the method of analyzing lesson plans employed in this system, as well as addressing likely uses of the instrument by teachers, administrators, and program evaluators


The aim of this study is to determine the effect of Computer-Assisted Instruction on the academic achievement of the students on the instruction of Physics subjects of 7th grade science lesson. This study includes Force and Pressure topics of 7th grade Science lesson. Two hundred and fifty three students joined in the
study as control and experiment groups. Control group took only
traditional instruction; experiment group took traditional instruction
supported by teacher controlled computer assisted instruction. For
both groups, Science subject test was applied as a pre-test before
the instruction. It was seen a difference between the control and
experiment groups` average scores at Science subject test at a
significant level

Herriot, A. M  Bishop, J. A.  Truby, H.  “The Development and
Evaluation of Student Training, Education and Practice for
Dietetics CD-ROM: A Computer-Assisted Instruction Programme
for Dietetic Students.” Centre for Nutrition and Dietetics, School
of Biomedical and Molecular Sciences, University of Surrey,
Guildford, United Kingdom. Journal of Human Nutrition and
Dietetics, Vol 17(1), Feb 2004. pp. 35-41

This study aimed to evaluate student response to the programme
and its effectiveness as a teaching tool, based on the evaluating
framework of D.L. Kirkpatrick (Evaluating a Course, 2nd ed.
London, Kogan Page). Quantitative and qualitative methodologies
were employed, with 41 dietetic students, separated by year
group, completing questionnaires and taking part in six focus
groups, at the University of Surrey. Student attitudes towards the
instruction method and the STEP-DIET programme itself were
investigated, in conjunction with their perceived learning
achievements. Students rated the programme highly in terms
design and content, however, there was a reluctance to accept
computer-assisted instruction (CAI) as a sole teaching method.
number of learning achievements relevant to dietetic practice were reported including a perceived increase in ability to conduct dietetic interview and an increased understanding of the management of Type 2 diabetes. In general students reacted positively to the STEP-DIET programme and it was perceived by students to be effective in preparing them for the practical component of their dietetic training. (PsycINFO Database Record (c) 2008 APA.


Studied the effects of using Computer-Assisted Instruction (CAI)(CD software and PowerPoint programs) on pre service physical education teachers' attitudes toward computers. Ss were 56 undergraduate students (29 females and 27 males) from the Faculty of Physical Education at the University of Jordan during 2001/2002. Ss were taught via CAI for 10 wks. Independent T-test and ANCOVA were used to test the null hypothesis. Results of an attitude scale showed significant differences between students' attitudes before and after teaching via CAI on all study dimensions. However, no significant gender-related differences were found. Ss with computer experiences scored significantly higher than those with less and no computer experiences. N
significant differences were found on students' attitudes across three academic achievement groups.


As a teaching methodology in post-secondary education and, more specifically in both pre-service and continuing education rehabilitation programs, e-learning continues to grow in popularity. While accessibility has rightfully been addressed by rehabilitation educators promoting e-learning, other equally important areas should also be addressed in the move toward e-learning and distance education. As the use of this modality continues to widen, rehabilitation educators must be cognizant that Web-based learning involves far more than converting class notes, PowerPoint slides and posting them on a Web site, or running a chat room or bulletin board. Rather, curriculum and instructional decisions should include awareness, understanding, and utilization of cooperative learning, motivation and adult learning theories and research. (PsycINFO Database Record (c) 2008 APA, all rights reserved)

teacher-centred vs. student-centred multimedia computer-assisted instruction (CAI) on the science achievements of tenth-grade students. A total of 244 tenth-grade senior high-school students (attending six science classes) participated in this pre-test/post-test comparison-group experiment. During a one-week period, one group of students (n = 123) were taught by a teacher-centred multimedia CAI scheme (TMCAI) whereas the other group of students (n = 121) was subjected to a student-centred multimedia CAI (SMCAI) effect. An analysis of covariance on the Earth Science Achievement Test post-test scores with students' pre-test scores as the covariate revealed that the teacher-centred teaching approach was more effective in promoting students' science achievements than was the student-centred method - especially on the knowledge and application levels of the cognitive domain. Some implications for the implementation of multimedia CAI within secondary-science classrooms are discussed.


Investigated whether the combined use of lecture, discussion, and computer-assisted instruction (CAI) improved students' attitudes toward biology and computers/CAI and their understanding of reproduction in plants and animals. 42 female 11th grade students (aged 14-18 yrs) attended lectures, discussions, and CAI in biology. Ss subsequently completed biology achievement test (BAT) and questionnaires concerning
their attitudes to biology and computers/CAI. Results show that CAI Ss' posttest attitudes to biology and computers/CAI were significantly better than were controls receiving only lectures and discussion. The experimental group significantly outscored the control group on the BAT. (PsycINFO Database Record (c) 2008 APA.


This study investigated the effects of a computer-assisted instruction (CAI) program on basic skills achievement and attitudes toward instruction of Spanish-speaking migrant children. The study used two comparable groups of third, fourth, fifth, and sixth grade Spanish-speaking migrant children. One group used CAI to supplement instruction while the second group served as a control. The academic achievement gains and attitudes of the groups were compared. Children (256) were administered the Comprehensive Tests of Basic Skills twice during 1 year and a Students’ Attitude Instrument at the end of the year. The results indicated that students who used the CAI program had greater achievement gains than did students who participated in the regular classroom program. However, students who were in the non-CAI program had more favorable attitudes toward CAI than did students in the CAI program.
Geer (1981) showed that conventional method was better than the inductive method for secondary classes.

Ahlfors (1980) concluded that all instructional groups (dictionary method, context method and experimental method) were significantly better than the groups receiving the specific vocabulary instruction.

Edward. (1979), “The Effectiveness of Student–Centered Teaching, and directive Teaching on the Achievement of Students”. He showed that student–centered teaching is more beneficial to the students than the directive teaching.

Similarly Edward (1979) showed that student – centered teaching is more beneficial to the students than the directive teaching.


Green (1978) found no significant differences between the three teaching strategies for the language arts.

that oral explanatory strategy was more effective than the answer-centered strategy for the retention of scientific concepts, inferred that both the expository and the laboratory methods were significantly more effective than the discovery method for overall achievement in science.

Clark, (1977), Inferred that three methods conventional, contingency management and learning activity package method were equally effective for teaching archery in High School.

33. Davis, J.O. (1977), “The Effects of Three Approaches Science Instruction of the Science Achievement Understanding and Attitudes of Selected fifth and Sixth Grade Students”, DAI, 38(1), p.211 – A. Similarly, Davis concluded that individualized instruction method was significantly better than the lecture discussion method.

Mecarley. (1977) concluded that individualized instruction method was significantly better than the lecture discussion method.

Rhea (1977), Compared the achievement of seventh grade students taught by traditional teaching techniques and students taught by individually paced instructional techniques in a beginning typewriting classes. There was no significant difference in the achievement between the two groups.

Wilson (1977) showed that non-self inclusive reference book method gave middle school students an advantage over studen
in the self-inclusive method for learning of multiple meaning content laden works.


**Hardin,** (1976), reported no significant difference among the textbook method, non-text book method and a combination of both methods in High School introductory Spanish.

**Mercer** (1975) concluded that programmed instruction group did better than the conventional instructional group.

**Vongchusiri, P.,** (1975), “The Effectiveness of Alternative instructional Methods on the Achievement of Science Students the Elementary Schools of North East Thailand”, DAI, 36(7), p.4318 –A. He showed, that discovery strategy with objective mode was significantly better than the discovery strategy with graphic mode, reception strategy with graphic mode and reception strategy with objective mode.

**Luong,** (1971) found that the reception approach yielded better results than the discovery approach.

**Thomas, H.M.,** (1971), “A Comparison of Two Methods Teaching Calculus with Special Inquiry into creatively”, DAI, 31(8), p.3785 –A  He designed a
Similarly Thornton, W.T., (1970), “The Comparative Effectiveness of Programmed Instruction, Educational Television and Traditional Teaching of a unit on Human Biology in Selected Elementary Schools”, DAI, 31(3), p.1098. He found that programmed instruction, educational television and traditional teaching method were equally effective.


Benson, K.S., (1969), “A Comparison of Two Methods Teaching Fifth Grade Science”, DAI, 30(3), p.1067 – A. He concluded in his study that traditional or lecture cum demonstration and pupil investigatory or discovery method were equally effective.

Study, which was concerned with the question of rigor versus intuition as a method of teaching a first course in calculus and how these methods inhibit or facilitate the creative potential of a student, and also what effect these methods have on student attitude toward mathematics. The students were classified as creative or non-creative on the basis of Mednick’s remote associate test. The students were also given the Kuder occupational interest test to obtain a measure of their interest in mathematics. These two scores together with age, IR, SAT
mathematics score, SAT verbal score and high school grade point average were used covariates in the subsequent analysis. It was found that (i) There is no difference between the rigorous method and (ii) Intuitive method was significantly greater than any other combination of method and creativity.

Shafer, J.R. (1971), “An Experimental Study of Computer Reinforced and Inductive Techniques in High School Chemistry Laboratory Sessions”, DAI, 31 (9), p.3427 –A. He indicated that the inductive approach, and on the use of the computer in chemistry, laboratory instruction increases the student understanding of science, where as conventional laboratory instruction does not.

Andriat, W.R., (1970), “Difference in Retention between Populations of Seventh Grade Science Students Taught by Two Methods of Instruction: Small Group Laboratory and Teacher Demonstration”, DAI, 31A (16), p.2753 –A. Andriat showed that comprehensive learning were significantly greater for the teacher demonstration than the student laboratory method.

Roebuck’s (1970), experiment was one more example of where the programmed instruction group did better than the conventional instruction group.

Taylor, (1970), inferred that programmed text book proved to be significantly the most efficient than the multimedia lecture discussion.
Weiss, (1969), found inductive method more effective than the programmed instruction in the close reading of poetry.

2.2 STUDIES CONDUCTED IN INDIA:

A review of the literature revealed that there existed scarcity of research studies related to the methods of teaching in India. According to a recent survey of doctoral level and other researches over the last forty years indicates that there are about 30 studies on the methods of teaching. These studies do not present any clear picture of the relative effectiveness of different methods. In this regard the ideas of Duch (1979) are as follows:

The studies on teaching methods hardly made any significant impact. Most of them compared some sort of practical based approach to instruction with the most traditional ‘Chalk and Talk’ method and branded the former as progressive or effective without caring to go a bit deep into the fact as to why, in what way, or how it was so real psychology or pedagogy of methods remained untouched as its core”.

Therefore, it won’t be for wrong to say that the whole area of effectiveness of different methods is opened for investigation. Out of the studies reviewed by the investigator none is related to teaching through over head projector and lecture cum demonstration method. The studies that are related to the other different teaching method are as follows: Studies of this group are related to methods of teaching in general as well as teaching
methods as applied to a particular subject. Many of these studies have only tried to identify inadequacies in the traditional method of teaching; only few of them have ventured to experiment with method.


Abstract: This study attempts to find out the best instruction method out of three i.e. Conventional Instructional System (CIS), Audio-Video Instructional System (AVIS) and Multimedia Instructional System (MIS), for teaching Information Technology at the secondary level. For this purpose total 120 students were randomly selected from three CBSE affiliated schools.

They were assigned to three groups on the basis of their scores in Intelligence test. These three groups were taught by three different methods. Four tools were used in this study out of which, except Intelligence test all other tools were developed by the researcher. After attaining the raw scores and applying different statistical techniques like ANOVA, t-test and factorial design, it was found that MIS is the best method, AVIS is the second best and CIS is the third best method for teaching Information Technology at secondary level.

Sharma, A. and Sansanwal, D. N. 2002 “Comparison Among Video – Based Instructional Strategies for Teaching Science
The study aimed to compare the mean scores of achievement of students in science belonging to different video-based instructional strategies for teaching science at class IX level. The sample comprised at 115 students randomly selected from class IX of Kendra Vidyalaya No. 1 from Indore city. Pre-Test, Post-Test experimental design was used in which three groups were randomly assigned to the treatments. The dependent variable was assessed by the science achievement test developed by the investigator. Statistical technique like Dunceen’s Multiple Range Test & ANOVA were applied to analyses the data.

The findings were, (1) treatment had significant effect on achievement in science of students belonging to different video-based instructional strategies for teaching science. (2) The video viewing followed by lecture as well as video viewing followed by discussion were significantly higher than those of video viewing only. (3) The mean scores of science achievement of video viewing followed by lecture was found to be significantly superior to video viewing followed by lecture was found to be significantly superior to video viewing followed by discussion.

Shanthi’s and Raj. A. Amal, (2002.), “Computer Assisted Instruction on Achievement in Science in Schools”, School Science Abstracts Pg. (7 – 11), March 2002. Objectives were as follows: (1) to find out the effect of Computer Assisted Instruction (CAI) on achievement in four units in Bio – Zoology among high
secondary students. (2) To find out the effect of Computer Assisted Instructions on achievement in the learning objectives such on knowledge, Comprehension, Application and skills. (3) To find out the effect of Computer Assisted Instruction on Achievement in Bio – Zoology over lecture method.

Methodology: The study was an experimental research. The design of the study was the Pre Post Equivalent group; one sample selected for this experiment was purposive random sampling. The strength of control group and experimenting group was 34 and 31 students, respectively. All the students studying Bio – Zoology at class XI level were selected as the sample for the study. Gained scorer from pre and post test was taken for analysis of data Percentage Correlation and ‘t’ test were calculated to analyze the data. Major findings were as: (1) Students taught through CAI achieved significant different in the attainment of the learning objectives, pertaining to the realm of Knowledge, application and skill whereas there was similar effect of understanding among control and experimental groups. (2) Significant effect was observed on the achievement in favour of CAI in all aspects of learning. (3) CAI students scored significantly higher marks over the control group students.

were: (a) To classify studies on various variables like main teaching methods as Programmed Learning Method (PLM), Multimedia Method (MM), Traditional Method used, the type population on which studies have been conducted and the courses of studies used. (b) To find out the effect sizes and other relative statistical indices and (c) To compare the effect sizes on the classification of studies.

Methodology: The research studies were listed from first, second, third & fourth survey of educational research by MB. Buch, ICSSR, NCERT, UGC annual reports, Indian Dissertation Abstracts and doctoral theses collected from different libraries of Indian Universities by visiting them personally served as a basic material for the study. This way 29 studies were selected for quantitative analysis and further divided into 15 sub-classes on the basis of variables like level of education (primary and secondary) and subjects of study (science and arts). The statistical findings of all the studies were taken an comparison of the treatment group, Multimedia Method or Programmed Learning Method Vs Traditional Method was made. Effect-size estimation technique was applied for the purposive analysis. Descriptive Statistics like range, mean, S.D., chi-square and other deltas were used also calculated. Findings were as:

1) The performance of an average student either taught by Programmed Learning Method or Multimedia Method was superior to that of student taught by Traditional Method.
2) Effective size at secondary level was found to be higher than that of primary level, that indicates that the modern method i.e., PLM or MM is more effective for secondary level as compared to primary level.

3) PLM and MM are more suited for the teaching and study of Science as compared to arts.

4) In all comparisons of PLM Vs TM and MM VS TM individually Revealed that each of these innovative methods was superior to TM in overall situation. The study cites ten references.


This study examines the effectiveness of multimedia instructional strategy in teaching science to slow learners. The study was aimed: (a) To compare the effectiveness of traditional lecture method and multimedia instructional strategy in teaching science to slow learners, and (b) To examine whether multimedia instructional strategy helped slow learners to cope with normal students.

A sample of 50 slow learners of class VIII from S.S.H.N. High School, Muhavur was divided into two matched groups using systematic random sampling techniques. A normal group comprising average and above average students were also defined in order to assess how far multimedia instructional strategy
enabled slow learners to cope with normal students. For this group, out of 150 students every sixth student was selected on the basis of systematic random sampling techniques. The data were collected using an achievement test constructed by investigator. The collected data were analyzed using mean, S.D., and t-test.

Major Findings:
(a) Achievement of slow learners was higher when they were taught through the multimedia instructional strategy. (b) Multimedia instructional strategy enabled the slow learners to cope with normal students to a considerable extent. (c) Multimedia instructional strategy facilitates better learning and promote longer retention.


To study the effect of two methods of teaching chemistry, namely, large group lecture – demonstration method and small group laboratory method, on secondary school students of Lucknow city.

To find out the difference between the two teaching methods groups on achievement in chemistry and attitude towards science and.

To assess the relationship between students attitude towards science and their achievement in chemistry.
Methodology: The study used the purposive sampling technique in the initial stage. The sample consisted of 79 girls and 91 boys who were randomly assigned to the two teaching method groups. The tools used included Chemistry Achievement Test (Forms A and B) constructed by the researcher and Attitude Survey for the Junior High School of Fisher. Major Findings – Neither of the methods was so superior to the other in teaching all aspects of science as to force us to use it to the exclusion of the other. In lessons connected with analytical chemistry, there had been an increase in knowledge through the lecture – demonstration method, while there was increase in understanding and laboratory method. There was no effect of sex on the achievement in chemistry. No significance difference was found between the two teaching method groups with regard to attitude towards science. A positive relationship was found between achievement in chemistry and attitude towards science.

Singh, R.D., (1991). A study “Teaching of Mathematics: Effectiveness of Computer Assisted Instruction & Conventional Method of Instruction.” Indian Educational Review Vol. 26(4), 15-34. They took up the study to see the effectiveness of computer assisted instruction in teaching mathematics. He found that students who used the computer scored significantly higher than those taught through the conventional method.

Women, Coimbatore. He developed a CAI package in Physics for class XI students. The experimental group found that the experimental group performed better on the post test. The differences were insignificant in terms of sex and medium of instruction.


He found that both techniques were better than conventional teaching. He also found that ‘Promoted ‘ students when taught through the PSI or ML approach performed significantly better on the summative test as compared to pass students taught through the conventional method. **Prasad** compared the merits of demonstration method over individual laboratory method in the teaching of science. For observation and drawing inferences in Chemistry, demonstration method was better. For arrangement of apparatus and for drawing inferences in Physics, individual method was better.

**Padma, M.S.**, (1976), "To find out the effectiveness of P1, P2, P3 & P4 on the retention of the applicational ability in Science (Physics) of standard VIII pupil of Baroda city.” Teaching patterns & Pupil’s attainment, Ph.D. Ed., M.Sc., 1976. The study aimed at fulfilling the following objectives: To find out the effectiveness Pattern P1 (lecturing – problem solving approach pattern), Patte
P2 (Questioning – answering – problem solving approach pattern), Pattern P3 (questioning – answering – feedback – problem solving approach pattern), Pattern P4 (lecturing – no problem solving approach pattern) on the development of applicational ability in Science (Physics) of standard 8th pupil of Baroda city. The study comprised two experiments. The first experiment followed a Graeco-Latin Square Design (4x4) involving the 4 teaching patterns, 4 units of Physics, 4 sections of standard VII and weeks, with 10 replicates in each cell.

The second experiment followed a completely Randomized Design. Intelligence as measured through the Shah’s non verbal group Test of intelligence and per-achievement in Science as measured through a test developed for the purpose were used as the two covariates. Three types of criterion scores were obtained; these were: (a) Implicational ability scores under planned testing conditions in the First and Second experiments. (b) Implicational ability scores under surprise testing condition in the IIInd experiment only. (c) Implicational ability scores for retention in both the experiments. The first experiment involved 40 pupil from 4 classes of standard VII from the second experiment involved 72 pupil from 4 classes of standard VII form the city in Baroda. The investigator herself acted as the teacher in both the experiments. The teaching of the selected unit’s a/c to the teaching patterns chosen for the experiment formed for treatment. Uniformly structured lesson plans were developed for each lesson to facilitate the teacher to follow strictly the teaching patterns. Data were analyzed using analysis of variance on the first experiment and the analysis...
covariance in the second experiment. Conclusions were: The teaching patterns (P1, P2, P3, and P4) were having equal effects on the development of implicational ability when measured under surprise testing condition. The 4 teaching patterns (P1, P2, P3, and P4) were having equal effects on the development of applicational ability when measured under planned testing condition.

In the First experiment which involved the Graeco-Latin Square Design, it was found that the four teaching patterns had different effects on the retention of applicational ability. On further analysis, it was found that mean for P3 was significantly smaller than means of P1, P2 & P4. There was no evidence of significance variability in the patterns P1, P2 & P4. Principles in Teaching Mathematics at the Secondary Level”.

Journal of center for pedagogical studies in mathematics, seventh issue, 20 - 33. The study attempts to examine the effectiveness “seeing is believing” principle in teaching mathematics at the secondary level via pilot study mode. To test the efficiency of teaching mathematics through “Seeing is believing principle.” The sample consisted of 289 students of class VI, VII & VIII of two educational schools including one rural and one urban area. Two groups were formed, one was taught by conventional method and the other taught using principles of experimentation by the same teacher. After teaching, unit test was conducted for the students of both groups. The collected data were treated with mean and S. The efficiency of teaching mathematics through experimentation was better than ordinary or conventional method of teaching.
Aggarwal, R.N. & Sharma, D.K., (1975), A study “An Experimental Study of the Relative Effectiveness of Expository, Programmed Learning and Guided Discovery Methods in Modern Mathematics” was conducted. Objectives of the study were: (a) study the relative effectiveness of Expository, Programmed Learning and Guided Discovery methods in modern mathematics. (b) To study the interaction effects between methods of teaching and intelligence. (c) To prepare programmed learning materials in modern mathematics. (d) To design suitable strategy for guided discovery method in modern mathematics. Method: 3x3 Factorial design was prepared and the experiment was conducted on a random sample of 90 students of grade VIII. The sample was divided into three groups on the basis of intelligence.

Major Findings: Superiority of Guided Discovery method over Programmed Learning and Superiority of Programmed Learning over Expository method was observed for teaching of multibase number system to VIII grade students. No interaction effect of the methods with intelligence levels was observed.

Khan, found supervised study method was better than the lecture demonstration method. Desai, found that in general science pupil learnt better through new methods of teaching. Khushdil, found that in respect of assimilation and acquisition of knowledge, integrated approach to teaching of social studies was superior to traditional methods of teaching the subject. Rai, found demonstration method superior to lecture method and lecture-Cum-discussion superior to lecture method in teaching science
class VII. **Thiagrajan**, reported that demonstration, conducting practical and the use of audio-visual aids helped students to learn Science subjects better than sample classroom teaching. Thus, he found that problem development method yields better results than demonstration method when used in teaching General Science.

Direct method and bilingual method were compared by **Murthy** in teaching English and by **Nagaranjan** in teaching English to Hindi speaking people. In both the studies bilingual method came out superior. **Patel** found activity based method superior to traditional one. **D'Souza** compared systematic and regional methods in teaching Geography, Regional method was found superior. **Sharma** studied effect of self-paced vs traditional teaching in general Physics. He found self-paced method better than the traditional one. A comparative study of discovery and lecture method in teaching Science was taken by **Goyal and Bhardwaj**. They did not find any significant difference between the two methods.

An experimental study of the effectiveness of audio-lingual and cognitive code methods in the teaching of Hindi sentence patterns to non-Hindi-speaking students were taken by **Suresh**. She found that cognitive code method was more effective than the audio-lingual method.

2.3 COMMENTS ON THE REVIEW OF RELATED STUDIES:

In the preceding pages, related studies have been surveyed and analyzed pertaining to the exploration of the relative effectiveness of different methods of teaching. Now an attempt is made in th...
following paragraphs to summarize the review of all these studies. Review of related researches and their results considered earlier do not enable us to draw conclusions regarding the effectiveness of computer assisted instruction followed by different methods such as discussion method, demonstration method and activity method.