

CHAPTER V

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CHAPTER V

SUMMARY AND CONCLUSION

5.0 INTRODUCTION

We are in the midst of the Information Technology revolution. We are in a new progressive era with a promise of far reaching benefits for all sections of society. Computers and computer related technology is the main tool for present revolution of society. One of the most known products of the research and technology is “the computer”. At the same time it is not only a product of research and technology it is also a tool for development of research and technology. The use of computers in all walks of life has unleashed new business opportunities covering system integration, internet working, internet services, software development, manufacturing, marketing, education, consultancy and training in this field. Hence more and more organizations are inspired to this field. The entry of many IT multinationals in India is the evidence for this statement to prove. They view India as one of the largest markets for IT and communication services, training and education. Computer Education is one of the significant components of this system that provides skilled manpower according to the changing need of the market. Indian Computer Education is capable of attracting the attention of the globe and hence it has become one of the largest exporters of skilled software personnel to developed and developing countries. There is huge scope of research in this area for the national development.

Quality of computer education suffered due to the mushrooming development of computer education institutes without proper rules and regulations. The demand for computer expertise is decreasing in global as well as national market due to which many institutions are closing down their institutions. There is a lack of manpower to serve in the computer education institution. Even many of computer instructions lack in pedagogic training. Due to first development and change in the field of computers, it is always difficult to equip institutions with latest hardware and software. Financial and infrastructural problem are also common among Computer Education institution. The increased cost of living, electricity, telephone etc, also affecting adversely in the development of Computer Education institutes. In the present study the investigator is

trying to get the details about the problems faced by Computer Education institutes in the Borada district of Gujarat.

Baroda district is one of the advanced district of Gujarat in term of education. It is also found to be quite advanced in development of Computer Education. In 2004, there were around 200 Computer institutions in the Baroda district of Gujarat. According to the available data around 700 Computer institutions were there in around June 2000. It includes universities, affiliated colleges, study centres of universities, franchise study centres of some computer training agencies, and self governed computer institutions. Now there are nearly 100 computer education institutions offering courses in both hardware and software. This scenario conveys the message that the number of Computer Education institutions are going down during last five years and only around 15 percent of total institutions could survive in last 4 to 5 years.

The institutions which are closed down are mainly private institutions, and the foremost cause behind it was their financial crises. But at the same time it is to be noted that demand of computer manpower in both i.e. public as well as private sector has reduced significantly. To provide answer for these issues related to the decrease of computer institutes in number and the quality of computer education in Baroda District, the present research is an humble attempt.

5.1 REVIEW OF RELATED LITERATURE

The researcher reviewed the researches conducted in India by Sailaja (1986), and ISRO (2000), Patadia (1993), Sahasrabuddhe (1994), Ansari (1998), Matai (1998), Gupta (1999), Gupte (1999), Gujarati (1999), Vaghela (2000), Shah R. (2002), Ansari (2002), Chauhan (2001), Biswal and Das (2001), Baruah (1997), and Chandrakar (2002), Saruparia (1992), Mahajan, Singh, and Rajiv (1997), Malik (1992), Singh, Ahluwalia and Verma (1991), Rose (1992) and Jayamani (1991), Das (1998), Zyud (1999), Dalwadi (2001), Sharma (2003), Helaiya (2004), Bhattacharya (1989), and Khirwadkar (1998). Researches were found 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.

The Researcher also reviewed the studies conducted abroad like, Smith (1984), Nakafuji (1985), and Kabbi (1995), Wilson (2000) Bonner and Thompson (2000), Panteli (1992) and Pusiri (1992), Al-furaih (1989), Devoe (1991) and McCraw (1993), Tengku (1994), Jabbar (1997), Karim (1999), Taghavi (2001), Hill (1986). Most of these studies were found to be of survey type.

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 different aspects. 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. 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.

5.3 RATIONALE OF THE STUDY

India is one of the biggest computer professional providers in global software and hardware market. A large number of students are getting this education and many institutions are there in the market to provide Computer Education to produce computer professionals and users. These computer users and professionals are produced through universities, IITs, polytechnics, ITI's affiliated colleges and private computer institutions. It is understood that the government institutions are able to provide relatively better quality education due to proper infrastructure facilities and qualified manpower. Moreover there are certain criteria for selection of teachers, admission of students etc. But all the students do not get admissions in these government institutions as their intake capacity is shorter than requirement. So to cater the need of the students, innumerable private institutions have emerged and learners are rushing to them. They are attracting these students through their

marketing skills. These institutions normally give them admission irrespective of their stream, and level of education, moreover whether that has taken place under certain norms, criteria and requirements is also yet to prove. It creates the doubt upon the quality of their product. Hence, to open up the realistic situation of Computer Education and stop further deterioration in this field, this study is required and can prove to be beneficial in future.

There are many research studies available in the area of Computer Education. Most of the research studies are related to teaching learning and researchers tried to see the effectiveness of some sort of CAI or CAL packages prepared to teach subjects at school and university levels. But there are few survey studies available related to Computer Education in school education. The researcher did not come across any such studies related to the status survey of the Computer Education at other than school level such as Computer Education imparted by universities and their centres, franchise study centres, ITI's, self governed private institutions etc.. This study can provide a status of Computer Education at all these levels.

The courseware and the teaching learning methodologies differ from institutions to institutions. Some courses of both government and private bodies are well designed by a continuous research and development efforts. Some institutions use very high quality methodologies of teaching and learning designed by themselves and some use imported teaching learning technologies and courseware designed by foreign institutions. The present study can provide details of different types of teaching learning techniques, methods and approaches which is being adopted today. This study can help to study these teaching learning methodologies and courseware so interested students can take its advantage.

The output of the present study would be able to provide a competitive view of Computer Education with reference the courses offered with their fees, duration, their designing authority, admission and eligibility criteria etc., contribution of different types of institutions in Computer Education field, picture of infrastructure and other facilities available such as computers, printers and allied facilities, books available, area occupied, classrooms, computer laboratories etc., teaching staff with their qualifications, experiences, average number of teaching staff members, salary etc. and

other significant details. It will provide a competitive picture of the norms, guidelines, criteria etc. followed by different computer institutions in Baroda district of Gujarat.

As mentioned earlier Computer Education is relatively new concept in Indian perspective than developed countries. At this stage certain empirical evidences are needed for further progress of the discipline. It should be recorded that different kind of multidimensional studies on Computer Education have been conducted all over the world. But in India a very few researches have been undertaken in this area. Only a few researches have been noted in the fifth survey of educational researches conducted by the NCERT. This fact confirmed that in India till today this area of research has not been significantly noticed by the investigators. Present study has been ventured in this rapidly developing field of Computer Education to assess it scientifically. Moreover, no even single research has been undertaken to know the present situation of the Computer Education in India and particularly in Baroda district other than Computer Education at schools.

One must know whether the things are in the right direction in this endeavor and whether the goals in this context have been achieved or not. In this regard, it can be said that this timely effort of evaluating Computer Education will help the concerned people to plan and improve the Computer Education effectively. This study will focus on many significant aspects such as development of Computer Education institutions, courses taught, norms, criteria applicable for Computer Education institutions, infrastructure and other facilities, teaching learning process, various problems faced by the institutions, market value of the courses and comparative picture of various types of computer institutions and many other related facts.

At school level certain level of standardisation is observed as education boards have passed certain circulars and given the uniform syllabus for school Computer Education. So worries in relation to school Computer Education have shortened to certain extent. At the same time at university level even uniformity in syllabus is seen to certain extent although it varies a little from university to university. DOEACC, ITI etc. also have scientifically designed their courses for Computer Education but the contribution of even significant in the Computer Education field so it can't be ignored. In this state of scenario no study have been conducted which has taken them

in consideration. So the investigator has taken this study to establish some strong evidence about the Computer Education.

Today Indian contribution in software market has opened the eyes of China and some other countries. So now these countries are willing to come to join this race and make race more competitive. In this situation when India is facing threat from China, South Korea and Common wealth countries, this attempt of investigator to study the computer and offer some suggestions to make Computer Education more effective may prove fruitful.

Today when Indian students are moving to overseer to satisfy the hunger of quality education, a lot of Indian currency is going out and Indian students have created a remarkable market for European countries, at this juncture of time to change the situation in Indian favour, there is felt need to improve the existing condition of computer market. In this circumstances, this study can play a vital role.

As it is known to every body that there is no formal teacher training courses available for computer faculties, the pedagogy adopted in teaching learning is doubtful when qualification for computer teachers is not recognized and decided by any responsible authority. In this condition this study can open many facts in this regard. So the present study is an attempt in this direction to study the status of computer in the district of Baroda other than schools which can be helpful to answer certain questions raised in the form of research questions.

5.4 STATEMENT OF THE PROBLEM

A STUDY OF THE COMPUTER EDUCATION IN BARODA DISTRICT OF GUJARAT.

5.5 OBJECTIVES OF THE STUDY

The present study was undertaken with the following objectives.

1. To study the development in establishment of Computer Education institutes in Baroda district of Gujarat.

2. To study the norms, rules, directives, ordinance, etc. applicable for the development of Computer Education in Baroda district of Gujarat.
3. To study the status of Computer Education coursed offered by different institutes in Baroda district of Gujarat.
4. To study the infrastructure, hardware and other facilities available for Computer Education coursed offered by different institutes in Baroda district of Gujarat.
5. To study the status of staff for teaching Computer Education at different institutes in Baroda district of Gujarat.
6. To study the Computer Education teaching learning processes at different institutions in Baroda district of Gujarat.
7. To study the problems faced by Computer Education institutes in Baroda district of Gujarat.
8. To study the market demand of different Computer Education coursed offered by different institutions in Baroda district of Gujarat.
9. To compare the status of Computer Education in Baroda district of Gujarat in terms of infrastructure, Hardware, Software and other facilities, Teaching faculties etc available in different institutes viz : Government recognized, Franchisee study centres of renowned computer agencies and self governed private institutions.

5.6 DELIMITATIONS

The following delimitation were considered in the context of the present study.

- The study is delimited to the certified courses (where certificate is provided after successful completion of the course)
- The study is delimited to the courses offered in face to face mode.
- The study is delimited to the Computer Education institutes other than schools.

5.7 RESEARCH METHODOLOGY

The present study is a survey type of study. Brief research methodology followed in the present study is given as follow.

5.7.1 Research Design

The present research is a survey type of the study. The Present study undertakes the study of Computer Education imparted in Baroda district of Gujarat with reference to different components. All types of institutes imparting subsidised as well as self financed Computer Education courses in face to face mode are taken for the present study.

5.7.2 Population

Here the population encompasses all category of institutes imparting Computer Education in face to face mode except schools in Baroda district of Gujarat. It includes franchisee study centres, self managed with self designed course, study centres given by university, self managed but teaching courses of other bodies like (ITCT, MHRD, Autodesk), DOEACC Certified courses conducting institutes, university affiliated colleges, university departments and ITIs. There are around 101 institutes comes under the region of population of the present study.

5.7.3 Sample

Looking at the objectives of the present study, population and nature of the data to be collected, the investigator has adopted purposive sampling method. The investigator has taken 40 computer education comprising of all types of institutions as the sample of the present study.

5.7.4 Tools of Data Collection

For the present study, the investigator has opted for self made tools like, Questionnaire, Classroom Observation Schedule, Interview Schedule. questionnaire was used to achieve maximum number of objectives i.e. objectives 1,2,3,4,5, and 8, observation schedule and interview schedule were used to achieve objectives 6 and 7.

5.7.5 Procedure for Data Collection

The investigator himself collected the data for the present study. The investigator contacted the proper persons from the sample institutes, took their permission and administered questionnaire and interview schedule. The investigator observed a total of 80 class room teaching of 40 institutions during a period of three months with the help of observation schedule.

5.7.6 Statistical Techniques Used

As the present study is more of qualitative in nature, collected data were analysed using both qualitative as well as quantitative techniques. Quantitative data were analysed using simple statistical techniques, such as, mean, frequency, and percentage.

5.8 FINDINGS OF THE STUDY

Research is undertaken to reach at certain findings and on the basis of which some suggestion could be given to improve circumstances. This study was undertaken to study the status of Computer Education in Vadodara district of Gujarat and to offer suggestions to improve the scenario. Following major findings could be drawn in accordance with the objectives of the present study.

(i) Establishment of Computer Education Institutions

Computer Education institution was established first by a private agency namely Aptech Computer Education in 1986.

1. The first government computer institution was established in 1990 by ITI Vadodara. 95 percent institutions are self financed institutions and only 5 percent of total computer institutions are subsidised institutions.
2. Up to 1995 only 12.50 percent computer institutions were established in Vadodara district. Maximum number of computer institutions i.e. 50 percent of the total were established during 1996 and 2000. Then growth of computer institution became slow as only 37.50 percent institutions were established during 2001 and 2004.

(ii) Types of the Computer Institutions

1. Mainly, three types of Computer Education institutions were found like, (1) Government recognised teaching institutions (2) franchisee study centres of renowned computer training institutions, and (3) Self managed institutions
2. 37.50 percent of Computer Education institutions were found to be franchisees centres of renowned organizations such as, Aptech, NIIT, SSI, C-DAC, LCC, JetKing etc. 25 percent institutions were found teaching government recognised courses which include University departments, study centers of universities, DOEACC Certified courses centers etc. and the rest 37.50 percent institutions were found to be self managed which were not established as per the criteria of any recognised body.

(iii) Norms and criteria for Computer Education

It was found that central government and state government have given Information Technology policies and strategy for software development, hardware development and human resource development. Under the umbrella of central and state government policies on IT education various authorities have given their norms and criteria for Computer Education at different levels such as certificate course, diploma course, bachelor and master degree courses etc. which as given as follow.

1. It was found that AICTE (All India Council for Technical Education) has given norms and criteria for Computer Education of master degree level courses such as MCA, M. Sc. IT, M.Sc (E.Business) etc.
2. It was found that universities have also prescribed their norms and criteria for Computer Education of bachelor degree level, post graduate diploma level and diploma level courses such as BCA, PGDCA and DCA etc.
3. It was also found that DOEACC (Department of Electronics Accredited Computer Courses) society has given norms and criteria for Computer Education of certificate, PG diploma, master degree and M. Tech. Degree level equivalent courses such as "O" Level, "A" Level, "B" Level and "C" Level courses.

4. Certain private agencies such as NIIT, Aptech etc. which are letting franchise centres under their brand names, also have given norms and criteria for Computer Education centres. Institutions willing to take the franchise of them have to fulfill their norms and criteria.

All these authorities have given their norms and criteria with respect to the requirement to be fulfilled for taking permission of respective authorities to run their recognised courses. These requirements are related with Computer teachers' requirement such as qualification, experience, part time or full time, number of computer teachers etc. requirement of carpet area, classrooms, computer laboratories, software and hardware requirements, library, books, magazines, equipment such as OHP, internet etc.

But it was found that 37.50 percent institutions were self managed institutions for which no norms, criteria and guidelines are prescribed. They are established without following the norms and criteria of any authority.

(iv) Courses Offered in Computer Training Institutions

1. It was found that 33.33 percent i.e. 15 were the common courses and 66.67 percent i.e. 30 were the individual courses offered in the market by different computer institutions.
2. Common courses offered in computer training institutions were C & C++, Oracle, Java, Basics (MS Office, DOS and Windows), Visual Basic, BCA, MCA, PGDCA, DTP, Tally, Autocad, Multimedia, "O" level, "A" Level and "B" level courses.
3. Individual courses offered in computer training institutions were Diploma in Website Designing, Diploma in 3D Engineering and Animation, JCHNP (Jetking Certified Hardware & Networking Professionals), Complete Information Technology Professional, Vidya, Computer Hardware, M.Sc. IT (Master of Science in Information Technology), Career Diploma in Multimedia, Diploma in Multi media, MCSE (MicroSoft Certified Software Engineer), Inventor, Mechanical Desktop Power pack, Complete Java Professional, ACCPWP(Aptech Certi. Computer Professional World

Program), Planetworkz, ADMCP(Adv. Dip. in Multi-lingual Computer Programming), ADMCA(Advanced Dip.in Multi-lingual Computer Applications), Certificate in Computer Management, B.Sc. IT (Bachelor of Science in Information Technology), M.Sc. EB (Master of Science in Electronic Business), COPA (Computer Operator & Processing Assistant), ADCHN(Adv. Diploma in Computer Hardware & Networking), Complete e-Commerce (Java Track), Net Engineering, Diploma in Java, DMOA (Diploma in Office Automation), How to make Personal Computer, A+, Complete e-Commerce (MicroSoft Track), DMCA and (Diploma in Multi-lingual Computer Application)

4. It was found that all the courses which were found commonly offered were software courses and no hard ware course was found as common course.
5. It was found that majority of the franchise and self managed institutions were offering individual courses and government recognised institutions were offering common courses.
6. In terms of software and hardware courses, it was found that 11.11 percent hardware and 88.89 percent courses software courses were offered in the market.
7. Out of 45 only two i.e. 4.44 percent courses were found to be subsidized. They were COPA and PGDCA although PGDCA was offered as both subsidized as well as part time course. 43 courses were found to be self financed courses.
8. Out of total 45 courses, 27 courses were certificate courses, 07 courses were diploma courses, 03 courses were advanced diploma course, 4 courses was PG diploma and equivalent course, 02 courses were graduate degree courses, and 02 courses were post graduate degree courses.
9. Except the courses of government recognised institutions', no strict admission and eligibility criteria was found followed for any other course.

10. No uniformity was found in the percentage of theory and practical teaching hours and percentage of theory and practical in evaluation except the courses of government recognised institutions.
11. Maximum Government recognised courses were found full time courses and all the other courses were found part time courses.
12. All the private institutions were found charging fees as per their image in the market although for university and other subsidized courses the charges were decided by the concerned authorities.
13. Course duration even for the same course were found varying drastically from institution to institution. It was found standardized for Government recognised courses and to some extent in franchisee institutions too.
14. Except government recognised courses, rate of passing candidate was almost 100 percent.
15. In case of 70 percent institutions courses were designed by certain responsible authorities and in remaining 30 percent institutions courses were designed by the institution itself.

(v) Status of Computers in the Institutions

1. 47.50 percent institutions had up to ten computers in the institutions and 27.50 percent institutions had 11 to 20 computers where as, the rest 25 percent institutions had 21 to 100 computers in their institutions.
2. There were an average of 18 computers found in each Computer Education institutions.
3. Computers with the configurations like, P3, P2, Celeron, P1, P4 and 486 were found with 38.15 percent, 21.66 percent, 17.85 percent, 12.26 percent, 7.90 percent and 2.18 percent in institutions respectively.
4. 94.55 percent of computers were being used for the purpose of teaching and the rest 05.45 percent of computers were being used for non teaching tasks

entirely. Some of the computers which were being used for teaching purpose even used for other than teaching purpose e.g., for developing study material, for internet access etc.

(vi) Status of Printers in the Institutions

1. 40 percent, 27.50 percent, 5 percent, and another 5 percent computer institutions were found with one, two, three and five to six printers respectively where as, rest 10 percent institutions were found with no printers.
2. 45.78 percent, 26.50 percent and 19.28 percent of printers were found to be dot matrix, inkjet, and laser printers respectively, where as, rest 8.44 percent printers were found to be of other types.
3. 51.81 percent printers were found used for teaching purpose and 3.61 percent of printers were used for non teaching purpose. At the same time rest 44.58 percent printers were found utilised for both teaching and non teaching purposes.

(vii) Maintenance of Hardware Facilities

1. Maintenance of hardware facilities was found adequate in 25 percent institutions, where as, it was found so-so in 75 percent institutions.

(viii) Status of Classrooms and Area Occupied by Institutions

1. 40 percent, 30 percent, 17.50 percent, 10 percent, and 2.5 percent institutions were found with one, two, three, four, and six class rooms respectively for theory teaching purposes.
2. Area of 44.58 percent, 14.46 percent and 12.05 percent classrooms were found between 101 to 200 Sq.ft, 401 to 500 Sq.ft., and 201 to 300 Sq.ft. respectively and remaining classrooms were found either less or more than this size.
3. Average number of theory teaching classrooms per institutions were found to be two.

4. Average size of each classroom was found to be 312 Sq. ft.
5. 52.50 percent and 35 percent institutions were found acquired with up to 1000 Sq.ft and 1001 to 4000 Sq.ft land respectively, whereas, 10 percent and 2.5 percent institutions were found with 4001 to 6000 and 8001 to 9000 Sq. ft.

(ix) Internet, Scanner, Web Camera, OHP, LCD, Library

1. 75 percent, 70 percent, 32.50 percent, 17.50 percent, and 45 percent institutions had internet, OHP, Scanner as well as Web Camera, LCD and separate library facility respectively. Rest of the institutions were found without these facilities.
2. 32.50 percent institutions had less than 50 books in their library. 47.50 percent institutions had 51 to 250 books. 10 percent institutions had 451 to 1450 books and the rest 10 percent institutions had 1450 to 4000 books in their libraries used for students reference purposes.

(x) Facilities Availed for Students and Teachers

1. Use of Hardware facilities, stationary, ribbon /cartridge, floppy and CD by the students were found to be sufficient in more than 75 percent institutions. It was found so-so in rest of the institutions.
2. Use of Hardware facilities and CD by the student were found to be sufficient in 50 percent and 70 percent institutions respectively. It was found so-so in rest of the institutions.
3. Use of Hardware facilities by teachers was found sufficient in 95 percent institutions and so-so in rest of the institutions.
4. Supply of all the facilities such as stationary, ribbon / cartridge, floppy can CD was found sufficient in all the institutions.

(xi) Teaching Staff

1. 9.60 percent Computer teachers who were found in highly paid salary group were drawing an average of Rs. 11,500/- per month. 40.00 percent teachers

who were in moderately paid salary group were found with an average salary of Rs 5,520/- per month and the rest of 50.40 percent teachers who fall in low paid salary group were found drawing an average of Rs. 2,886/- per month.

2. 16 percent Computer teachers were found with basic qualification in computer field and 84 percent computer teachers were found without basic qualification in computer field.
3. 21.60 percent, 19.20 percent, 15.20 percent, 13.60 percent and 11.20 percent computer teachers were found with MCA, Diploma in Computer Application, PGDCA, Certificate courses in computer, and B.E. (Computer Science) qualification respectively and the rest were found with the qualifications like, Advanced diploma in computer, Higher diploma in computer, Basic (M.S. Office, DOS, Win), BCA, A level, B level, and O level courses.
4. 24.00 percent, 21.60 percent, 14.40 percent, 13.60 percent and 12.80 percent, computer teachers were found with two years, one year, three years, four years and five years of teaching experiences respectively. 6.40 percent computer teachers were found with less than one year of teaching experience, where as, rest 7.20 percent computer teachers were found with more than 5 years of teaching experience.
5. 84 percent computer teachers were found teaching all subjects offered in the institutions and 16 percent computer teachers were found teaching only one subject in the institution like, Java, Visual Basic, C++, SQL, Tally, Trio, Basic, Autocad, and M.S.Office.

(xii) Teaching Learning Process

1. In 80 percent periods of different institutions, teachers were found teaching without a lesson plan and in 72.50 percent cases teachers were found not using any books in the classroom during teaching.
2. In case of 88 percent classes, teachers were found introducing lessons by using previous knowledge of the pupils.

3. In 50 percent, 42.50 percent and 7.50 percent periods inductive, problem solving and deductive approach of teaching were found used by teachers.
4. In 93 percent classes, pupils participation was found to be moderate or maximum and in 7 percent classes participation of pupils was less or not at all.
5. In 70 percent computer institutions marker black boards were used and in rest 30 percent computer institutions Chalk board was used.
6. In 70 percent classes Black board was not used and in 2 percent classes it was used rarely, where as, in 28 percent classes the use of blackboard was found either often or very often.
7. From those 30 percent classes in which black boards were found used, it's use was found excellent in 17 percent classes, satisfactory in 58 percent classes and not satisfactory in 25 percent classes. The classes in which blackboard was found used for the purposes like, drawing graphs and charts, for explaining difficult content and for detailed workout.
8. In 93 percent of the classes, teaching aids were found used and in 7.50 percent classes, teaching aids were not used. Computers were found used as a teaching aids in maximum classes.
9. It was found that in 62.50 percent classes use of the skill of explanation was excellent and in 37.50 percent classes it was average. In non of the classes it was noted poor.
10. It was found that in 32.50 percent classes use of the skill of illustrating with example was excellent and in 62.50 percent classes it was average. In 5 percent of the classes it was noted poor.
11. It was found that in 07.50 percent classes use of the skill of reinforcement was excellent and in 42.50 percent classes it was average. In 50.00 percent of the classes it was noted poor.

12. It was found that in 20.00 percent classes use of the skill of questioning was excellent and in 70.00 percent classes it was average. In 10.00 percent of the classes it was noted poor.
13. It was found that in 07.50 percent classes use of the skill of achieving closure was excellent and in 32.50 percent classes it was average. In 60.00 percent of the classes it was noted poor.
14. It was found that in 24.33 percent classes use of the skill of using audio visual aids was excellent and in 54.05 percent classes it was average. In 21.62 percent of the classes it was noted poor.
15. It was found that during teaching in the class teachers asked 48 percent, 28.75 percent and 23.25 percent questions of knowledge level, understanding level and application level respectively.
16. Average 10 questions were asked by the teacher in each period.
17. It was found that frequency of questions asked by the teacher in the class was very often in 40 percent classes, sometimes in 53 percent classes and rare in 7.50 percent classes.
18. It was found that in 55 percent classes, assignment was given to the pupils after regular classes and the absence of giving assignments was found with rest 45 percent classes. The quality of the assignment was found satisfactory in majority of the cases.
19. Classroom management and supervision were found satisfactory in 55 percent and 40 percent classes respectively and in remaining classes it was found to be average and poor.
20. In 75 percent, 15 percent and 10 percent of classes democratic, autocratic and laissez-faire style of teaching were observed respectively.
21. 75 percent times positive and 25 percent times negative reinforcement was given by the teachers during teaching in the class.

22. In 80 percent classes, no review of the lesson was done at the end of the class and in 20 percent cases, review of the lesson was done by the teacher.
23. In 55 percent and 27.50 percent classes lecture method and demonstration method were found used respectively and in rest 17.50 percent classes discussion and discovery methods of teaching were employed.

(xiii) Problems faced by Computer Institutions

Problems faced by computer institutions found varying with the percentage of institutions with varying types of problems which is reported as follow.

(a) Problems found with 70 percent and more institutions

1. Enough number of students were not available.
2. Students' group was highly heterogeneous creating problems in teaching learning.
3. High cost of electricity.

(b) Problems found with 50 percent to 69 percent institutions

1. Difficult to get teachers for teaching newly introduced courses.

(c) Problems with 30 percent to 49 percent institutions

1. Teachers were not trained in teaching pedagogy.
2. Clientele available from in-service class group were less motivated and it was difficult in giving them suitable batch timings. They were also found poor in grasping.
3. Difficulty in introducing new courses frequently as it was difficult to get teachers for teaching those courses.
4. Study material for new courses were not available.
5. It is costly to market new courses.

6. It was difficult to design new courses frequently with future vision to meet market demand.
7. Amount of fees charged was not enough due to increased competition so it was difficult to survive in competitive market.
8. Students were not sincere to pay fees. So collection of fees was found difficult for the institutions.
9. Problems related with study material, examination and advertisement of the products.
10. It was difficult to get live projects with required specification as a part of completing the course.

(d) Problems faced with less than 30 percent institutions

1. Institutions faced the problem of enough number of students in batches and even level of motivation of learning among students was not satisfactory.
2. It was difficult to get qualified and experienced teachers with grip over both English and regional language.
3. Lack of facilities like, number of computers, number of printers, internet connection, seminar rooms, video camera, Over Head Projector etc..
4. Irregularity of electricity

(xiv) Market Demand of the Courses

1. Market value index for common courses ranged from four (4) to five (5) it was so high as private institutions like to offer those courses which are more in the demand in the market.

2. Market value index for individual courses ranged from two (2) to five (5). 30 percent individual courses offered were with three or less than three market value index and 70 percent courses were found with four to five market value index.
3. C, C++ was the course which was being offered in highest number of institutions i.e., in 42.50 percent institutions. The course which was being taught in second highest number of institutions was Oracle which was being taught in 20 percent institutions. Third rank goes to Java and DTP which were being taught in 17.50 percent institutions each and others were offered in lesser than these institutions. The market value index of these courses were found to be high.

(xv) Comparison of Establishment of Various Category Computer Education Institutions

1. It was found that 37.50 percent, 37.50 percent and 25 percent Computer Education institutions were government recognised, franchise and self managed institutions respectively.
2. The growth rate of establishment of was slow in first decade, whereas, it was highest during 1996 to 2000, it was slow again during the year 2000 to 2004.
3. The growth rate of establishment of Self managed institutions was slow during 1996 to 2000 when it was highest in other categories, whereas, it was highest during the period 2000 to 2004 when it was slow in other categories.

(xvi) Comparison of Various Category of Institutions With Respect to Infrastructure and Other Facilities

1. It was found that self managed institutions were with having more latest configuration computers i.e. P3 and P4 generation, with 55.14 percent of total computers, government recognised institutions were on second place with 49.14 percent and franchise institutions were on third place with 39.81 percent of total computers.

2. In terms of average number of computers, it was found that average number of computers were 30.80, 21.27 and 7.13 in government recognised, franchise and self managed institutions.
3. In terms of average number of printers, it was found that average number of printers were 3.20, 2.27 and 1.13 in government recognised, franchise and self managed institutions.
4. It was found that average area occupied by Computer Education institutions, was 3082 Sq.ft, 2357 Sq. ft. and 520 Sq. ft in the government recognised, franchise and self managed institution respectively.
5. It was found that average number of theory teaching classrooms were 3.10, 2.20 and 1.27 in government recognised, franchise and self managed institutions respectively.
6. It was found that average size of theory teaching classrooms was 406 Sq. ft., 306 Sq. ft and 196 Sq. ft in government recognised, franchise and self managed institutions respectively.
7. It was found that average number of computer laboratories were 1.93, 1.60 and 1 in government recognised, franchise and self managed institutions respectively.
8. It was found that average size of computer laboratory was 506 Sq. ft., 374 Sq. ft. and 167 Sq.ft. in government recognised, franchise and self managed institutions respectively.
9. It was found that average number of books was 1033, 237 and 35 books in government recognised, franchise and self managed institutions respectively.
10. It was found that government recognised and franchise were having better facilities like scanner, LCD, Library, OHP, web camera etc. then self managed institutions.

(xvii) Comparison of Teaching Staff in Various Categories of Institutions

1. In terms of highly qualified teaching staff i.e PGDCA and above, government recognised, franchise and self managed were on first, second and third place respectively. It was found that average salary of teaching staff of government recognised, franchise and self managed institutions' teachers was Rs. 6312, Rs. 4092 Rs. 3720 per month respectively.
2. In terms of experience of teaching staff, it was found that the experience of half of the teachers was between 2 to 5 years, whereas, government recognised institutions were having 19 percent of teachers with more than five years experience, whereas, franchise and self managed institutions were having majority of the rest teachers with less than two years experience.
3. In terms of average number of computer teachers in government recognised, franchise and self managed institutions was 4.78, 3.47 and 2 in government recognised, franchise and self managed institutions respectively.

5.9 SUGGESTIONS

Ultimate intention behind survey studies lie in unfolding the situation and offering certain suggestions in order to improve the present scenario. Finding of this study led to the conclusion that in certain aspects present scenario of Computer Education was worth appreciating. While in certain other aspects, more attention was needed to improve it. Following suggestions are given on the base of the findings of the study.

1. It was found that only 5 percent institutions were offering subsidized courses. So the students those are academically good but economically weak lack opportunity to take Computer Education. So more institutions should come up with subsidized courses to cater the need of this group of students. Some steps should be taken to offer scholarships to draw the attention of intelligent but economically poor students. It should be made compulsory for self financed institutions to give admission to certain percentage of this groups students at subsidised fees.

2. After 2000 A.D. the growth in computer institutions had reduced because of cut throat competition and lack of confidence of students in the quality and demand of Computer Education. Even some institutions which were having significant market share were not able to survive in the market. In this situation, government should do efforts to control and boost up Computer Education through private and subsidised institutions for enough output in market.
3. Rein of private institutions should be kept in the hands of one regulatory body to control, boost up and encourage private participation in the market specially in the circumstances when government participation is quite less. Certain guidelines should be formulated to help private institutions in providing better quality service in the market so that they can make their stand strong in the market. Moreover this regulatory body should come up with certain norms and criteria for establishing new private computer institution and should provide certain guidelines to run the institutions with reference to Hardware, Software and human ware facilities in the institutions, qualification, experience and training of faculties, courses and their fees, admission and eligibility criteria, time table and evaluation etc.
4. It was found that out of the total number of courses, only 33.33 percent courses were commonly offered courses, where as, rest of the courses were individually offered courses. As far as hardware courses were concerned, not even single course was commonly offered course. It means there was need of standardized courses. The body which is looking over quality of the institutions, should take responsibility to furnish scientifically designed courses to the institutions and it should modify and revise them at optimum interval of time although giant institutions of the market will hardly agree to these courses, some other options should be thought for the solution of this problem as to ensure the quality of Computer Education.
5. Private institutions were hardly following eligibility and admission criteria for enrolling students in particular courses. This practice should be stopped and admission and eligibility criteria should be framed in such a way as to

match the level of students with respect to intelligence, age, qualification, and their interest and aptitude.

6. It was found that there was no balance in the ratio of theory and practical teaching hours. It should be scientifically decided because this ratio differs drastically from institution to institution even for the same course. Even in evaluation the weightage given to theory and practical was not systematically decided. It varied from institution to institution even for same component courses. Certain institutions were giving equal weightage to theory and practical and certain institutions were giving no weightage to theory at all. So there should be guidelines for justified ratio for theory and practical in examination and evaluation.
7. In terms of fees it was found that structure of fees was not standardized. There was significant difference in the amount of the fees for the same course in different institutions. So the fees structure should be rationally decided and be made applicable effectively.
8. It was found that 47.50 percent institutions were with less than ten computers. 40 percent institutions were having only one printer and 10 percent institutions were not having even a single printer. 40 percent institutions were having only one classroom for teaching theory subjects, with less than 200 Sq. Ft. size. Facilities like internet connection, Over Head Projector, LCD, Scanner, Web camera etc. were not sufficient and adequate in significant number of institutions. Number of books and library facility were not adequate in large number of institutions. So it was doubtful whether these institutions were able to justify their task without enough facilities. In this situation there should be certain norms and criteria for these institutions as to ensure required facilities like, computers, printers, library, books, internet, OHP, etc for improving the quality of Computer Education.
9. Amount of the salary paid to teachers was very disappointing. The average salary of 90.40 percent of total number of computer teachers was Rs. 4,050 per month. In this situation expecting well qualified and enthusiastic candidates in teaching field is unrealizable dream only.

10. Computer teachers were not given the status like the status and security of other subject teachers. It leads to the lack of interest of candidates to come in teaching line of computer field. So to attract quality candidates in teaching field of computer, handsome amount of salary and enough security and status should be given.
11. Majority of the teachers were less qualified and not trained in teaching pedagogy. It affects the teaching learning process and ultimate goal of education. So a course of teacher training should be designed and training should be given to all the computer teachers. This training should be the part of their eligibility criteria to work as a computer subject teacher.
12. Average number of teachers per institution were found to be three teachers. It should be increased. In maximum institutions each teacher was teaching all the subjects taught in the institution which affects the specialization of expertise of the teacher and thereby the quality of teaching too. So certain steps should be taken to change this situation.
13. It was found that 80 percent teachers were going in the classrooms without written lesson plan, that is significant cause of ineffective teaching in the classroom specially when it was found that majority of the teachers were less than two years experience.
14. Important teaching skills which have significant role on level of effectiveness of teaching were not being used effectively in the class eg., skill of reinforcement, skill of questioning, skill of set induction, skill of black board work, skill of achieving closure, classroom management, quality of classroom supervision by the teacher etc.. Apart from this, use of teaching aids, level of pupils' participation in the class and methods of teaching used in the class were needed keen attention to bring change in class room teaching learning process. Looking at this state it is worth suggesting that computer teachers should be given training in teaching pedagogy. Education department of government should take responsibility to organize certain workshop to improve the quality of teaching by computer teachers and it should be a criteria for working as a computer subject teacher so that classroom teaching

learning can be improved. This step can bring drastic change in the quality of classroom teaching learning process in computer field.

15. The bodies which were letting franchise centres and the universities which were offering courses through affiliated colleges and study centres should be made aware of their duties like, examination, certification, course designing etc. so that Computer Education can be imparted more effectively.
16. As a part of curriculum, students have to make a project, it was found that certain companies were not giving projects to the learners. Companies and industries should be encouraged to provide projects to students as a part of their social responsibility.
17. It was found that maximum institutions were having internet connection but they were not allowing students for free access of internet. Their argument in this regard was that it was not affordable to allow the students free access of internet due to high cost. It might be affecting the level of learning of the students. Hence, Computer Educational institutions should be given all facilities related with internet service at subsidized rates.
18. Computer Education institutions were of the view that they should be given subsidy in electricity charges as a part of motivating Computer Education. They also suggested that electricity charge should be collected monthly rather than twice a month as to make their payment easy.
19. Certain institutions were not having enough physical facilities and were willing to get financial help like loans at low rate of interest to improve physical status of the institutions. After having satisfactory investigation about the institutions, financial help should be encouraged by monitorial institutions.
20. Industrial visits and presentation from experts should be made compulsory as a part of curriculum so that students can be made more realistic and practical in thinking and ready to work at work places immediately after the completion of the study. This will increase the worth of the course and learning of students as well.

21. It was found that self managed institutions were found relatively poor in physical facilities, such as computers, printers, library, books, classrooms and computer laboratories, carpet area, internet facility, equipment like OHP, scanner, LCD etc. They were not having enough number of qualified, experienced, well paid computer subject teachers. They were suffering from lack of financial resources too. On the contrary their market share can't be overlooked as 37.50 percent of Computer Education institutions were from this category only. So they should be given special attention to improve their status and ensure the quality of education.

5.10 SUGGESTIONS FOR FURTHER RESEARCH

The present research study was undertaken to assess the status of Computer Education imparted in Vadodara district of Gujarat. It was undertaken to unfold certain aspects related with present scenario of Computer Education prevailing in this region. The study is restricted to only those institutions which are imparting Computer Education in face to face mode only excluding schools' Computer Education.

During the whole process of the study certain new research problems aroused in the mind of the investigator which were felt worth exploring. They are enlisted here.

1. This study was undertaken to study the status of Computer Education imparted by both private and public institutions. But studies can be undertaken to study the status of Computer Education imparted in private computer institutions only that may give entire picture of the scenario of private institutions in the region.
2. The investigator found that computer teachers were nowhere qualified in teaching methodology. So a study can be undertaken to study the present pedagogy adopted by computer teachers and to develop the pedagogy for computer teachers so that teachers teaching computer subject even become well-versed with teaching pedagogy.

3. The investigator could not touch the institutions which were imparting Computer Education in distance mode, a study can be conducted to study the status of Computer Education imparted by distance mode.
4. Present day is the day of competition, in this circumstances, a comparative study of the status of Computer Education imparted by any two universities of Gujarat can be conducted.
5. Today private colleges are coming into existence imparting Computer Education. A study can be undertaken to study the status of self financed affiliated colleges imparting Computer Education in Gujarat.
6. Today certain universities like, Gujarat university had many affiliated colleges, a study can be undertake to study the status of Computer Education imparted by affiliated colleges of Gujarat university.
7. There are two branches of Computer Education like, software and hardware. The magnitude of software Computer Education is many more times than hardware Computer Education. In this circumstances a separate study can be conducted to study the status of software compute education in a district.
8. The investigator had studies the status of Computer Education in Vadodara district of Gujarat. Similar study can be undertaken for different district of Gujarat.
9. Computer Education had remained in the hand of certain class of society, so a study of the expansion of Computer Education in the state can be done with reference to certain variables like socio economic status, gender parents qualification, geographical area etc..
10. The investigator had excluded Computer Education imparted by school, a separate study can be undertaken to study the Computer Education imparted in various schools of any district or zone.
11. A comparative study of the status of GSEB schools imparting Computer Education and CBSE schools imparting Computer Education can be undertaken.

12. Computer Education is relatively a new concept in India than other developed countries and it has not spread evenly in different regions. So a study can be conducted to study the history and process of development of Computer Education in particular region.

5.11 CONCLUSION

Computer Education a very important area of education. This stream of education has the potential to develop the country to any extent. This stream of education need to be introduced at different levels of education from nursery to graduation and post graduation levels irrespective of the academic discipline. It should spread in both formal as well as non-formal sectors in the form of both public (subsidized) as well as private (self financed) education. To control and enhance the quality of this education norms and policies need to be prepared at national, state and district levels. Apart from this, private participation in this field needed to be encouraged and proper follow up mechanism needed to be adopted to safeguard these institutions. To bring excellency in the system, there is a need even to encourage universities and affiliated colleges to provide good quality of education with affordable cost. This is a prosperous sector of education need the attention of planners, policy makers, educationists and investors to nourish the system with great care to develop the sector up to its maximum potentials. The findings of the present study indicated the status and problems in this sector. Taking proper attempt in this direction can help to bring the glory of this sector of education.