

CHAPTER II

REVIEW OF RELATED LITERATURE

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CHAPTER II

REVIEW OF RELATED LITERATURE

2.0 INTRODUCTION

In the present chapter, an attempt has been made to review the related studies done in the area of Computer Education. It helped the investigator to develop a thorough insight into the research works already done. It provided an overview of the historical perspective of the research done in the area of Computer Education. It made the investigator familiar with existed research works, their objectives, population, sample tools, statistical techniques used and findings of these studies with a broad frame work in the mind which helped him in making certain decisions in the process of his research. It helped the investigator to justify the need and importance of the present study. It focused on research trends, and threw light on the methodology employed and present problems remain unsolved in the previous researches. Finally the review of related literature provided the direction for the present study.

In this chapter, review of related literature is presented in two sections. In the first section, the review of related researches conducted in India and in the second section the review of related researches conducted abroad are presented. Research conducted between 1983 and 2004 are presented in this chapter. In both the sections, research studies have been presented with their objectives, methodology and major findings.

2.1. REVIEWS OF RESEARCHES CONDUCTED IN INDIA

An attempt has been made here to review the related researches conducted in India and these are presented as follow.

Sailja (1986) conducted a study entitled “ A Status Assessment of Computer Literacy and Studies in School (CLASS) Project in Baroda” with following major objectives.

- To study the organisation of the CLASS project with reference to the resource centres and participating schools in Baroda.
- To study the functioning of the resource centres and the schools in Baroda.

- To assess the effectiveness of the CLASS programme on the basis of the perception of resource centre personnel , principals, teachers and students involved in the CLASS Project.

Data regarding the organizational and functional aspect of CLASS project were collected from two units of resource centers and six schools of Baroda. Fifty to sixty students were engaged in each school for CLASS project. Twenty five to thirty students were selected as the sample of the research on the basis of an aptitude test.

Data were gathered with the help of interview, observation, questionnaire and information schedule. Data were analysed qualitatively. Major findings of the study were as follow.

- Computer awareness programme would take some more years for the fulfillment of its objectives.
- Teachers and students were engaged. But teachers were not having positive attitude towards the project as they felt, that it was an extra load to their work.
- Principals felt alien to computers and were not much involved with the project activities as they were not provided with proper information about the project.
- Neither students nor teachers were able to see computer classes as an integral part of the general curriculum.
- Regarding the extent of achieving the objectives of the CLASS project, the achievement was found to be minimum.

Bhattacharya (1989) conducted an investigation entitled, "A Critical Review of Work Done on the Use of Computer as an Instructional Tool for Teaching Chemistry" with the objective "to develop tools for evaluating the effectiveness of available software in chemistry, along with suggestions with regard to the development of software in other areas of chemistry which are likely to be included in the curriculum".

An extensive study was conducted by the investigator on the use of computer as an instructional material for chemistry. The findings of the study were as follow.

- The available software in chemistry were of good qualities. The background was implied in most of the chemistry software.

- It was not always possible to maintain the sequence of content, specially in games.
- In most of the available software lecture cum-demonstration method was adopted with a duration of 20-40 minutes.
- Most of the software contained knowledge and discovery levels of teaching but those lacked in reflective level of teaching.
- Computer assisted instruction could be applied most effectively to an individual or small groups.
- The majority of the software could be used for concept development in Chemistry.
- Proper feedback system was found in most of the Software.
- Majority of software was found satisfactory in terms of their technical qualities.

Indian Space Research Organisation (ISRO) (1990) conducted a comprehensive study on, "The Evaluation of the CLASS Project". As the title shows the main objective of this study was to evaluate the CLASS project.

Under this study, ISRO covered the CLASS project schools spread all over India. The study found some of the deficiencies of the CLASS project. Findings of the study were as follow.

- None of the fifty one schools could provide thirty hours of theory and sixty hours of practical to the computer students.
- There were only two computer terminals per school for practical thereby limiting the operational time for each students.
- On an average only thirty eight students were selected for computer class in each school, and a batch of twenty students could use two computer terminals once in a month or maximum twice in a month.
- Students who had not been selected for Computer Education seemed to be very much interested in learning computer. Most of them were unhappy about being left out.
- Computer evoked considerable interest among the students during the initial period. But this enthusiasm gradually faded with the passage of time. It was due to insufficient time available for practices.

- The software package provided for CLASS project were found to be interesting.
- The goal of computer demystification was not achieved.
- Since there were no incentives for teachers in any form, the principals were unable to 'press the computer teachers to devote time for the computer class.
- The interpersonal relationship among the principals, computer teachers and other teachers also affected the management of CLASS project. Hence, Keeping the educational policy of the country in the view, efforts are required to provide equal opportunity for computer learning of their teachers.
- After the introduction of computer in schools through CLASS project many schools were motivated to start Computer Education in their respective schools.

Jeyamani (1991) conducted a study on "Effectiveness of the Simulation Model of Teaching Through Computer Assisted Instruction (CAI) ". Following were the major objectives of the study.

- To find out the effectiveness of the simulation model of teaching as compared to the traditional method of teaching.
- To utilize the growing use of computers in education.

The sample for this investigation consisted of students of standard XI of the two schools. The pre-test post-test control group design was used. Mean, SD, and 't' test were used to analyse the data. The findings of the study were as follow.

- The experimental group obtained a higher mean than the control group.
- The sex-wise comparison proved to be insignificant.
- There was no significant difference in learning level between Tamil medium and English medium students.
- The experimental group obtained a higher mean than the control group so the experimental group performed significantly better than the control group.

Singh, Ahluwalia and Verma (1991) undertook a study entitled, "Effectiveness of Computer Assisted Instruction (CAI) and Conventional Method of Instruction on Teaching of Mathematics" with following major objectives:

- To study the difference in Mathematics achievement which occurs as a result of the difference in instructional strategy among boys and girls separately and as a group.
- To study the direction of the change in attitudes of male and female students separately and as a group towards Mathematics as a result of the two different instructional strategies.

The sample of the study consisted of 220 students from four selected higher secondary schools, covering the good, average and poor schools of the Bhilai steel plant, Bhilai (M.P.) The findings of the study were as follow.

- Students who used computers scored significantly higher than those taught Mathematics through the conventional method,
- Students who used computers showed significantly highly favourable attitude towards Mathematics than those who did not use computers and
- achievement in Mathematics and change in attitude towards mathematics were found to be independent of the sex factor.

Malik (1992) undertook an investigation entitled "Managing Computerization: A Study of an Educational Institution" with a major objective "to study the nature and impact of technological change in four areas, Viz. Organizational structure, work process, motivation and morale of users, measured through degree of satisfaction and productivity of users."

For the study sample of forty four respondents were drawn from an educational institution working with computers for administration research data, word processing and other purposes. A questionnaire based on a five point scale was used as tool. Frequency and 2 X 2 contingency table were used to analyse the collected data. The major findings of the study were as follow.

- Younger people i.e. less than 35 years of age showed less resistance to change. Most of them were highly educated and planned technological change was introduced for them.
- Motivation and morale of users were found to be more or less average.
- Technological change resulted in increased productivity of users.

- There was relationship between the users category and their views on work process. Administrative persons were found with above average view on work process.
- There was no relationship between the users' category and user' views on motivation and morale.
- There was relationship between the users' category and users' views on productivity.

Rose (1992) undertook a study on "Effectiveness of Computer Assisted Instruction With Special Reference to Under Achievers". The main objectives of the study were as follow.

- To develop CAI software,
- To find out the effectiveness of CAI with TSS and CAI without TSS with reference to the learner variables and the treatment on the achievement score.

The randomised block design was followed in the selection of the sample with IQ as the blocking variable. The sample consisted of three groups of size each composed of students of standard ix selected from three Tamilnadu State Board schools covering one rural and two urban schools. The under achievers in the sample were identified by using the regression analysis. The tools used included CAI software on "the language of sets", achievement test, culture fair intelligence test by Cattell and Cattell, study habits inventory by Patel and Mathematics study attitude scale by Sundarajan. Mean, SD, 't' test, chi-square, one- way and two-way ANOVA were used to analyse the collected data. Findings of the study were as follow.

- Both the CAI strategies were found to be superior to the traditional method of instruction and CAI with TSS was found more effective than CAI without TSS for under achievers.
- Except achievement level, all the other learner variables combined with the treatment had no interaction effect on the achievement score.
- There was no relationship between the post treatment scores and the variables 'sex', 'locate and 'achievement level' of the experimental group. In the case of the variables IQ study habits and mathematics study attitude , the positive relationship between these variables and achievement at the pre-treatment

level was found to be cancelled at the post –test. Similar results were obtained for under achievers.

Saruparia (1992) undertook an investigation on “ Professional Awareness and Problems of Computer Education at +2 Level”. It was a survey type of study and the major findings of the study were as follow.

- Very few time was available for the preparation of software material related with the content.
- Sufficient books on computer were not available in libraries.
- Students could not get the sufficient information about the profession of Computer Education.
- Ninety percent students did not know how to enter into this profession. Moreover, they did not know the qualification required to get the job in the field and where to apply or contact for the same.
- Eighty percent students wanted to earn from this field.

Patadia (1993) undertook an independent investigation on “A Critical Study of Computer Education Imparted by the Schools of Baroda City”. The investigation was carried out with the following objectives.

- Listing the objectives of teaching Computer Education as decided by the schools in Baroda city.
- To evaluate the Computer Education syllabus with reference to age and abilities of the students.
- To judge the appropriateness of the content of Computer Education in the light of objectives of teaching.
- Fourteen schools in Baroda City were taken as sample for the study. The major findings of the study were as follow.
- Most of the schools had sufficient number of computers but time allotted for the Computer Education was not sufficient.
- Content implemented at elementary level was suitable to the age group of the children but the syllabus was not revised for the higher classes.

Sahasrabudhe, (1994) undertook an investigation entitled, “ A Study of Computer Education in the Secondary School of Baroda City” with following objectives.

- To study existing status of Computer Education in secondary schools.
- To find out organizational problems of Computer Education in secondary schools.
- To identify the perception of teachers and students on integrating computers with classroom teaching.

Twenty schools from Baroda city were selected as sample for the study. Data were collected from principals, all computer teachers and 114 students of those selected schools. Information schedule and questionnaire were used for the collection of required data. Major findings of the study were as follow.

- Most of the principals showed a positive attitude towards Computer Education at secondary level.
- Many of the principals were eager to make Computer Education Compulsory at primary and secondary level of education.
- Most of the schools kept the periods of the Computer Education in their daily school time tables.
- In most of the schools Computer Education was privately managed and there were no problems regarding the management of Computer Education in these schools, whereas, schools with CLASS project were facing difficulties regarding management.

Baruah (1997) undertook an investigation entitled “ The Problems of Teaching Computer Applications : A Case Study”. The major findings of the study were as follow.

- Computer related books and journals were limited
- The lack of practical knowledge was felt for which students were filling bored.
- The facilities of sending students for on the job training were not available.
- The problems of maintaining computer systems was also found. Most of the maintenance agencies refused to take annual contract for the older machines.
- Consultancy of higher professionals to run the system was almost out of reach.

- Trainers and permanent teachers were not available to teach some units. This subject was not found as much popular because of this reason.
- In spite of various problems there were good prospects for the computer entrepreneurs.

Mahajan, Singh and Rajiv (1997) undertook an investigation in Ambarnath area of Thana district, Maharashtra entitled, "Importance of Computer Education at Secondary School Level" with following objectives.

- To find out the use and the importance of the study of computers at secondary school level.
- To find out the necessity or need to study computers for all students at secondary school level.
- To find out the interest of boys and girls in learning computers.
- To find out the students in depth knowledge of computers.
- To find out the extent of use of computers in the schools by students.
- To find out the availability of adequate text books in the school library and in the market on computers.
- To find out the encouragement given by parents and teachers to students to learn about computers.

Thirty students of standard ix were selected from English medium schools of the Thana district, Ambarnath area of Thana district of Maharashtra. The data were collected through questionnaire. The major findings of the study were as follow.

- 77 percent to 100 percent students favour the necessity or need to study computers at secondary school level.
- Boys have greater interest to learn about computers by 7 percent as compared to girls.
- 67 percent to 100 percent students possess in depth knowledge of computers.
- 70 percent students use the computers in schools.
- 63 percent to 100 percent students stated that computer textbook available in the library of the schools and market are adequate.
- 93 percent to 100 percent students are encouraged by their parents and teachers to learn about computers.

- There is no difference in the encouragement given to girls, as compared to boys.

Ansari (1998) undertook an investigation entitled " A Study of the Computer Education Imparted in the Secondary Schools of Navsari Block". The major objectives of the study were as follow.

- To study the opinions of the students about the teaching learning process, physical facilities, curriculum, time, evaluation and economic aspects, with reference to the Computer Education imparted in the secondary schools of Navsari block.
- To study opinions and suggestions of the principals with reference to the Computer Education imparted in the secondary schools of Navsari block.
- To study the opinions and suggestions of the computer teachers with reference to the Computer Education imparted in the schools.
- To conduct the comparative study of the rural and urban students' opinion with reference to the Computer Education imparted in the secondary schools of Navsari block.

Seven Gujarati medium schools imparted Computer Education were covered under the study. The survey was conducted on total 563 students studying in these schools with Computer Education. data were also collected from seven principals and fourteen computer teachers of these schools. Opinionnaire and interview schedule were used for the purpose of data collection. The major findings of the study were as follow.

- Students understand the Computer Education easily.
- Sufficient number of computers were available in the classroom.
- Proper importance was not given to the practical examination.
- Students were satisfied with the Computer Education imparted against the fees charged to them.
- In general, similar situation was prevailing in the rural and urban area of the Navsari block, regarding Computer Education.
- Half of the computer teachers were satisfied with the present situation of Computer Education.

- Principals were found dissatisfied with the present situation of Computer Education because of limited time, high fees, limited computers etc.

Matai (1998) undertook an investigation entitled "Difficulties in Computer Literacy Felt by Students of Secondary Schools of Surat City : A Survey ". The objectives of the study were as follow.

- To identify the difficulties pertaining to teachers, literature, practical work, language and others with reference to the Computer Education.
- To collect the information about social encouragement received by the students for Computer Education.
- To collect the information about the importance given to the Computer Education by schools.
- To compare the difficulties felt by male and female students of the secondary schools in Computer Education.

Seven schools of the surat city providing Computer Education since last two years were included in the sample purposively. 300 students (150 male and 150 female) were selected as the sample of the study. An opinionnaire was used to collect the data. The major findings of the study were as follow.

- Computer teachers were not able to teach this subject effectively.
- Computer teachers were not prepared to give extra time for the teaching of this subject.
- More than two students were allotted to each computer for practical work.
- Students were facing difficulties in learning this subject because of the dominance of English Language.
- Fees charged in the schools were high.
- The difficulties regarding the teaching and practical work were found intensive among the students.
- Very few difficulties were found about the social encouragement.
- Proper importance was not given to the Computer Education.
- Male and female students were facing almost same difficulties.

Vashi (1998) undertook an investigation on "The Study of Difficulties in Computer Education in the Primary Schools in Surat City" with following objectives.

- To identify the problems in achieving objectives of the Computer Education.
- To study the problems in Computer Education with reference to curriculum, evaluation, physical facilities and teaching learning process.
- To make necessary suggestions to remove the problems of Computer Education.

To collect the required data a questionnaire was used. The data were collected from 300 students selected randomly studying in the private primary schools of Surat city. The major findings of the study were as follow.

- The methods of teaching computer were ever changing because the computer teachers were changing continuously.
- Study through sitting on computer was not possible for the students.
- Individual attention to the students was not given during the classroom teaching.
- Very few computers were available against the number of students.
- The time allotted for the Computer Education was not sufficient.
- Computer Education was not imparted according to the interest, taste and age of the students.
- Students were using computers with confidence because of the fear of damaging computers.

Khirwadkar (1998), Conducted a study entitled “Development of Computer Software for Learning Chemistry at Standard XI”. Objectives of the study were as follow.

- To develop CAL package in subject of chemistry for standard – XI science students, studying GSEB syllabus.
- To study effectiveness of the software package in terms of instructional time and achievement of students.
- To study effectiveness of the software package on students’ achievement in relation to students’ – intelligence level, motivation level and attitude towards the package.
- To study attitude of the students and teachers regarding effectiveness of CAL.
- Researcher had taken the sample of students through randomization method for both control and experimental groups. The students of experimental group

- To find out the utilization of computer infrastructure and personnel for non-instructional purposes.
- To find out the extent to which infrastructure and resource facilities are available in schools to teach computers in terms of number of computer teachers, number of computers, networking of computers, maintenance of computers and number of printers.
- To find out the time devoted to theory and practical of Computer Education per week per class in schools.
- To find out the content and methodology followed for Computer Education in schools.

The sample included 31 secondary schools of Baroda city affiliated to GSEB. Questionnaire, information schedule, semi structured and unstructured interview schedule were used as tools of data collection.

The major findings of the study were as follow.

- All the computer teachers have learned computers from private computer institutions.
- Only 9 percent computer teachers were trained in computer pedagogy.
- 35 percent schools had only two computers in each school and remaining schools had three to 20 computers.
- Syllabus of all the schools was not uniform.

Gupta (1999), conducted a study entitled, “ A Study of the Status of Computer Education in Higher Secondary Schools of Baroda City.” The main objectives of the study were as follow.

1. To study the status of Computer Education in higher secondary schools of Baroda city with reference to infrastructure facilities, teachers' qualification, areas of use, place of Computer Education in curriculum, sources of funds and managing body of computer departments.
2. To study the perception of teachers and students about computer education in higher secondary schools of Baroda city.

The sample consisted of all the higher secondary schools of Baroda city imparting Computer Education. Information schedule, teachers' perception questionnaire, students' perception questionnaire as tools were used.

The major findings of the study were as follow.

- In 85 percent schools student computer ration was 2:1.
- In most of the schools computer was taught as a subject only.
- Medium of instruction was English in majority of the schools.
- Computer subject was given different weightage in time table in different schools.
- All the schools had separate computer laboratory.
- All the schools had sufficient and adequate stationary and floppy disk except one.
- Computer were used for teaching, administration, for preparing study material, admission and evaluation purpose.
- Number of students with computer subject varied from 42 to 180.
- Sources of generation of funds in 81 percent schools were fees charged and assistance from trust.
- Evaluation of learning was done through test and ability to carry out functions. Although the number of tests varied from two to five in a year.

Gujarati (1999) undertook an investigation entitled " A Study of Difficulties in Teaching and Learning Computer Education in Schools of Gandevi Blocks". The major objectives of the study were as follow.

- To know the students attitude about the Computer Education.
- To collect the information about the curriculum of Computer Education.
- To identify the difficulties faced by the students with reference to timing, economic aspects and physical facilities of Computer Education.
- To collect the information about the examination pattern of the Computer Education.
- To know the appointment procedure of the computer teachers and their training.
- To collect the information about the difficulties faced by the computer teachers in teaching this subject.
- To know about the work load of teachers, available physical facilities and the co-operation given by the management to the computer teachers.

From eight schools imparting Computer Education, 200 students of standard IX 91 male and 100 female with computer subject) were randomly selected as the sample of the study. All the fifteen computer teachers of these schools were also included in the sample. To collect the required data opinionnaire and questionnaire were prepared for the students and computer teachers respectively. The major findings of the study were as follow.

- Students were interested in Computer Education.
- Students were of the opinion that more time should be allotted for Computer Education.
- Students were dissatisfied with the method of teaching adopted by the computer teachers.
- Computer Education was not affordable by the students as fees was very high.
- Very few computers were available in the schools for practicals.
- In general, students were found satisfied with the Computer Education.
- Computer teachers were appointed by the computer company.
- Computer teachers were not being sent for the training from the schools.
- Computer teachers could not teach the curriculum satisfactorily because of lack of time and infrastructure facilities.
- Proper co-operation was received from other subject teachers and the management.

Vaghela (2000) undertook an investigation entitled “A Study of the Computer Education in Shreyas Vidyalaya of Baroda City. The objectives of the study were as follow.

- To study the development of Computer Education in the school.
- To study the status of Computer Education in the school.
- To study content and methodology used for Computer Education in the school
- To study achievement of students in Computer Education in the school.
- To study perception of computer teachers, head of the computer department, students and parents, regarding Computer Education in the school.

The findings of the study were as follow.

- School had common computer laboratory with all required facilities except A.C. It was properly maintained.

- Student computer ratio was 2:1 and 3:1 in certain classes
- Qualified and experienced staff was there.
- Teachers were low paid i.e. from Rs. 1500/- to Rs. 2500/- and head of computer department was paid 3000/- although they were satisfied with the salary given to them.
- Win-95, Logo, games were in all the classes. In 9th Standard C++, and in 11th Standard M.S.Office was taught with Win-95, Logo and games. Students attendance and performance were the criteria for evaluation.
- Two tests of fifty marks were taken in a year and uniform achievement of students was observed over tests.
- Majority of the students were not satisfied with facilities available, curriculum of subject, time allotted for practicals, teaching methodology of teachers and with existing software packages.
- Teachers were found satisfied with existing circumstances of Computer Education in the school and two of them suggested to add the latest software packages in the curriculum.
- There was no similarity in the opinion of parents. On certain aspects they were satisfied and on the others they were found unhappy. They believe that private institutions were providing better quality Computer Education than schools.
- It was found that school faced difficulties related with finance, medium of instruction, to set time table for computer practical, etc.

Biswal & Das (2001) undertook a study entitled "Computer Education Curriculum for Schools : An Integrated Approach". The objectives of the study were as follow.

- To study the existing status of Computer Education in the schools of Vadodara City.
- To prepare suitable Computer Education curricula for schools according to the need of different classes.

Twenty schools with Computer Education facilities from Baroda City were taken purposively as sample and twenty experts from the field of Computer Education were taken to collect their suggestions about the proposed Computer Education

curriculum for the schools. Questionnaire and Interview schedule were used as tools of the research.

The major findings of the study were as follow.

- In all the schools there were well equipped computer laboratory, and they had common software like DOS, Wordstar, LOTUS 1-2-3, M.S-Office dBASE, Foxpro, Logo, print master and Banner.
- Most of the schools had computer teachers who were graduate and held a diploma in computer application.
- The syllabus of Computer Education differed from school to school.
- Fifty percent of the schools introduced Computer Education in class III. Forty percent schools introduced Computer Education in class II and ten percent schools introduced it in class VIII. According to 80 percent experts, Computer Education should be introduced in Class I.
- According to the most of the experts, there should be an integrated computer curriculum from class VI to XII. There should consist one Disk Operating System, one language and one Data Base Management package. In higher secondary classes there should be some professional packages.
- According to the experts, computer teachers for primary Classes (I-V) should be preferably lady teachers with minimum diploma in computer application along with primary teacher training and for secondary and higher secondary classes teachers should be trained graduates with a diploma/ degree in computer applications and/or some experience in the field of computer application.

Dalwadi (2001), conducted a study entitled “Development of Computer Assisted Instruction in Science for the Students of Standard. IX”. The objectives of the study were as follow.

- To develop Computer Assisted instruction (CAL) in science for standard IX.
- To study the effectiveness of CAL in terms of achievement of standard.
- To study the opinion of the science teachers and students regarding the effectiveness of the developed CAL.

Investigator had used purposive sampling method and Tejas Vidhyalay, Ellora Park had taken as sample. Investigator had selected the sample of students of standard

IX, for CAL on topic of "Light". For the purpose of the study tool have constructed and used pre-test, Post-test and oppnionnaire for teacher and students Development cum Experimental design. Major findings of the study were as follow.

- CAL was found effective individualized instructional technique for teaching Science to standard IX students.
- Students were found to have a positive opinion towards the developed CAL.
- Students' opinion towards the CAL was found to be favourable as far as the statements related to the interest, mode of presentation, content clarity, and the question asked in the CAL.
- A science teacher was found to have a positive opinion towards developed CAL.

Chauhan (2001) conducted a study entitled "A Study of Achievement of Computer Professional Students of Vadodara City in Computer Education and its Associated Variables." The major objectives of the study were as follow.

- To study the Computer Education achievements of computer professional students of Vadodara City in terms of theory, practical, total achievement and teachers' rating.
- To study the achievement of computer professional students of Vadodara City in Computer Education with respect to some of their personal variables like, age, academic stream and educational qualification.
- To study the achievement of computer professional students of Vadodara city in Computer Education with respect to some of their socio-economic variables like, Socio- Economic Status (SES) and media awareness.
- To study the achievement of computer professional students of Vadodara city in Computer Education with respect to some of their psychological variables like, Intelligence, Abstract reasoning, Numerical reasoning, Verbal reasoning, Space relations and Mechanical reasoning.

Population of the was all the private computer institutions students of the Vadodara city. 30 students of "Arrow System" was taken purposively in sample. Standardised as well as self made research tools were used for the study. **D.A.T.** (Different Attitude Test) standardised tests were used for testing mechanical, abstract, verbal reasoning, Numerical ability and space relations and Information

Schedule, Rating Scale, Socio Economic Status scale and Media Awareness Scale were the self made tools used for the study.

The major findings of the study were as follow.

- The performance of students was found satisfactory in theory, and practical.
- Positive and average correlation (ranging from 0.007 to 0.46) was found between achievement in Computer Education (theory, practical, teachers rating and total) and age of students.
- Positive and low correlation were found between media awareness and computer achievement in practical, total and teachers' rating.
- Positive and moderate correlation were found between computer achievement and intelligence.
- Positive, average and significant correlation were found between abstract reasoning and computer achievement.
- Very low non significant correlation was found between socio economic status and computer achievement.
- Positive and average correlation were found between different aspects of Computer Education achievement and Mechanical reasoning.
- Positive, non significant and low correlation was found between different aspects of Computer Education achievement and numerical reasoning.
- Negative, non-significant and low correlation were found between verbal reasoning & computer achievement and space relations & achievement of different aspects of Computer Education.

Shah (2002) conducted an investigation entitled “The Survey of Computer Education in Secondary Schools Affiliated to G.S.E.B. in Baroda City.” The objectives of the study were as follow.

- To find out the extent of infrastructure and resource facilities available in schools for Computer Education.
- To gather the information regarding the modes of evaluation of students in Computer Education at secondary level.
- To study the perception of computer teachers and students towards Computer Education.

The data were collected with the help of information schedule and questionnaire. The major findings of the study were as follow.

- More than half of the schools had enough infrastructure facilities.
- In 64.71 percent schools three tests were conducted in a year and in others only one test was conducted to evaluate the achievement of the students. The Weightage of theory was more than practical in evaluation.
- Majority of the teachers were satisfied with curriculum of the subject, time allotted in time table and availability of facilities in computer laboratory.
- Most of the students opined that practical hours should be more and desired to enjoy more facilities than existed. In rest of the things like teaching methodology and curriculum etc., they were satisfied.

Ansari (2002) undertook a research study entitled “A Status of Computer Education in the South Gujarat Region” with following objectives :

- To study the development process of the Computer Education in the secondary schools of the South Gujarat region.
- To study the developmental process of Computer Education of the Computer Education in the secondary schools of the South Gujarat region.
- To study the opinions of the principals regarding present status of the Computer Education imparted in the secondary schools of the South Gujarat region.
- To survey the opinions of the students regarding the present status of the Computer Education imparted in the schools of the South Gujarat region.
- To invite the responses of computer teachers regarding the present status of the Computer Education imparted in the secondary schools of the south Gujarat region.
- To offer suggestions to improve the quality and status of the Computer Education imparted in the secondary schools of the South Gujarat region.

Total 213 schools of south Gujarat region imparting Computer Education were taken as population for the study out of them 109 schools were taken as sample. Many sampling methods of sampling were taken for the study like random sampling, systematic sampling, random sampling, clustered sampling, incidental sampling and purposive sampling etc. after thoughtful consideration 50 percent schools from each

area (rural and urban) were taken in sample with the help of stratified sampling method.

In this study questionnaire, information schedule, opinionaire and interview schedule were the tools used. Mean, average, percentage, ranking Chi square etc. statistical techniques were used as per the nature of data where ever found necessary. The major findings of the study were as follow.

- Computer Education commenced in 1985 in south Gujarat region and speeded up after 1995. 33.29 percent secondary schools were imparting it. It became popular after CLASS project, average number of computers were 2.99 in each school, majority of the schools were imparting Computer Education through contract system the major source of funds for these institutions were grant from government and donation from society.
- The principals of the schools were not found satisfied with present Computer Education imparted in school on grounds of financial, infrastructure, computer teachers largely.
- Majority of the students ie., 70.61 percent students were found dissatisfied with present state of Computer Education in the grounds that enough time was not allotted to computer subject students, teachers methods of teaching were not effective, very few computers were available in schools, curriculum was too lengthy and fees were high.
- Majority of the teachers (68.42 percent) computer teachers were found dissatisfied on grounds of less salary, large number of students, disappointing government policy, more burden of work and no freedom to teachers to do related activities. The rest of the teachers were found satisfied.
- Computer subject should be offered as a compulsory subject, more periods should be allotted to Computer Education, students should be encourage to take computer subject specially in rural area and computer teachers should be appointed on permanent basis.

Chandrakar (2002) undertook an investigation entitled “An Analytical Study of the Computer Education Teaching Learning Process at Secondary Schools in Gujarat”.

The objectives of the study were as follow.

- To study the nature of computer curriculum used at secondary school level in Gujarat.
- To analyse the practice of Computer Education teaching at secondary school level in Gujarat.
- To analyse the Computer Education learning among secondary school students in Gujarat.
- To study the experts view and suggestions for effective Computer Education teaching learning process at the secondary school level in Gujarat.
- To design a framework for effective Computer Education teaching learning process at secondary school level in Gujarat.

The data were collected with the help of observation schedule and interview schedule. The findings of the study were

- the class was teacher centered and there was no proper interaction among teacher and students,
- in all the theory classes teacher followed lecture cum discussion method and used blackboard as a media,
- in practical classes students were not properly instructed and they followed their note book for practice,
- while teachers were supervising the class, students used to concentrate in their practical work and
- the experts differs in their views regarding Computer Education teaching learning process but all of them suggested the need for training of computer teacher and training institutions should take this responsibility.

Sharma (2003) undertook a study entitled "A Study of the Effectiveness of Computer Assisted Learning in Chemistry for the Students of Standard XI. The objectives of the study were as follow.

- To develop Computer assisted learning in chemistry for standard XI students.
- To study the effectiveness of the CAL in chemistry in terms of achievement of XI standard students.
- To study the opinion of the chemistry students regarding the effectiveness of the developed CAL.

All Gujarati medium higher secondary schools having computer laboratory facility of Baroda city constitute the population for the present study. Achievement test and reaction scale were used as tools for the study. The major findings of the study were as follow.

- CAL was found to be effective for teaching chemistry at standard XI. It helped the students to learn the topic of 'organic compound' and clarified the concepts.
- Students were found to have a positive reaction towards the developed CAL.
- Students' reaction towards the CAL was found to be favourable as far as the statements related to the interest, mode of presentation, content clarity, and the question asked in the CAL.
- A chemistry teacher was found to have a positive reaction towards developed CAL. Also, the data analyzed were revealed that teacher has given favorable statements regarding content, language clarity, mode of presentation, clarity in graphics and evaluation procedure in developed CAL.

Helaiya (2004) undertook an investigation entitled "Developing and Implementation of CAI Package for Teaching Statistics to B.Ed. Students". The objectives of the study were as follow.

- To develop a CAI Package for teaching Statistics to B.Ed. Students.
- To study the effectiveness of CAI Package in Statistics in terms of achievement of B.Ed. Students.
- To study the reaction of the B.Ed. Students regarding the effectiveness of the developed CAI Package.

All English medium B. Ed. College Students in Gujarat who have Statistics in B.Ed. course consist of population for the study. The sample for the present study was selected purposively. 16 B.Ed. students from The M.S. University of Baroda were taken purposively as the sample for the present study. Achievement test and Reaction scale were the tools used for study. The major findings of the study were as follow.

- The prepared CAI in Statistics was found effective in teaching Statistics to B.Ed. students as the post-test score was found significantly more than the pre-test score.

- The overall reaction of students' towards the prepared CAI in Statistics was found positive.

2.1.1. Overview of the Researches Conducted in India

All the available researches conducted in the area of Computer Education in India are reviewed and those are grouped to present a synthesized view.

Two researches were conducted by Sailaja (1986), and ISRO (2000) to evaluate and appraise the CLASS project on its various aspects. Studies conducted by Patadia (1993), Sahasrabudhe (1994), Ansari (1998), Matai (1998), Gupta (1999), Gupte (1999), Gujarati (1999), Vaghela (2000), Shah R. (2002), Ansari (2002) were found related different aspects of Computer Education mainly at secondary school level exploring the aspects like, Status of the resources available and difficulties faced in imparting Computer Education. Chauhan (2001) conducted a study to see the achievement of computer professional students with respect to certain variable. Biswal and Das (2001) conducted a study to study the curriculum of computer education of school and to develop curriculum for the same.

Studies conducted by Baruah (1997), and Chandrakar (2002) identified problems related to the teaching learning process of Computer Education at school level. Studies done by Saruparia (1992) recognized the professional awareness and problems of Computer Education at +2 level. Mahajan, Singh, and Rajiv (1997) tried to identify the importance and usefulness of Computer Education at secondary level. Malik (1992) studied the nature and impact of technological change on organisational structure, work process, motivation and morale of users, level of satisfaction and productivity of users.

Studies conducted by Singh, Ahluwalia and Verma (1991), Rose (1992) and Jayamani (1991), Das (1998), Zyud (1999), Dalwadi (2001) and Sharma (2003) focused on the effectiveness of CAI in different school subjects and units with different modes, whereas, Helaiya (2004) developed and implemented a CAI package for teaching students of B.Ed.

Bhattacharya (1989), evaluated the effectiveness of available software for teaching chemistry Khirwadkar (1998) developed computer software for learning chemistry.

Researches on Computer Education in India were conducted at M.Ed., Ph.D. and independent project levels. Majority of these researches were conducted at M.Ed. level. As far as the type of the research is concerned, it was found that more than half of the researches were of survey type and some were of experimental type and most of them were related to school education.

As far as sample of the studies are concerned, both probable and non probable sampling methods are used. The major units of the sample consisted of students, computer teachers and administrators of secondary schools.

In most of the researches, it was found that the researchers constructed tools to collect data. Questionnaire, Interview Schedule, Achievement tests, Opinionnaire and Observation schedule were found as tools of these studies.

Most of the researches were found Quantitative in nature. Both group as well as inferential statistics in parametric and non-parametric forms were found used in analyze data.

The findings of the reviewed studies found to be significant in the specific areas of research. These findings would definitely helpful to improve Computer Education mainly at school level. But no research study was found related to Computer Education beyond school education. The areas of Computer Education like, Computer Education related to higher Education and private sector were found neglected in term of research studies.

2.2. REVIEW OF THE RESEARCHES CONDUCTED ABROAD

An attempt has been made here to present the review of some of related literatures conducted abroad which can help to provide a sound background to the present study.

Smith (1984) undertook a study entitled " A Status Survey of Instructional Computer Use in Selected Elementary and Secondary Schools in Texas". The major objectives of the study were as follow.

- To determine the status of instructional computer use in Texas' public schools.
- To identify issues and problems related to this use.

Information were gathered relating to five areas of concern. like computer hardware, classroom use by students and teachers, computer courseware, teacher knowledge and training, and implementation.

A questionnaire was mailed to 200 Texas schools those were using computers in their instructional programs. The sample was selected with the help of stratified random sampling method. Elementary and secondary classroom teachers representing 62.5 percent districts responded. Structured responses were compiled by district size and school type and reported as frequencies and percentages. Narrative responses were compiled and analysed for trends. The major findings of the study were as follow.

- A limited amount of computer hardware was available in Texas schools and senior high schools. In larger districts computers were not available for instruction.
- Computers were not well integrated into the curriculum. Computer use was restricted to Language arts, Mathematics and Computer literacy.
- Teachers were the primary evaluators of computer courseware and relied on informal procedures.
- Schools did not have computer skill requirements for students, but teachers had developed their own skill requirements which varied by school type.
- Very few teachers had received training in the use of computers.
- The main factors influencing computer acquisition were administrative support, external funding sources and teacher pressure.
- The perceived barriers to computer use were lack of equipment, training, course ware, time and fear of machines.
- Teachers were not involved in the schools' planning efforts for expansion of instructional computing.
- The primary benefits associated with computer use were perceived as student centred, while the major problems were perceived as teacher centred.

Nakafuji (1985) undertook an investigation entitled, "Instructional Applications of Microcomputers in Selected Elementary Schools of the Los Angeles Unified School District". The major objective of the study were:

- to investigate and to analyse the microcomputers used in the elementary schools, and
- to obtain information about principals' and computer coordinators' attitude toward educational applications of microcomputers in the elementary schools.

The study was conducted through a questionnaire survey of twelve elementary schools in the Los Angeles Unified school district with one or more microcomputers used in the instructional process. The questionnaire were completed by the school principals and the computer co-ordinators. The study was supplemented by school visits. The major findings of the study were as follow.

- computer literacy was the major microcomputer application at 92 percent of the schools,
- problem- solving was the primary CAI application at 83 percent of the schools in the study,
- the predominant use of micro computers in the basic skill area was Mathematics,
- approximately 20 percent of the teaching staff and 50 percent of the students enrollment were involved in the microcomputer program.
- The average no of microcomputers at each of the schools was eighteen.
- The principals' attitude toward educational applications of microcomputers were extremely positive therefore influencing computer implementation in the elementary schools.

Hill (1986) conducted a study entitled "An Investigation of the Implementation and Utilization of Computer Technology in Selected School Districts in South Carolina". The objectives of the study were as follow.

- to investigate the status of the implementation and utilization of computer technology by administrators and teachers in selected school district in South Carolina, and
- to investigate what was considered by administrators and teachers in selected school districts in South Carolina to be necessary software, hardware and user requirement for utilisation of computer technology in South Carolina Schools.

The survey technique was used for the present study and a survey instrument were developed mailed to selected administrators and teachers in South Carolina school districts. The major findings of the study were as follow.

- Most of administrators reported that computers were available in their schools for the instruction of students. Apple was the most popular computer used for instruction followed by Radio Shack and IBM.
- Computers were used for administrative purposes in 83.34 percent of the district offices and 81.13 percent of the schools. Apple was the most popular brand both in the district offices and in the schools.
- The average cost per student annually to the school districts for the administrative use of computer technology was 51.62 percent.
- The most common instructional application of computers was CAI.
- More than half of the district reported administrative support and encouragement for district personnel to upgrade computer skills; however only about one third of the district personnel availed themselves of opportunities.

Al- Furaih (1989) carried out an investigation entitled, "Implementation of a Computer Literacy Curriculum in Secondary Schools in Kuwait : Teachers Perception." The main objectives of the study were as follow.

- to investigate the attitudes, needs and obstacles encountered by teachers implementing a government mandated computer literacy curriculum in secondary schools in Kuwait, and
- to investigate the influence of teachers background and training on their innovation.
- Data were collected through a questionnaire distributed to fifty six teachers in thirty two schools. Follow-up interviews were conducted with the ten teachers. The major findings of the study were as follow.
- Teachers endorsed the value of having a computer literacy curriculum for all secondary school students in Kuwait. However, they expressed dissatisfaction with the content of the curriculum.
- Instead of introducing students to computers through programming, teachers felt that initial exposure to computers should emphasise the computer's role as a tool and its effect on their society and culture.

- Teachers also expressed that the curriculum was mandated for all students, but no incentives were provided for the students to take the training seriously.
- Teachers' perception of their needs varied. Teachers with a computer science background felt the need for more training methods appropriate to the computer literacy curriculum and less training focussed on curriculum content. Teachers without a computer science background felt the need for both types of training.
- Many teachers reported the need for more support from school principals to reinforce the importance of computers in daily school activities.
- Teachers requested Kuwait Ministry of Education to provide : (A) accessible instructional resources to support the computer literacy curriculum and (b) training based on the actual needs of teachers.
- The main obstacle reported by the teachers were the inadequate prerequisite skill of students. Specially, teachers felt students needed more preparation in Mathematics, English and Key boarding to be successful in this curriculum.

Devoe (1991) conducted an investigation entitled, "An Assessment of Computer Literacy Education : Perception of Boston Computer Teachers Concerning the Teaching of Computer Literacy in the Boston Public Schools." The main objective of the study was to assess the perceptions of Boston computer teachers concerning the teaching of computer literacy in their schools.

A questionnaire was designed with three areas of interest called Curriculum, Facilities and Policies. The questionnaire was mailed to every certified computer teachers listed by the city of Boston School Department, with extensive follow-up procedures. The return rate reached to 78 percent. Data were analysed through SSPSX generated means, Means Discrepancies and ANOVA. The findings of the study were as follow.

The data from Boston Computer Literacy teachers ranked the three areas of interest, with "Curriculum" most favourable and "Policies" least favourable. Middle school teachers with longer experience were most contented with the current conditions. Those teachers with an average (four to six years) length of experience appeared to be the most disturbed, regardless of the school level at which they worked.

Panteli (1992) undertook an investigation on "Educational Uses of Microcomputers in New Hampshire Public Elementary Schools". This study involved following three areas of attention and investigation.

- The currently use and distribution microcomputers in the public elementary schools in New Hampshire.
- A review of the professional literature regarding the present implementation of the computers in school nationwide.
- The historical evolution of the New Hampshire minimum standard for public elementary school as mandated by the State Department of Education.

Data on current practices for utilizing microcomputers in the public elementary schools were collected through a questionnaire mailed to New Hampshire public school superintendents. The major findings of the study were as follow.

- The student computer ratio in a given elementary school classroom in the 47 responding school was 25:1.
- 86 percent of the SAUs had instructional computers in elementary school classrooms.
- 37 schools of the SAUs surveyed had computers in their libraries for accessing information from database.
- The number of elementary schools with computers in their libraries for cataloging materials collections was 13 percent of the responding SAUs.
- 82 percent of the school districts represented in the survey had a staff development program focused on computer technology.
- 51 percent of the respondents reported that their computers were integrated as a learning tool in their elementary curriculum.

Pusiri (1992) had conducted an investigation entitled "An Examination of Microcomputers in Education in Thailand." The major objectives of the study were as follow.

- To focus on the historical development, problems and trends of microcomputers use in education in Thailand.
- To compare the status of computer in education in Thailand with ten other countries in Asia and the Pacific region.

Information about microcomputers used in Thailand and in other countries was analysed and interpreted from interviews, questionnaire and related documents. The major findings of the study were as follow.

- It was found that Thailand has a well developed computer curriculum but it lacks funding, personnel, standards and support from the Government.
- The trends in computer application in Thailand are towards learning computer application rather than programming.
- There is an increase use of computers for management, administration and for several kinds of school tasks
- Compared to other countries in Asia and pacific region, Thailand has the most flexible computer curriculum. However, Thailand is behind Australia, Japan, Singapore and Sri Lanka in the area of government support in Computer Education.
- All the countries surveyed are facing the same problems of not enough computers for instructional use and lack of qualified personnel.
- In all the countries under the study, the trend of using computers in education has been shifting from learning about computers to learning with computers.
- Computer Education in secondary schools in Thailand has progressed steadily since its first introduction in 1982. It has well developed Computer Education curriculum but standards need to be set and implemented.
- It was concluded that support and clean policy on Computer Education from government is essential and vital to the progress of Computer Education in Thailand.

McCrow (1993) undertook a study entitled, "Rural Elementary School Teachers : What They Believe About Computers : A Case Study". The major objectives of the study were as follow

- To examine teachers' perception of computers in the general school setting.
- To examine technology problems perceived by the teachers that would inhibit the educational process.
- To examine the teachers' belief about their technology training, their own role in integrating technology into the curriculum, the role of the school

organisation in implementing successful technology integration and the influence on technology implementation from sources outside of the school.

Data were collected through observation of the teachers in the laboratory and in their classrooms. Interview data from selected teachers in the program were collected through formal interviews. The major findings of the study reported were as follow.

- There was a need for a long term technology plan to be installed at the same time that technology is acquired with regular evaluation for accountability structured into the plan.
- It was also found necessary to provide technology training to both teachers and administrators in the school system, if the technology plan is made to be effective.
- Administrators must continually update the school board about the needs and uses of technology in their schools.
- Without long term goals and strong leadership there is little chance of technology being used effectively.
- Lack of teacher training in technology, problem with software acquisition and its effective use, teachers' resistance to curriculum integration and the change process were noted.

Tengku (1994) carried out an investigation entitled "The Implementation of a National Computer Education Project in Secondary Schools in Malaysia : Teachers' Perception." The major objective of the study was to provide realistic picture of the actual implementation of the NCEP project.

A descriptive survey supplemented by observations and interviews was utilised in this study. A questionnaire was administered to the 120 teachers involved in the project.

The study drew several findings related to computer implementation in schools. Some of them were as follow.

- Implementing a computer curriculum in schools should be based on clearly defined educational objectives.
- Computer in-service programs should have at least two characteristics confirmed by this study, (a) the concerns and needs of the teachers involved

should be the basis for staff development program in computer literacy, and (b) in-service should be linked to instruction and should have clear and relevant objectives.

- The availability of adequate educational resources is essential for introducing change related with computing. School principals and Ministry of Education must play important role in supporting teachers' commitment toward change.
- Implementation of educational innovations clearly affects teachers, those must directly responsible for bringing about change. Teachers' concerns and needs should be considered before and during the introduction of any educational innovation.

Kabbi (1995) conducted an investigation entitled "Analysis of Educational Computer Use in Lebanese Urban Private Schools". The major objectives of the study were as follow.

- To study the current status of personal computers used in the private schools in the Greater Beirut area of Lebanon.
- To examine whether or not implementation of computer knowledge and use has met or fallen short of the initial plans for its implementation.
- To compare the status of computers in education in Lebanese with that of some other developing countries in the middle East, Asia and the Pacific region.

The sample size for this study was 50 percent of the 411 private schools located in the Greater Beirut area of Lebanon selected randomly. Information about personal computers used in Lebanon was analysed from the transcriptions of interviews, questionnaire and related documents.

The important findings of the study were as follow.

- The study found that Lebanese is still in the early stage of implementing computers in schools. This is due to lack of funding, qualified personnel and support from the Government.
- It was found that Lebanese has no set or established computer curriculum. The computer curricula courses offered to students at the present time are based almost entirely upon the individual computer experience of the teachers who give the courses.

- Teachers in Lebanese believe that teaching of computer applications to students is more important than training them in computer programming. They also feel that teaching intermediate school students programming language for writing small programs and more advanced programming languages in the secondary schools, will help students in the future when they reach the university level.
- All of the countries surveyed in this study are facing the similar problems like not enough computers for instructional use and a lack of qualified personnel.
- The trend toward using computers in education had been shifted from learning about computers to learning with computers.

Jabber (1997) conducted a study entitled "A Survey of Factors Which Influenced Teacher's Use of Computer Based Technology." The major focus of the study was:

- to study the factors which influence teachers use of computer based technology.

A survey of K-12 teachers in two rural country school systems was conducted. One was in Southern West Virginia and the other was in South-Western Virginia. The major findings of the study were as follow.

- It was found that computer access in the classroom influenced the frequency of the use for some instructional activities.
- Lack of internet access and computer equipments resulted in a negative influence to the teachers use of the computer based technology in the classroom.
- Teachers also expressed a desire for continuous type of training program in the use of computers.

Karim (1999) conducted a study entitled "Computer Technologies at University of Utara Malasysis (UUM): Faculty Use, Knowledge, Skill, Interests and Attitudes." The major objective of the study was to examine and describe University Utara Malasia faculty members' computer knowledge, skills, interests and attitudes and their opinions regarding computer related issues in higher education.

The information for this study was obtained by means of a questionnaire. The major findings of the study were as follow.

- The majority of the faculty members are computer users. They have access to computers in their offices and at home.
- Faculty members receive their computer training through informal means, self study and from other computer users.
- Faculty members were well informed about computer structure and operation, but not well informed about computer applications, limitation and computer programming.
- Faculty members have more skills in instruction and research applications than skills in web and multimedia development applications.
- Faculty members have the most interests in using computer technologies as a tool.
- Faculty members exhibited positive attitudes toward computer technologies. They perceived computer technologies as valuable tools for performing a variety of tasks
- Differences exist among various subgroups with respect to selected variables.
- Respondents who reported being more informed were also found more skillful, more interested and exhibited more positive attitudes towards computer technologies.
- Faculty members believed strongly that computer technologies would have an impact on the teaching and learning process and would be pervasive in education.
- Fostering the use and learning of computer technologies would required various forms of assistance and support from the university.

Thompson (2000) carried out an investigation entitled, "Factors Affecting Computer Implementation and Impact on Teaching and Learning in Northeast Louisiana." The major objective of the study were as follow.

- To find out the relationship between degree of computer implementation with teacher personal use of computers, teacher motivation, curriculum integration training and curriculum integration support.

- To establish the relationship between degree of computer implementation with collaborative learning, self-directed learning, active learning, teacher practices.
- The major findings of the study were as follow.
- Results demonstrated a significant relationship ($P \leq .05$) between degree of computer implementation and (a) teacher personal use of computers (b) curriculum integration training, and (c) curriculum integration support.
- No significant relationship was found between teacher motivation and degree of implementation.
- A significant relationship ($P \leq .01$) was found between degree of computer implementation with collaborative learning, self directed learning, active learning and teachers practices.
- A significant multiple regression analysis showed self-directed learning, curriculum integration support and teacher practices to be significant predictors of degree of computer implementation.

Wilson (2000) undertook a study entitled ; "An Assessment of Computer Usage Within the Bahamian Public School System and Recommended Guidelines Towards the Development of the Strategic National Computer Plan." The major objectives of the study were as follow.

- To assess the computer usage within the Bahamian public school system.
- To give guidelines towards the development of the strategic National Computer Plan.

This was a descriptive study for which an extensive review of literature in areas of computer hardware, software, teacher training, research, curriculum, support services and local context variables was undertaken. A survey was conducted involving 201 teachers and 51 school administrators from sixty randomly selected Bahamian public schools.

- Based on the literature review and the data gathered for this study a number of recommendations were presented. These recommendations may be used by the government of the Bahamas to establish policies with regard to the use of computers within the public schools system.

Taghavi (2001) undertook an investigation on "Evaluation of College Student's Attitudes Towards Computers Before and After Taking a Computer Literacy Course." The major objective of the study was to compare college student's attitudes toward using computers at the beginning and end of the computer literacy course in terms of time of class, gender, age, prior computer experience, access to a home or work computer and collegiate classification.

The computer attitude scale (Loyd & Loyd, 1985) was the selected instrument used for the study. The sample of this study was 174 college students. Responses were analysed using analysis of variance, multivariate analysis of variance and analysis of covariance. The major findings of the study were as follow.

- Time of class, gender, and collegiate classification did not significantly influence the overall attitudes of students toward computers.
- It was revealed that age, prior computer experience and access to a work computer significantly influence the overall attitudes of students toward computers.
- The computer literacy course was found to improve computer attitudes and to help college students develop more positive attitudes toward computer technology.
- It was recommended that those at South Eastern Land Grand University responsible for implementation of curricula and instructional practices should continue to strive to eliminate any possible gender bias and remedy potential gender differences through role models on computer technology.

2.2.1. Overview of the Researches Conducted Abroad

Researches conducted abroad and reviewed here were conducted between the years 1983 and 2001. More than half of the researches were conducted at Ph.D. level and purpose of most of these studies were conducted to unveil the awareness of the Computer Education prevailed in different countries other than India.

Smith (1984), Nakafuji (1985), and Kabbi (1995) undertook the investigations with the purpose of studying instructional use of computers in specific regions and Wilson (2000) undertook the investigation to study the situation of Computer Education imparted in Bahamian schools. Bonner and Thompson (2000) identified the factors affecting computer implementation and impact on teaching learning in

Northeast Louisiana. Panteli (1992) and Pusiri (1992) explored the development and use of micro computers in education.

Al-furaih (1989), Devoe (1991) and McCraw (1993) did the investigation to study the perception of computer teachers about different aspects of Computer Education. Tengku (1994) studied teachers perception on implementation of National Education project in secondary schools of Malaysia. Jabbar (1997) investigated to identify the factors influencing teachers use of computer based technology and Karim (1999) undertook investigation to study the knowledge, interest, skills and attitude of computer teachers of University Utara Malaysia faculty members and their opinion regarding computer related issues in higher education.

Taghavi (2001) studied the attitude of college students before and after computer literacy course. Hill (1986), conducted study to investigate the status of implementation and utilization of computer technology by administrators and teachers in selected schools of South Carolina.

As far as the type of the research is concerned, it can be generalised that all the studies except two were of survey type.

As far as sampling methods of the studies are concerned, both probable and non probable sampling methods are used. The major units of the sample consisted of students, computer teachers and administrators imparting computer education schools.

In more than half of the studies self made research tools were used, where questionnaire was found most prevalent. Interview schedules and observation schedules were found used in few studies. Statistical techniques like , average, percentage and rank order were used in accordance with the nature of the data in a large number of studies.

Through the review of the researches conducted in India and abroad, it can be derived that in India majority of the studies are conducted on status ground at school level with regards to infrastructure, human resource, hardware and software, difficulties faced in imparting Computer Education and perception of teachers and pupils with regards to the present scenario of Computer Education, different use of computers and application of Computer Assisted Instructions in teaching etc. Still there is enough scope for diversification in the field of studies related with Computer Education and it has yet to cover many levels of Computer Education with regards to

similar and some new aspects to give some more realistic picture in the area. These studies do not cover areas like, how Computer Education has developed over years, which institutions has taken initiation in the field, details of the courses imparted, methodology of teaching, rules, regulations, norms, criteria being followed by institutions, what is the contribution of certain category of institutions in the market, difficulties faced by different institutions, guidelines for imparting Computer Education in order to maintain it's quality. Present study is an attempt to answer certain questions related to it.

Although the present study is confined to one district of Gujarat i.e. Baroda district. Similar situation is prevalent in a long number of cities of the country as similar institutions are imparting Computer Education. So the findings and suggestions of the present study would have reaching impact for the whole country.

2.3. DISTINCTIVENESS OF THE STUDY

The history of Computer Education in India is not very old. It has emerged only after seventies. Observing the research trend, it can be concluded that a large number of researches are done to study the status of Computer Education at school levels and functioning of the projects in the area of Computer Education. There is a need for multidimensional studies in other areas like, higher education including private and government institutions imparting Computer Education.

The major objectives of these researches conducted in India were presented as follow.

- To study the status of infrastructure, hardware, software and teaching staff.
- To study the difficulties faced in imparting Computer Education.
- To study the implementation of CLASS project.
- To judge the effectiveness of Computer Assisted Instructions with regards to different subjects etc.

The major objectives of the researches conducted abroad were as follow.

- To ascertain the present situation of Computer Education.
- To recognize the problems emerged in a way of implementing Computer Education.
- To amass the information about the uses of computers.
- To adjudge the level at which Computer Education has been imparted.

The studies already conducted have investigated on significant objectives, yet they have not touched certain significant aspects which are covered in the present study. Following are the unique aspects which this study has covered as follow.

- Norms, criteria, ordinances, rules and regulations etc. applicable for Computer Education in the region of Baroda district of Gujarat.
- The market value of the different courses offered in Computer Education institutions.
- The study of development in establishment of Computer Education institutions in this region.
- Individual and common courses offered in different institutions.
- To study government recognised, franchise and self managed autonomous institutions in the market comparatively and as a whole.

So this study is to unfold various aspects of the area which are still curtailed which have significant impact in the area of Computer Education.

The other ground of the distinctiveness of this study is that Computer Education is being imparted by various types of institutions such as universities, colleges, franchise and other private institutions. Computer professionals and users are prepared by them as normally candidates join them in order to make their career in this line while in schools, computer is taught as a subject only to bring awareness about the computer and it is given importance as one of the various subjects offered. But in reality all the studies conducted in the field of Computer Education are conducted in the area of school imparting Computer Education and no study was found conducted for studying the Computer Education imparted by universities, colleges, franchise institutions and self managed institutions. This study has covered these types of institutions which are imparting Computer Education in face to face mode except schools. So this study is unique and will have significant contribution to unfold untouched aspects of Computer Education.

The result of all the studies conducted in school education will give the idea about Computer Education imparted in that state schools as school education is subject to state education policies but the present study gives the area of the Computer Education imparted in India at a large because Computer Education imparted by franchisee centres, universities, affiliated colleges etc. is almost similar in all the states as the same education agencies like NIIT, Aptech, etc are imparting

Computer Education in more or less in the same way through their centres. Universities are also providing Computer Education in similar way under the same umbrella of UGC and AICTE etc. national level controlling bodies in all the states. So this study gives the idea of Computer Education imparted in maximum states of the country and not limited up to one state or district.

No study except one is conducted at Ph.D. level in Computer Education in India moreover the population and sample of none of the study is same in any respect to the present study as this study has targeted absolutely different category of institutions.

In short, the study is taken up by the investigator with many unique objectives for unique area of population in which no study has been undertaken and which area has to give significant contribution in the field of software and hardware. This study is to focus on present status of Computer Education from view point of many dimensions and to offer suggestions to improve the state of it in future. Hence, the investigator perceives that this study will be practically virtuous and recommendatory in serving the purpose for which it has been undertaken.