CHAPTER II
It is evident that neither the computer itself, nor even a particular kind of software, are likely to affect learning in any profound way. Research clearly shows that while software and activities that realise computer's unique attributes are a necessary condition, much still depends on the particular way, computers are to be used. For example, student's ability to write does not improve while learning to use word processing, unless it is accompanied by a whole writing curriculum. So computers should be fully integrated into a curriculum means that these two components affect each other reciprocally. Some of the efforts made in these directions are discussed below:

2.1 COMPUTER AIDED INSTRUCTION AND ACADEMIC ACHIEVEMENT

Jamison et al (1974) suggested that even when there were no differences in achievements, CAI did produce some saving of time. They also found that CAI yielded the most improvement when used in small amounts with slower students.

Two computer Based Simulations were developed and tested by Edwards (1975) to teach problem solving in legal education. He applied and documented an Instructional design system model, incorporating techniques of simulation design and of CAI design. Students who completed both simulation felt that
computer simulation method was superior to the case method. Majority of students agreed that computer gave them the feeling of having a private tutor. Further, attitude towards the content of the simulation was far more favorable after simulation experience than before.

Jackson (1976) found that the effectiveness of CAI and programmed instructions are equal.

Edgar (1980) concluded that the studies generally scored higher on a mathematics and reading post test when instructions were supported by computer instructional management system.

Montiel (1980) found that the students achieve better in terms of subject-matter content mastery when taught with psychological strategies using a personalized system of instruction mastery based model.

Aeillo (1981) revealed that individualised instruction in science is somewhat more effective than traditional instructions.

Tarrant (1982) concluded that high motivation and interest in computers may make it easier to take advantage of drill and practice programs for the disadvantaged learners. Computers may be of good use as an aide or an alternative for individualised program for students.

Lovelace (1982) established that there appears to be no evidence to support either the programmed text or the computer assisted instructions treatment as being superior method of instructions.
Levy (1982) found that the traditional reading method was more effective than perspective method and computer assisted method.

Shaw (1982) revealed that whole class mode was better than individualised mode.

Austin (1983) found that a computer assisted instruction lesson was effective for teaching a geometry concept attainment exercise.

Bradley (1983) concluded that computer assisted instruction has been effective in mathematics, science and social studies. This showed improvement in achievement for both, male and female, using computer assisted instructions to study American history.

Dursky (1983) found that CAI is atleast as effective as programmed text for teaching Latin and Greek derivatives.

Elg Thomas (1983) found that the computer simulation experience in study seems to have provided a cognitive routine which the students could apply to the learning of problem solving.

Heilman (1983) revealed that computer simulation practice helped students reinforce rule-using behaviors as well as increase verbal learning.

Vezquiz (1983) showed that computer assisted instructions was effective in chemistry, science achievement at secondary school level.

Merrell (1984) concluded that students receiving traditional instructions supplemented with 15 minutes of
computer assisted instruction significantly improved academic gain in the subject of math but not in reading. CAI is recommended for use in math at all three grade level, i.e., 3rd, 4th and 5th grade.

Durnin (1985) suggested that the use of computer based learning material should be restricted to individuals alone. Many benefits appear to accrue by having pairs of groups of three working together.

Madison (1985) recommended for applications of the findings emphasized increased use of micro computers in accounting institutions. Recommendations were also made for further study in the area of computerized instruction.

Hawley (1985) indicated that adjunct Micro-computer assisted instructions significantly improved the mathematics concepts, maths problem-solving, total math and computer literacy of grade 3 and 5 students.

Stefen (1985) found that CAI is more effective over traditional instruction in improving bowling skills at the college level.

Ayoubi (1985) did study to find effects of microcomputer assisted instruction on achievement in high school chemistry. He found that students spending half their classroom instruction time studying chemistry from microcomputer programs reached the same level of achievement as students receiving instruction only from classroom teacher. There were some variations for students of different abilities. Medium ability students achieved significantly higher when they
spent more time on computer. The significant differences between high and low ability students were erased if the low ability students spent more time on computer than the high ability students. Students preferred to work in pairs on the computer programs were helpful as instructional tools.

Bennet (1985) found that students who received CAI would achieve significantly higher physics test scores and would develop significantly more positive attitude towards physics.

Tisone (1985) study resulted in non-significant main effect for determining an overall superior method of instruction for increasing the creative abilities of 7th grade students at Dublin Middle School, in Dublin Ohio.

Thomas (1985) found that computers have positive effect in learning accounting skills.

Davidson (1985) indicated that CAI did not result in significant gains in mathematics achievement of chap I students.

Girdhari Lal (1986) found that learning packages was most effective mode of instructions out of three modes i.e. Learning packages as a mode of instructions, Lecture method and instructions through branching program.

Melnik (1986) compared the problem solving performance of students participating in two methods of instructions (1) one hr./week of teacher directed problem-solving work sheet practice and (2) one hr./week of independent student use of microcomputer problem solving software. Results showed that both the teacher directed and computer software groups gains significantly in problem - solving ability.
Hakes (1986) compared two methods of instructions that is individualized instruction by the teacher and individualized instructions by computer utilizing the system known as Programmed Logic for Automatic Teaching Operations (PLATO). He found no evidence to suggest one instructional program is superior to the other.

Fox (1986) concluded that a computer based individualized instructional delivery system for educating students in a general education science course was not as effective as a lecture based instructional delivery system.

Hayden (1988) found that eighty eight percent of the students reported that they understood how to do the assignment, when the networking system was used, as compared to 58% when it was not. Seventy five percent of the handicapped students understood how to do the assignment when the system was used as compared to 25% when it was not.

Vanlengen (1988) did study to examine the possible relationship between computer programming instruction and increased general problem solving ability. No significant difference in general problem solving ability was obtained.

Tilidetzke (1989) found that software package was as effective as classroom instruction on the three topics used in the study.

Yarbrough (1988) revealed that the CAI tutorial did significantly increase students scores of economic understanding. Students did show a positively significant attitude towards the CAI tutorial as a method.
Cosmos, George John (1988) found that improvement in the arithmetic achievement in the traditional group instruction group was statistically significant but was not significant in the computer based individualized instruction group. It was also found that there was a significant treatment effect due to gender with males scoring higher than females in both groups.

In the same year Lowery, Barbara (1988) did a study to compare achievement of students when using two teaching strategies, CAI and traditional method. The study revealed that there was no interaction between cognitive styles and teaching strategies. No significant difference in performance on the mastery examination was identified between CAI and traditional method students. This study identified that CAI promoted mastery of course content regardless of student's cognitive styles saved time for students and was a cost effective method of teaching and faculty.

Lee-Wel-Tsun (1989) found that there were significant differences among the subject's four test scores (taken after 10 days delay between each test) with respect to immediate feedback to CAI group, delayed feedback to P1 text group and no instruction or feedback to the no treatment control group in learning to solve the analogy items.

Wetherbe (1989) revealed that CAI integrated with spreadsheets was more effective than printed packet using calculators.
The purpose of Reeve's (1989) study was to determine the effect of teacher assisted computer instruction versus traditional teaching techniques for pre school children. The results indicated that CAI significantly improved scores on the four (4) subset measures at the .001 level.

Drexel (1989) indicated that students can learn selected English grammar principles as effectively on the computer with an individualized packages as students can learn these same grammar principles in the traditional classroom setting.

Wang (1989) compared the effectiveness of the two types of CAI and discussion method for teaching logic to 72, 5th graders. The major findings of this study were:

(i) Any one of the three types of logic classes taught in this project was effective in improving children's logical ability.

(ii) The low and average logical ability students improved their logical thinking during the logical classes, while the high logical ability students did not.

(iii) There was no difference of the effectiveness among the three logic classes.

Canady (1990) compared three instructional approaches CAI, Co-operative learning and Teacher directed instructions. It was found that no significant differences existed between the three groups on improving student performance on math concepts, maths problems, math computation and math total.
Webster's (1990) findings indicated that CAI as a supplement to teacher directed classroom instruction is as effective as traditional teacher directed instruction in producing student mathematics achievement. It further indicated that CAI results in more positive student attitude towards mathematics and computers and in positive teacher attitudes towards computers and the concept of CAI.

Dungan (1990) found that students who received traditional instructions and CAI achieved at significantly higher level on reading than those students who received only traditional instructions.

Nwaizu (1990) indicated that in terms of achievement gains, CAI intervention was slightly more effective than TAI intervention over their baseline means, both interventions were equally effective in terms of relative number of problems completed by each student.

Mahajan (1993) indicated that the CAI for teaching singulars and plurals was found to be effective in terms of achievement of students belonging to experimental group at the 0.05 level. In another experiment he (1993) indicated Computer Assisted Linear Programming on Geometry was found to be effective in terms of achievement of students belonging to experimental group than that of control group at 0.05 level.
2.2 STUDY HABITS AND ACADEMIC ACHIEVEMENT

Academic achievement of an individual is influenced by so many factors such as intelligence, need achievement, personality factors and environmental factors. Although the relationship between achievement and intelligence is considerable high, yet it is by no means perfect. Besides intelligence, there are certain other factors which may account for the scholastic attainment of a child. One of these factors is study habits. This view is supported by following studies.

Weinlend (1930) and White (1932) reported that successful students had better study habits.

Duncan and Duncan (1937) found that poor study habits resulted in poor scholastic achievement.

Heaton and Weadon (1937) reported that students improve their achievement by improving their study habits.

Alexander and Woodruff (1940) found no definite relationship between study habits and scholastic success.

St. Esther (1945), analysed the study habit of a Catholic High School students and reported statistically significant difference between the study habits of the most successful and least successful students.

Michael and Reeder (1952) found that scores in the study habit inventory which they had constructed for college students correlated significantly with the weighted grade average.
Carter (1953) found significant correlation between study habits and academic achievement varying from .46 to .51.

Diener (1960) observed that over-achievers and under-achievers differed significantly in respect to their study habits.

Rao (1963) found that under-achievement may result from inefficient methods of study, deficiencies with regard to facility and quantum of reading, note taking and comprehending may seriously interfere with a student's preparation and thereby his achievement, more efficient methods of study yield better results with less work.

Surdershan (1964) reports that individual students have certain study habits which enable them to excel others of equal intelligence.

Rao (1965) found that study habits among other factors is related to scholastic achievement. He found that intelligence, study habits and school attitude were significantly related to the prediction of scholastic achievement. The multiple correlation coefficient between achievement scores and scores of intelligence, study habits and attitude towards school was 0.81 which was quite high.

Jain (1967) attempted to observe the study habits and academic achievement of college students. The scores on study habits inventory correlated significantly and positively with attainment.
Jain and Robinson (1969) revealed that good achievers have always good study habits. Working habits was found to be most important.

Entwhistle and Entwhistle (1970) in their study with the help of correlational technique found that better study methods have positive but low correlation with better attainment.

Cazelle (1971) found that study habits scale appeared to be one of the useful instruments in differentiating between academically successful and unsuccessful students.

Januar (1973) in his latest studies investigated study habits in relation to their intelligence and academic achievement, personality and background. He found statistically significant correlation between study habits and achievement.

Walia's (1975) findings revealed insignificant differences between study habits of high and low achievers, similarly no difference between the study habits of male and female students of XI grade was found.

Tuli (1980) found that study habits is one of the correlates of achievement in mathematics.

H. Singh (1984) has found that study habits were related to the academic achievement significantly. High achieving students had significantly better study habits then middle achievers. Middle achievers had significantly better study habits then low achievers.

Patel (1986) has reported that the better and greater the number of good study habits, the higher was the achievement.
Blumner (1988) concluded that study habits are predictive of college grades even when effects of academic aptitude are controlled.

Oriola (1988) reported a positive and significant correlation between the study habits and academic achievement of both over and under achieving students of both arts and science subjects.

### 2.3 CLASSROOM ENVIRONMENT AND ACADEMIC ACHIEVEMENT

Lovitz, A.(1974) found a number of statistically significant relationship between stress and particular dimensions of classroom environment (Involvement, Affiliation and Order and Organisation) but no statistically significant relationship was found between perception of classroom environment and academic performance.

Morris, (1974) did a study to analyze the effects of the classroom's environment on student's achievement and their perception of the learning environment. None of the variables were found to have predictive value.

Research was designed by Davidson (1975) to investigate the relationship among the classroom environment variables of structure and support and the personal variables of adjustment in terms of satisfaction, social choice and relative achievement for sixth grade students. Highly supportive classrooms were found to be associated with high levels of
student's satisfaction and achievement. A high degree of classroom structure contributed to high student satisfaction.

David John (1976) investigated the effects of two contrasting teacher behavioral pattern on science achievement, problem solving ability, confidence and classroom behavior for students in sixth grade science. The teaching patterns were identified as Student Structured Learning in Science (SSLS) which minimizes restrictions on students, and Teacher Structured Learning in Science (TSLS) which is moderately restrictive.

The results of analysis of variance indicated significantly higher confidence levels for SSLS classes and significantly higher levels of motivation in SSLS classes.

Seitchik (1980) did a study to examine how student perceptions of their involvement were linked to their perceptions of teacher's supportive and challenging behaviors. An approach that was only supportive in tenor, as well as, an approach that was designed to be more challenging, were capable of producing equally high levels of perceived involvement and teacher support.

The basic purpose of the study done by Hitcherson (1981) was to examine the relationship between teacher's level of job satisfaction, to determine if student satisfaction differed in classrooms taught by teachers who differed in levels of job satisfaction. The findings of this study do not support a common assumption about school climate, that a high level of teacher satisfaction will lead to improved levels of student satisfaction.
The results of the study done by Brown (1981) showed that the main empirical hypothesis of the study i.e. that the classroom environment scale profiles for the poorly behaved and the well behaved students would differ, was supported. It further showed that the poorly behaved had lower scores on the dimensions of Involvement, Affiliation, Teacher support, Order and Organisation, Rule Clarity and Innovation. There were no differences on the dimensions of Task Orientation, Competition and Teacher Control.

The findings suggest that students filling different information and formal roles in Junior-Senior high school classrooms perceive their classrooms differently. Thus, their subsequent behaviors based on their differing perception of their classroom environments are likely to differ. In so far as this is the case, measurements may prove useful in understanding and predicting behaviors within classrooms and other social environments.

Turpin (1981) assessed the classroom climates of an ongoing instructional program, explored the relationship of climate to achievement and investigated the possibility of interactive effects of general ability, anxiety and climate on achievement.

It showed (1) positive effect classes (those which, with the effects of student aptitudes partialed out, had a positive effect on achievement) tended to be higher on support, (2) non verbal ability seemed to have been less important in classes high on
support. (3) positive effect classes were distinguished by increasing frequency of 'personalizing' behavior.

Watson (1982) found no significant relationship between teacher self-concept and classroom environment existed.

The purpose of study done by Holly, J.C. Thomas (1982) was to compare two methods of instruction and their effects on student perception of classroom climate and academic achievement. The following conclusions were based on the analysis of data:

(i) Significant differences exist between the two groups in perception of classroom climate and mean achievement scores.

(ii) Students taught outdoors projected a more positive attitude of their classroom climate than indoor instructed students.

Adams (1982) suggested that student perceptions of the ideal classroom environment can have important consequences for planning and implementation of gifted education. Greater awareness of student perceptions and opinions could provide educator and policy makers with an enlightened perspective regarding an effective match between the student and the learning environment.

Costello (1984) determined the degree of relationship between ability grouping upon student's perception of their classroom social climate and the relationship of the climate upon the student academic achievement. The results of this study support the belief that there is a relationship between student's perception of the classroom social climate and academic
achievement in ability grouped mathematics and English Classes.

Kumar, V. (1984) found that there was positive and significant correlations between nine dimensions of classroom social climate and 14 dimensions of academic motivation.

Upadyaya (1984) analysed the classroom Environment in tribal setting with a view to study its effect on learning and attainment. Some of the major findings were:

- Each of three aspects of classroom environment - interpersonal relationship, goal orientation and system maintenance and change, was significantly correlated to academic achievement.
- Of the three dimensions comprising interpersonal relationship, while involvement and affiliation were positively correlated with achievement, teachers support was not.
- Task orientation and competition, the two dimensions of the aspect-goal orientation, were highly correlated with academic achievement.
- Order and organization, a dimension of system maintenance, which implied polite and orderly student behavior in the classroom as well as out of class activities were not related to academic achievement.
- The only dimension negatively correlated with academic achievement was rule clarity, a dimension of system maintenance.
- Teacher control signifying the strictness of the teacher in implementing and enforcing rules and magnitude of
punishment on violation of rules was positively correlated with academic achievement.

- Change in the school system was negatively correlated with academic achievement.
- Classroom environment is a significant determinant of pupil's learning.

Brooker (1989) suggested that the most effective structure for teaching and learning of basic skills involves an optimal combination of organised individual activity with regular teacher-pupil interaction.