CHAPTER-1

ICT @ School Scheme: An Overview

1.0. Revised ICT Scheme:

The scheme of Educational Technology (ET) was started in 1972 during the 4th Five Year Plan (FYP). Under the scheme 100% assistance was given to 6 State Institutes of Educational Technology (SIET) and the States/UTs were assisted for procurement of radio cum cassette players and colour TVs. Further, in recognition of the importance of role of ICT in education, the Computer Literacy and Studies in Schools (CLASS) Project was introduced as a pilot project in 1984-85 with the use of BBC micros. The project was adopted as a centrally sponsored scheme during the 8th FYP (1993-98) and its scope was widened to provide financial grants to educational institutions and also to cover new Government and Government aided secondary and higher secondary schools. The use and supply of software was limited with coverage confined only to higher secondary schools.

The National Task Force on Information Technology and Software Development (IT Task Force), constituted by the Prime Minister in July, 1998 made specific recommendations on introduction of IT in the education sector including schools for making computers accessible through the Vidyarthi Computer Scheme, Shikshak Computer Scheme and School Computer Schemes. Smart schools were recommended on a pilot basis in each state for demonstration purposes. It was also stipulated that 1 to 3% of the total budget was to be spent on provision of computers to all educational Institutions up to secondary and higher secondary level during the next five years.

Based on the experience gained so far, a need for a revision of the scheme of ICT @ Schools was felt to expand the outreach of the scheme to cover all Government and Government aided secondary and higher secondary schools in the country with emphasis on educationally backward blocks and areas with concentration of SC, ST, minority and weaker sections. Along with that, there is a need for ensuring dependable power supply where the electricity supply is erratic and

internet connectivity, including broadband connection. The key recommendations of various workshops conducted by MHRD during 2004-09 related to ICT and computer aided learning in schools can be summarised as follows:

- **Setting smart schools:** There is a need to set up smart schools at the district level to serve as demonstration models for neighbouring schools.
- **Teacher engagement and better in-service and pre-service training:** Since ICT education will be imparted to all secondary and higher secondary students, an exclusive ICT teacher is required for each school. Similarly, there is a need for pre service as well as in service training of all teachers in effective use of ICT in teaching and learning process.
- **Development of E-content:** There is also a need to develop and use appropriate e-content to enhance the comprehension levels of children in various subjects.
- **Monitoring:** A strong mechanism for monitoring and management needs to be set in place at all levels for ensuring optimal delivery of set targets. The scheme envisages that the school management committee, parents' teachers association and local bodies would be involved in the programme management along with the setting up of an online web based portal for real time monitoring and transparency. In addition, independent monitoring and evaluation need to be envisaged.

Accordingly, the scheme has been revised, with the approval of Cabinet Committee on Economic Affairs (CCEA) on 9th January 2010, for implementation during the remaining period of 11th Plan. The major components of the scheme as per revised ICT @ school scheme (2010) are:

- Partnership with State Governments and Union Territories Administrations' for providing computer aided education to secondary and higher secondary Government and Government aided schools
- Covering all Government and Government aided secondary and higher secondary schools by ICT by giving priority for early coverage of schools in educationally backward blocks and in areas having concentration of SC/ST/minority/weaker section.

- Provision for engagement of an exclusive computer teacher in each secondary and higher secondary school, capacity enhancement of all teachers in ICT to enable them to impart ICT enabled teaching and a scheme for national ICT award as a means of motivation**.**
- Strengthening of SIETs (State Institute of Education Technology) to contribute to e-content development. Development of a e-content, mainly through Central Institute of Education Technologies (CIET), six State Institutes of Education Technologies (SIETs) and 5 Regional Institutes of Education (RIEs), as also through outsourcing.
- Management, monitoring and evaluation through ICT will be strengthened. Convergence with the existing programme would be essential especially in teacher training and ensuring reliable power supply and internet connectivity. (http://www.teindia.nic.in/e9tm/Files/ICT_Documents/ICTatSchoolsScheme.pdf)

1.1. An overview of the provisions under ICT scheme in India: In the revised ICT @ Schools Scheme it is the mission to bring all Government and. Government secondary and higher secondary schools under the ambit of the scheme. Priority would be given to educationally backward blocks and areas with concentration of SC, ST, minority and weaker sections. The various provisions under Ict@ School scheme are summarised as follows:

1.1.1. Infrastructure: In ICT@ School Scheme the provisions related to infrastructure are made in all schools. The recommendations on minimum infrastructure to be provided in each school are as follows:

- **Hardware and software**: Each school would be provided with 10 PCs or 10 nodes connected through a server. Accessories like printers, projection system, etc will also be provided. Keyboards would be customized for use in the regional languages.
- **Connectivity:** The first priority would be to have a broadband internet connection of at least 2 MBPS bandwidth in each school. Wherever that is not possible, connection of lower bandwidth would be provided with plan t upgrade in future. Wireless links would also be explored.

- **Power Supply:** Wherever the power supply is unreliable, it is proposed to provide assistance for purchase of a generator, as a back up only and also its recurring cost, subject to a maximum of Rs.1000 per month, in addition to Rs 1000 per month for the electricity charges. In areas where there is no power supply, solar generated power should be made use of.
- **Computer Room/Lab:** The computers would be installed in one of the safe rooms in the school. If such rooms are not available, the need can be met from the scheme Rashtriya Madhyamik Shiksha Abhiyan (RMSA) in case of Government schools.

1.1.2. Central Funding Pattern: Under the class component of the Revised ICT scheme, the Union Government would provide 75% of financial assistance to State/UTs. The balance 25% of funds would be contributed by the State Governments/UTs. Assistance shall be provided to Northern East States, including Sikkim, in the ratio of 90:10. Each school is given under Non- Recurring Expenditure - 10 PCs (or one Server with 10 Terminals), 1 Projector, 1 Printer, 1 Scanner, 1 Web Camera, 1 modem, Broadband antenna, Generator/ Solar Package, UPS, video camera, Operating System & Application Software and budget for training of teachers etc.; and in recurring expenditure Computer Stationery (Printer cartridges, CD-ROMs, floppies, paper, etc); Electricity charges @ Rs. 1,000/- p.m.; Expenses on Diesel /Kerosene for generator @ Rs. 1,000/- p.m.; Telephone charges @ Rs. 500/- p.m.; Internet / Broadband charges; Teachers' salary @ Rs. 10000/- p.m.; budget for refresher training of teachers and for Management, Monitoring and Evaluation of ICT scheme. An overall maximum limit of Rs.9.10 lakh per school {Rs.6.40 lakh (non-recurring) and Rs.2.70 lakh (recurring)}. The Central Government's share would be restricted to Rs.6.63 lakh per school {Rs.4.80 lakh per school (non-recurring) and Rs.1.83 lakh per school (recurring)} for general category States and Rs.7.19 lakh per school {Rs5.76 lakh non-recurring and Rs.1.43 lakh per school recurring} for NE States, including Sikkim.

1.1.3. Mode of Implementation (Boot Vs Outright Purchase): States would be encouraged to implement the programme through a BOOT model under which the supplier would make available the ICT infrastructure for the duration of the

contract period (normally five years) on the basis of a service level agreement and assurance of a periodic payment subject to satisfactory maintenance. The release of Central assistance in that case would be spread over the contract period.

In exceptional cases where such arrangements are difficult to implement, ICT infrastructure can be procured on 'Outright Purchase Basis'. The State/UT Govt. shall be free to partner with private organizations or integrate it with other similar schemes for implementation of the 'ICT in schools' scheme including providing for maintenance. The direct procurement of hardware by the State would be last resort.

1.1.4. **Establishment of Smart Schools:** *Each State Government/Union Territory would convert one school per district into a smart school to serve as role model and to share the infrastructure and resources with the neighbourhood schools also subject to availability of funds. A grant of Rs.25 lakhs would be given per smart school.* In smart schools, the emphasis would not only be on the use of Information Technology but also on the use of skills and values that will be important in the next millennium. It is hoped that at least one section (of 40 students) in each of the classes IX – XII will be fully computerized. Thus a school having 160 computers @ 40 computers for each IX to XII classes may be called a smart school under the scheme. However, keeping in view the fact that this target cannot be achieved in one go, it is proposed to provide 40 computers to such identified schools.

1.1.5. **Appointment of ICT teachers and formulation of curriculum for computer literacy:** The objective of the ICT @ school scheme is to make all students IT literate. This would involve formulation and transaction of curriculum and syllabus on computer literacy for each of the classes from IX to XII. Firstly, a dedicated ICT teacher would be required in each school. Secondly, all Examination Boards in the country would be encouraged to offer computer-related subjects as electives at the higher secondary stage. This scheme would encourage individual schools to offer such electives, so that a large manpower with IT skills can be built up in this country. The following options for engagement of teachers for IT literacy and competency teaching are suggested for adoption by the States:

- It would be necessary to have dedicated and suitably qualified teacher for computer education in each secondary school. It would not be possible for other subject teachers to teach computer literacy to high school students
- If a school has higher secondary stage, then a post graduate teacher in computer science may be appointed if computer related subject(s) is (are) offered as elective(s).
- To start with, such teachers may be appointed on contract basis with a remuneration not exceeding Rs. 10,000 per month and this will be part of the scheme. If one school does not justify a full time teacher, one teacher may be appointed for 2 schools and time table may be so arranged that the teacher can spend half the week in each school. The qualification of the teacher teaching higher secondary stage should be adequate.
- If the school has both secondary and higher secondary stage, then the teacher meant for higher secondary classes would also teach ICT in secondary classes (class IX and X) students.
- If the school has only secondary (IX-X) and no higher secondary (XI-XII stage, then a dedicated and qualified teacher is required on contract basis to teach ICT. In this case, the ceiling for monthly remuneration would be Rs. 500 per month. If full time work is not possible in one school, one teacher may be appointed for a group of 2 schools, taking care to arrange time tables so as to enable the teacher to spend half of the week in each school.
- The computer teacher will also be in charge of all ICT facilities in the school in general. He/ she will also coordinate in-service ICT training for all subject teachers in the school to enable them to use ICT in their day-to-day teaching of subjects.
- Wherever if it is found expedient, instead of contract teachers for IT for classes IX and X, provision of a qualified teacher can be made as part of 'BOOT model' agreement, so that the service provider makes arrangement for a qualified teacher. In such cases the total outlay per school would be enhanced to the extent of Rs 5000 per month or Rs 60000 per year for a five year period.

1.1.6. Teachers' Training: *It will be mandatory for all teachers to undergo in-service training in use of ICT in teaching; and also during the pre-service training courses meant for secondary teachers.* The National Council for Teachers Education shall be associated with the scheme in the context of training of teachers in computer-aided learning. The Rehabilitation Council of India would play an important role in projects involving introduction of use of technology for the education of children with special needs. In p*re-service training on ICT should be provided for 55 hours.* For in-service training in f*irst time induction training in ICT should be provided to all teachers in the sanctioned schools for a period of 10 days (8 hours per day) @ Rs. 400/- per teacher.* The trainings would be organized by the respective State Governments in convenient batches at the SCERTs or such other training institutions as the State Governments finds suitable. The *Refresher Training in use of ICT in teaching should be provided to all teachers of the sanctioned schools every year for 5 days (8 hours per day) @ Rs. 400/- per day per teacher.*

1.1.7. *National Award for the Teachers using ICT for Innovations in Education:* *In order to motivate teachers and teacher educators to use ICT in school education in a big way it is proposed to institute National Awards for the Teachers using ICT to be given away every year on the National Education Day (11th November).*

1.1.8. Development of E-Content: *Development of the appropriate e-content and its persistent and effective use constitutes the core of this proposed scheme. This task would be shared by Central Institute of Educational Technology (CIET), State Institutes of Educational Technology (SIET), Regional Institutes of Education (RIE) of the National Council for Educational Research & Training (NCERT), Institutes of repute having experience of education and development of e- content and other wings of central and State Governments as required. Outsourcing to private sector in a transparent manner may also be done.* National and State level committees should also be set up to assess the nature of e content to be developed to enhance the learning capabilities of the secondary school children. There would be stress on development of e- content and building of repository of e- content & dissemination of best practices.

1.1.9. Programme Management Structure: With the increase in the mandate and outreach of the scheme, an appropriate management structure is needed at the national, state and district levels for management, monitoring and evaluation. A separate budget is there for at the national level and the provision would be used for the purpose of monitoring, evaluation, research, innovation, seminar, workshops, visits, office expenses, and consultancy. At the State level the provision would be utilized for undertaking external impact assessment studies at State, District and school levels to make course corrections and for meeting expenses on the staff salary at State level and District level.

- **State Level:** The overall responsibility of the programme at the State level shall rest with Principal Secretary/Secretary in charge of the programme. A cell, headed by an officer not below the rank of District Collector, having sufficient experience in the sector, will manage the programme implementation. The support staff for the cell would be engaged on contract basis.
- **District Level:** A cell headed by an officer with adequate seniority and relevant experience will oversee the implementation of the programme in all secondary and higher secondary schools in the district. The cell would monitor the programme and also maintain all records including periodic financial and physical reports to be sent to the State for onward transmission to the Ministry.
- **School Level:** The head of the school assisted by the computer teacher would be responsible for the school-level implementation. The School Management Committee, the Parents Teacher Association and the local bodies would be fully involved. All efforts would be made to make the school an information hub for the community. The facilities can be used outside the school hours for the benefit of the community so that optimal utilisation of the ICT infrastructure takes place while enabling revenue generation.

1.2. ICT@ School Scheme: A Dynamic Model of School Education:

The objective of the ICT @ school scheme is to make all students IT literate, so, that a large manpower with IT skills can be built up in this country; and to integrate technology in the teaching learning process. No doubt, the provisions

made in ICT@ School Scheme are dynamic one to provide good IT infrastructure in each school. Establishing smart schools to serve as role model and to share the infrastructure and resources with the neighbourhood schools is the initiative to make technology based education for Govt. school students. Formulation of curriculum for ICT is really an innovative idea to develop IT skills among the future generation. To provide grants for the appointment of a dedicated ICT teacher and encouraging all Examination Boards in the country to offer computer-related subjects as electives at the higher secondary stage is a step to develop IT professional of the future. The involvement of NCTE for pre-service training in ICT and promotion of ICT training during in-service is an appropriate measure to make the teachers computer savvy. In order to motivate teachers and teacher educators to use ICT in school education in a big way it is proposed to institute National Awards for the Teachers using ICT to be given away every year on the National Education Day. The development of appropriate e-content and its persistent and effective use constitutes the core of this proposed scheme. With the increase in the mandate and outreach of the scheme, an appropriate management structure is made functional at the national, state and district levels for management, monitoring and evaluation. Capacity building of teachers in IT and skill development of students in IT is the core objective and a dynamic preposition of the scheme.

Chapter – II

ICT @ School scheme in Punjab: An Overview

2.0. ICT Scheme in Punjab:

Information & Communication Technology (ICT) Education Project has been started with the aim to impart computer education to all students of class VI to XII. ICT is universally acknowledged as an important catalyst for social transformation and national progress. Understanding and leveraging ICT is critical for the State's continued social and economic progress. In Punjab, the Project is managed by the two societies namely 'Punjab ICT Education Society' (PICTES) for computer literacy and Punjab EDUSAT Society for development and transmission of E-content. The ICT Project consists of four components in Punjab i.e. Computer Literacy; Computer Aided Learning; Teacher Training; and EDUSAT based lessons.

- **PICTES:** In PICTES Committee has 11 ex-officio members, 4 co-opted members, two IT experts to be nominated by the Department of Information Technology and two eminent citizens to be nominated by the Department of School Education. Hon'ble Chief Secretary, Govt. of Punjab is the Chairman, the Secretary School Education is the Vice Chairman and DGSE is the Member Secretary.

- **Punjab EDUSAT Society:** The Govt. of Punjab has set up Punjab EDUSAT Society for providing quality education to the Govt. educational institutions of Deptt. of School Education, Higher Education, Technical Education and Medical Education. The EDUSAT network was dedicated to the State on 02.01.2008 by the Hon'ble Chief Minister Punjab. Punjab EDUSAT Society has set up one Hub and three studios in the premises of Punjab School Education Board from where independent programmes of Higher Education as well as Technical Education are being broadcast. All the three studios have been equipped with the State of the Art equipment and peripherals.

2.1. Goals and Objectives of ICT Education in Punjab as per PICTES:

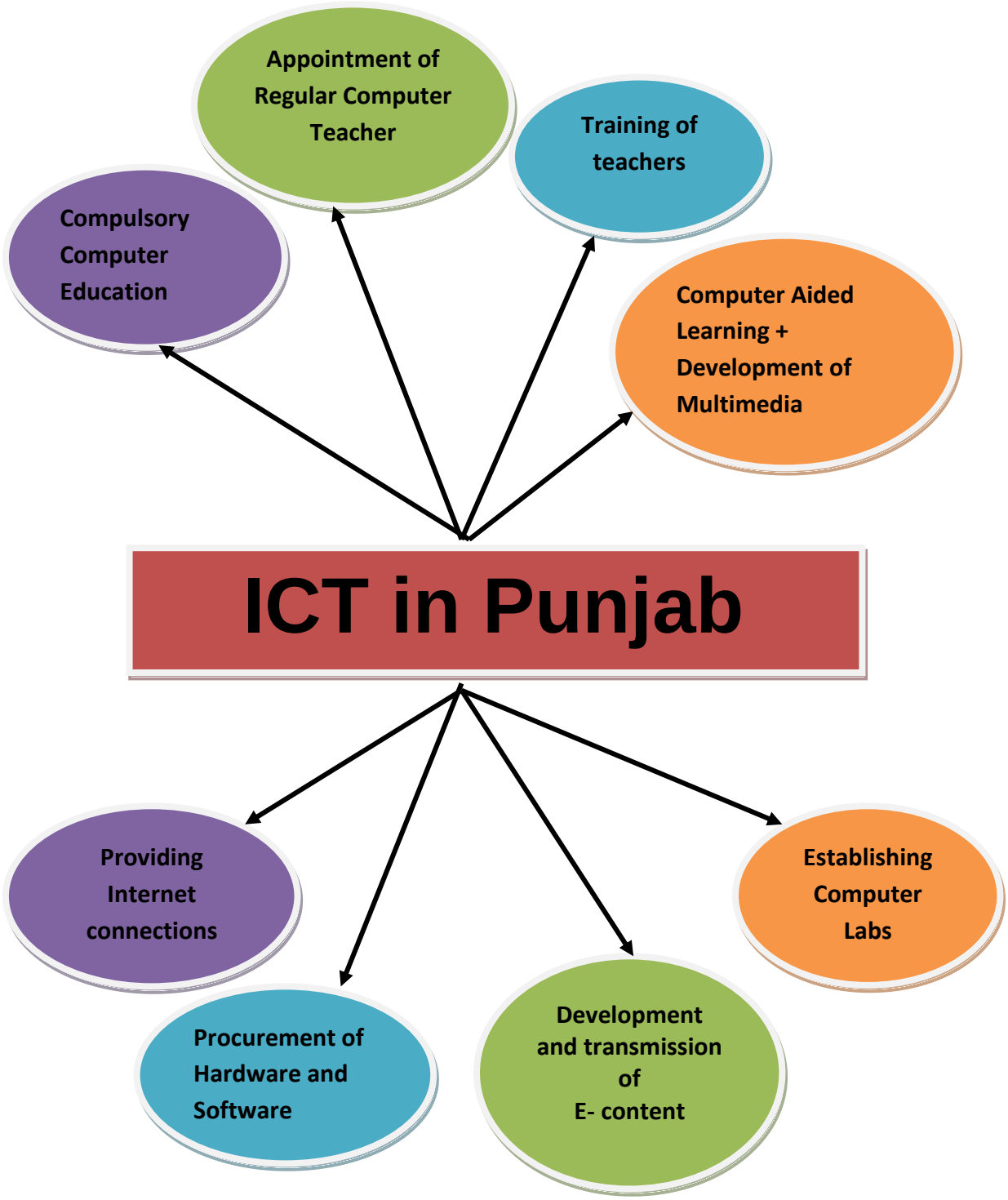
- To establish and enabling environment to promote the usage of ICT especially in Upper Primary (6-12th) Government Schools across Punjab State. Critical factors of such an enabling environment include widespread availability of access devices, connectivity to the Internet and promotion of ICT literacy.
- To enable every students of the Punjab State to become “Digitally Literate”.
- To train the school teachers in effective delivery of education by using IT tools for teaching with latest methodologies & aids.
- To facilitate and catalyze the growth of digital economy in the state by leveraging this infrastructure and re-engineered workforce.
- Compulsory ICT Education for all students.
- Set up modern labs with latest IT infrastructure where students get the best of IT training.
- Develop student & teacher competence as per NCERT and CBSE Guidelines.
- Incorporate a Management Information System (MIS) for monitoring and reviewing the project on regular basis.
- To provide an effective learning environment for children by providing interactive multi-media CDs to the students of primary and upper primary classes make learning a joyful experience.
- To ensure the availability of quality enrichment of existing curriculum and pedagogy by employing ICT tools for teaching and learning.
- Promote critical thinking and analytical skills by developing self-learning. This shall transform the classroom environment from teacher-centric to student-centric learning.

(Source: http://www.ssapunjab.org/pictes/)

2.2. Provisions of ICT @ School Scheme in Punjab:

To fulfill all the objectives laid down in ICT@ School Scheme, in state of Punjab following provisions are made i.e.

- Provision of Compulsory Computer Education from VI- XII in all the Govt. schools of Punjab.
- Establishing computer laboratories in all the Govt. schools of Punjab since 2006 and in 2012-13 under E- library programme, 24 computers have been provided, out of which four are master computers having 5 nodes each. Computer laboratories are established in separate rooms in all schools. Each school is provided with computers and keyboards are customized for use in the regional languages.
- Under the ICT scheme, computer labs and receive only terminals (ROT) have been set up for transmission of EDUSAT based lessons in schools where modern hardware, software, LAN, broadband facilities have been provided.
- Appointment of computer teachers in all middle, secondary and senior secondary schools.
- A broadband internet connection of at least 2 MBPS bandwidth in each school. Wherever that is not possible wireless links are explored.
- For uninterrupted power supply, assistance for purchase of a generator is provided with recurring cost.
- Curriculum has been designed based on NCERT guidelines.
- Computer books are given to students free of cost.
- For all teachers, five days in-service training has been provided on computer skills.
- An administrative set up at state and district level to implement the scheme.


Appointment of Regular Computer Teacher
Training of teachers
Compulsory Computer Education
Computer Aided Learning + Development of Multimedia
ICT in Punjab
Providing Internet connections
Establishing Computer Labs
Procurement of Hardware and Software
Development and transmission of E- content

2.3. Detail of Schools covered in ICT Scheme: Under the Scheme, Department of School Education & Literacy under MHRD, Govt. of India makes available funds in the ratio of 75:25 for setting up IT infrastructure in secondary and higher secondary schools for imparting computer education to students of class IX to XII. Under the scheme 3703 schools have since been approved - 200 in 2005-06; 2000 in 2008-09; 870 in 2009-10, 494 in 2010-11 including 354 Govt. Aided Schools and 139 in 2012-13 including 5 Smart Schools (which are yet to be established). The funds are provided both for non-recurring and recurring expenditure for computer labs with minimum 10 computers & other support systems including furnishing and electrification. Detail of school is as follows:

S. No.	Year	No. of Schools Covered
1	2005-2006	200
2	2008-2009	2000
3	2009-2010	870
4	2010-2011	494
5	2012-2013	139
	Total	3703

❖ **Year wise detail of Schools covered under ICT:**

ICT- Schools Covered in Year 2008-09										
S. No.	**Type of School**	**Nature and number of school**			**Schools covered under ICT**			**Balance**		
		Govt.	**Govt. aided**	**Total**	**Govt.**	**Govt. aided**	**Total**	**Govt.**	**Govt. aided**	**Total**
1	Secondary school	114	6	120	63	0	63	51	6	57
2	Higher Secondary school	87	12	99	87	0	87	0	12	12
	Total	201	18	219	150	0	150	51	18	69

ICT- Schools Covered in Year 2009-10										
S. No.	**Type of School**	**Nature and number of school**			**Schools covered under ICT**			**Balance**		
		Govt.	**Govt. aided**	**Total**	**Govt.**	**Govt. aided**	**Total**	**Govt.**	**Govt. aided**	**Total**
1	Secondary school	114	6	120	114	0	114	0	6	6
2	Higher Secondary school	87	12	99	87	0	87	0	12	12
	Total	201	18	219	201	0	201	0	18	18

ICT- Schools Covered in Year 2010-11										
S. No.	**Type of School**	**Nature and number of school**			**Schools covered under ICT**			**Balance**		
		Govt.	**Govt. aided**	**Total**	**Govt.**	**Govt. aided**	**Total**	**Govt.**	**Govt. aided**	**Total**
1	Secondary school	114	6	120	114	6	120	0	0	0
2	Higher Secondary school	87	12	99	87	12	99	0	0	0
	Total	201	18	219	201	18	219	0	0	0

ICT - Schools Covered in Year 2011-12										
S. No.	**Type of School**	**Nature and number of school**			**Schools covered under ICT**			**Balance**		
		Govt.	**Govt. aided**	**Total**	**Govt.**	**Govt. aided**	**Total**	**Govt.**	**Govt. aided**	**Total**
1	Secondary school	114	6	120	114	6	120	0	0	0
2	Higher Secondary school	87	12	99	87	12	98	0	0	0
	Total	201	18	219	201	18	219	0	0	0

Total Schools Covered under ICT										
S. No.	**Type of School**	**Nature and number of school**			**Schools covered under ICT**			**Balance**		
		Govt.	**Govt. aided**	**Total**	**Govt.**	**Govt. aided**	**Total**	**Govt.**	**Govt. aided**	**Total**
1	Secondary school	1883	249	2132	1883	249	2132	0	0	0
2	Higher Secondary school	1466	105	1571	1466	105	1571	0	0	0
	Total	3349	354	3705	3349	354	3705	0	0	0

2.3.1. ICT Education in Middle Schools: Coverage of Schools has been extended to Middle schools by Govt. of Punjab. The criteria to be covered under ICT project has been fixed as follows for middle schools:

- having minimum 3 class rooms
- having minimum enrollment if 25
- having own school building
- having safe school building
- having minimum one subject teacher posted in the school.

The investment for ICT project in middle school has been done by Govt. of Punjab exclusively without any share from Govt. of India. Punjab ICT Education society has been provided computer labs to 2816 middle schools.

- The computer labs in the schools have been provided on the basis of the enrolment of the students in the school. The hardware in each school includes computers, printers, UPS and networking. The Government has purchased hardware on BOOT basis. i.e. the hardware has been supplied by a company on the lease of 5 years after which the ownership would be transferred to the government. During these five years the company is also expected to maintain the hardware assuring a minimum up time. In each school, the computers have been provided depending upon the student population. A minimum of Five computers with a printer have been installed in each schools. Bigger schools have been provided more number of computers. In every lab computers are connected through LAN. The ratio of computer and pupil in the school is 1:40.
- Each computer lab is provided with an Internet connection. BSNL has provided Broadband/Wimax internet connections at reasonable rates for the project.
- Books are provided to students free of cost. The curriculum and books have been designed by State authority on guidelines of the NCERT.
  - The following software has been purchased from Microsoft.
    - MS Office 2003 Professional
    - Encarta Encyclopedia
    - Visual Studio. Net 2003
    - Window XP Professional
    - MS Windows Server 2003

2.4. ICT Infrastructure : In ICT@ School Scheme the provisions related to infrastructure are made in all secondary and higher secondary schools i.e..

- **Computer Room/Lab:** The exclusive computer labs in the schools have been established on the basis of the enrolment of the students in the school in one of the safest room in the school.
- **Hardware:** The hardware in each school includes computers, printers, UPS and networking. The Government has purchased hardware on BOOT basis. i.e. the hardware has been supplied by a company on the lease of 5 years after which the ownership would be transferred to the government. During these five years the company is also expected to maintain the hardware assuring a minimum up time. In each school, the computers have been provided depending upon the student population. A minimum of ten computers with a printer have been installed in each schools. Bigger schools have been provided more number of computers. In every lab computers are connected through LAN. The ratio of computer and pupil in the school is 1:40.

  In 2012-13 under E- library programme od Punjab EDUSAT Society, 24 computers have been provided, out of which four are master computers having 5 nodes each. Computer laboratories are established in separate rooms in all schools. Each school is provided with computers and keyboards are customized for use in the regional languages. The computers provided in first phase are now discarded as those are not working.
- **Software**: The following software has been purchased from Microsoft.
  - MS Office 2003 Professional
  - Encarta Encyclopedia
  - Visual Studio. Net 2003
  - Window XP Professional
  - MS Windows Server 2003
- **Connectivity:** Each computer lab is provided with an Internet connection. BSNL has provided Broadband/Wimax internet connections at reasonable rates for the project.

- **Power Supply:** For uninterrupted power supply, 1003 portable Gensets have been provided to the Govt. institutions to meet the power failures. Running cost was also provided for their running.

2.5. Mode of Implementation: Boot Vs Outright Purchase:

The Punjab Government has purchased hardware on BOOT basis. i.e. the hardware has been supplied by a company on the lease of 5 years after which the ownership would be transferred to the government. During these five years the company is also expected to maintain the hardware assuring a minimum up time. Service Level Requirement is binding for the selected supplier and conditions are laid down for the supplier for the up keep of the hardware and software. Continuous meeting are done with the suppliers and notices are given them for improvement. **(Annexure-)**

2.6. Formulation of curriculum for computer literacy: The curriculum and books have been designed by State authority on guidelines of the NCERT. The Books are provided to students free of cost.

SYLLABUS OF COMPUTER EDUCATION		
Class	**Lesson No.**	**Detail**
6th	1	Introduction to computer
	2	work with windows
	3	Hardware and Software
	4	M.S Paint
	5	Input and Output devices
	6	Parts of computer
	7	Use of Window Application
7th		Revision of 6th class
	1	Window Explorer
	2	Storage devices
	3	Typing Tutor
	4	Introduction with MS Word
	5	Formatting of Word document

	6	Introduction of Logo
	7	Logo and graphics
8th		Revision of 7th class
	1	Introduction of Information Technology
	2	Working with tables in MS word
	3	Mail Merge
	4	Graphics and Multimedia
	5	Introduction to Power Point
	6	Advanced Power Point
	7	Fundamentals of Internet
9th	**1**	**Internet Application**
	2	**M.S Excel-1**
	3	**M.S Excel-2**
	4	**Introduction to DBMS**
	5	**Working With MS Access**
	6	**Advanced Access-1**
	7	**Advanced Access**
10th	**1**	**Types of Software**
	2	**Advanced Excel**
	3	**Basics of HTML-1**
	4	**Basics of HTML-2**
	5	**Building of Website**
	6	**Microsoft Publisher-1**
	7	**Microsoft Publisher-2**
	8	**Programming languages**
11th	**1**	**Revision of 10th class**
	2	**Basics of Programming in C**
	3	**Constants,variable and data types**
	4	**Opeartors and Expressions**
	5	**Control Flow-1**
	6	**control Flow-2**
	7	**Arrays-1**

	8	**Arrays-2**
	9	**Desktop Publishing**
12th	**1**	**Revision of 11th class**
	2	**Use of String Function**
	3	**User defined function**
	4	**Window movie make-1**
	5	**Window moviemaker-2**
	6	**Networking**
	7	**Library Function**
	8	**E-governance**

2.7. **Establishment of Smart Schools**: Under the smart school scheme by conversion of one of the existing State Government schools, to serve as role model and to share the infrastructure and resources with the neighbourhood schools also. Five schools are sanctioned to Punjab by Govt. of India- MHRD; out of which two in Sangrur district; one each in district Patiala, Amritsar and Tarntaran; but no school got established till date i.e. Dec, 2013.

2.8. **Recruitment of ICT Teachers:** For teaching Computer Science subject, dedicated ICT teacher are appointed in all secondary and higher secondary schools 6926 computer teachers are working at present. Out of which 6290 teachers are regularised after completing 2 and half years of service as per the policy of the Punjab Govt. services in the pay scale 10300F34800 + Grade pay 5000/- and 636 ICT are appointed on contract @ Rs. 10000/- per month.

Name of Post	**Pay Scale**		**Detail of Posts**		
Computer Faculty	**Regular (10300- 34800+ Grade pay 5000/-) = 18450/-**	**Contract (Rs. 10,000/- p.m.)**	**Sanctioned**	**Filled**	**Unfilled**
	6290	**636**	**7172**	**6926**	**246**

2.9. Teacher Training: The detail of pre-service training and in-service training is as follows:

- **Pre-service training:** As per the curriculum of the three main universities i.e. Punjab University, Chandigarh; Panjabi University, Patiala and Guru Nanak Dev University, Amritsar who are involved in teacher training in Punjab at secondary level; there is compulsory paper on computer training in Panjab University Chandigarh and GNDU, Amritsar; in Panjabi University, Patiala it's an optional paper for teacher trainees. All the three universities are offering course in 'Teaching of Computer Science' for specialised teachers in computers.

- **In-service Training:** The induction training of 5 days is done of all the teachers for the ICT and one computer centre has been setup in each district alongside the DIET/GSITC for the training of teachers in ICT. One computer teacher has been deputed in each computer centre for the purpose.

  - In addition, two IT academies have been set up in the State, one at Ajitgarh and the other at SBS Nagar for imparting advance in ICT to teachers by Microsoft. In this regard an MoU is made with the Microsoft India Corporation Private Limited for providing training to teachers at two centres i.e. Ajitgarh and SBS Nagar **(MoU Document ANNEXURE- II).**

  - Arrangement exists with American India Foundation Trust (AIFT) for imparting refresher training to teachers.

DIET Centres for Teacher Training (17)			
S.No.	**District**	**S.No.**	**District**
1	Amritsar / Tarn-Taran	10	Ludhiana
2	Bathinda	11	Mansa
3	Faridkot	12	Moga
4	F.G. Sahib	13	Muktsar
5	Ferozepur	14	Nawanshar
6	Gurdaspur	15	Patiala
7	Hoshiarpur	16	Ropar/Mohali
8	Jalandhar	17	Sangrur/Barnala
9	Kapurthala		
Two Training Academies: 1. 3B1 Ajitgarh 2. Naura (SBS Nagar) **(Contract with Microsoft expired in July, 2012)**			

2.10. Role of NGO's for Educational Content development and Training: American Indian Foundation, under its Digital Equalizer programme in 800 schools imparted computer based training to subject teachers. These teachers develop multimedia content based on the hard sports in the syllabus. The content so developed is disseminated to schools where TV sets and DVD Players, computer system along with LFD/LCD and also integrated Computer cum Projectors have been installed. The content so developed is also uploaded it on website, so that other teachers can use it. (www.depunjab.org/edukit.php)

The subject teachers are further encouraged to develop content with the help of computer teachers.

The American India Foundation (AIF) is a NGO, associated with ICT program since 2005. PICTES signed a MoU with The American India Foundation Trust (AIFT) in year 2005 for implementing its program in the state. Details of various programs and activities undertaken by AIF are detailed in the ensuing paragraphs.

- **Monitoring and evaluation of ICT schools (1300) schools:** The government assigned the task of Monitoring & Evaluation of the ICT project in 1300 schools in 2005 to AIF for ensuring the quality of the ICT program in the state.

Monitoring reports submitted by the NGO helped the government in handling the teething problems associated with the program. Currently, AIF is involved in M&E of 800 government ICT schools in Punjab covered under Digital Equalizer program & DE- lite program across 16 districts.

- **The Digital program (DE):** DE is a 3 year Techno-Pedagogy (Integration of Technology and Pedagogy) enabled program. Under DE AIF coordinators impart the training of Pedagogy and Integration of Technology to the teachers within the school premises. AIF deputes a coordinator for a set of 6 schools, where subject teachers and students are imparted training about the technology, Integration of technology and pedagogical methods for betterment of teaching learning process by the coordinator. Content development is a very crucial part of the program

In 2006, AIF signed a MoU with the Dept. of School Education to introduce its signature program, Digital Equalizer (DE) in 200 schools across 10 districts of Punjab. In 2007, the program expanded to 600 schools across 14 districts considering the response of the teachers and students to the program. Subsequent to the graduation of 600 schools in March, 2010, DE program was implemented in additional 200 government schools since April, 2010.

Display of AIF Programme in a School

A website (www.depunjab.org) has been developed dedicated for uploading/ sharing the content developed under the program by the teachers. The projects are accessed by the teachers across the state and used for enhancing the learning levels of students in the schools.

- **DE-lite Program:** To ensure the sustainability of DE methodologies and follow up/ support, AIF Trust implemented DE-Lite program in all the 600 DE graduated schools in year 2011 for a period of two years. DELite program was based on "Hands off – Eye On" approach. Under the program, AIF coordinators focuses on preparing Master trainers and strengthen their skills to carry out the program and ensure pedagogical practices & integration of technology in subjects by other teachers in school.

  On an average each DELite coordinator visits his schools twice in a month. During the visit he used to interact with other teachers in schools and evaluated their skills and training requirement. The program was completed in March'13.

- **DELL Connected Classroom (DCC) program:** Considering the response and good support from Government of Punjab, AIF started the Dell Connected Classroom (DCC) program in 3 government schools (GSSS Manauli, GSSS Kharar-M & GHS Bhago Majra) in district Mohali in year 2010. Following support was provided to each of the selected school by AIF under the program.

  - 24 Netbooks,
  - 5 Laptops
  - Interactive Whiteboard
  - Projector
  - Internet
  - Furniture (tables and chairs)

  Besides, AIF has also provided the digital content to be used by the subject teachers. In each school we have a DCC Facilitator to support the teacher & students. Main objective of DCC was to let teachers and student

experience the latest digital technology and utilize the resources for better concept clarity of students by their active involvement.

- **Centre of Excellence (CoE) program:** AIF has set up Centers of Excellence in 25 government school under the program. The program is implemented in a separate room which is equipped with 4 computers with internet connection for exclusive teacher training. The government has provided infrastructural support such as separate room, furniture & electrical fitting etc.
- **Centralized training of S.St. teachers in Patiala under RMSA:** AIF singed a MoU in May'12 with RMSA, Punjab to implement centralized DE program. Under the program, S.St. teacher would be trained at State & District level by AIF trainers. Subject experts from govt. will hand-hold with AIF for training of teachers at district level. 50 govt. schools in Patiala have been selected as well for training & support to teachers at school level. The program tenure is 2 years from 2012 to 2014.

The AIF Trust has a dedicated staff with Operation Director, Program Manager and Regional Co-ordinator at the state level and team of trainers/ training officers across districts to take care of the program implementation in the state. AIF bears all the financial obligations in terms of human resources, capacity building/ training of team, implementation and monitor the program etc. **(Copy of MoU- ANNEXURE- III).**

2.11. MIS/GIS Project: Under the SSA, an Management Information System (MIS) and Geographical Information System (GIS) is under development by M/s Zensor Technologies of Pune who were selected for the purpose through an open tender. Under the contract they are required to develop application software for both MIS and GIS, provide hardware for the data centre i.e. servers etc and supply system software.

2.12. Development of E-Content*:*

For development and transmission of e- content, a society named 'Punjab EDUSAT Society' constituted in Punjab who is taking care of all the provisions under E- content development and dissemination.

Over the past few years, Distance Education has come into its own as the mainstay in the field of education. The integration of satellite technology and education has yielded rich rewards socially, culturally and economically, to name just a few, it being a truism that education has its own reward for any society, distance education has also been a boon in a most specific sense to educational institutions themselves as it allows extremely useful contact across national and international borders.

Indian Space Research Organization has pioneered the use of frontline space based communication technologies in the field of education and development. ISRO has launched EDUSAT, a satellite meant exclusively for education sector on 20-09-2004. It is a Geosynchronous Satellite dedicated to the nation for providing quality education across the country including the remotest area. ISRO provides 2 types of Edusat terminals namely:

- Satellite Interactive Terminals
- Receive only Terminals

The State of Punjab has adopted both Satellite Interactive Terminal Technology as well as Receive Only Terminals.

The EDUSAT Project was conceived by the Govt. of Punjab in the year 2005. A sum of Rs. 12 Crores was provided by the Govt. of Punjab for establishment of Edusat network in the State of Punjab in the year 2005-06. In the 1st Phase, one studio was created in the premises of Punjab School Education Board and State Hub was established therein. Simultaneously, 300 Satellite Interactive Terminals (SITs) were provided in the education institutions of different department in an initial phase.

After successful trial run of the network, the Govt. of Punjab constituted an independent entity to implement the Edusat programme in the State of Punjab called "Punjab Edusat Society" which was registered on 15-11-2007 under the Registration of Societies Act 1860. The Board of Governors is headed by the Hon'ble Chief Minister, Punjab and its Executive committee is headed by the Chief Secretary to Govt. of Punjab. The Executive Committee meets frequently to monitor and review the progress of the programme.

The EDUSAT network was dedicated to the state of Punjab by the Hon'ble Chief Minister, Sh. Parkash Singh Badal on 02-01-2008. The hub studio in Mohali is

connected to all the govt. institutions through the Education satellite and while the lecture is being delivered to the students gathered at these centers "see and listen" to the teacher. It is also possible for the teacher to interact with the students. While the lecture is being delivered, the queries being put by the students are received and flashed on the computer in front of the teacher.

Punjab EDUSAT Society has also undertaken the task of career counseling, personality development, Legal Literacy Mission programme, Meet a Scientist programme as well as health education programmes in collaboration with the Department of Employment Generation/ Deptt of Medical Education and Health, Punjab, ISSR, Mohali. The reputed eminent personalities are invited to deliver the lectures to students through EDUSAT network on the career counseling at every weekend.

The Executive committee of the Punjab EDUSAT Society who has also decided that the network can be used by other departments also for addressing their issues with their field officers all over Punjab. Sarva Shiksha Abhiyan Authority is providing training to the teachers, District Resource Persons, Block Resource Persons and school heads through EDUSAT network.

2.12.1. The present status of EDUSAT network is given hereunder:

- 3387 educational institutions have been covered under EDUSAT network. The institutions covered with Satellite Interactive Terminals (SITs) (516) covered Medical & Dental Colleges (5), Higher Education (47), Technical Education (29) and Department of School Education (436).
- 500 Receive Only Terminals (ROTs) were provided in the Govt. Sr. Sec. Schools of State having Humanity Group in the year.
- In expansion phase, 2371 more Govt. Sr. Sec. Schools (Humanity Group) and Govt. High Schools have been covered with ROT facility.
- 2077 E- Libraries have been fully established in the financial year 2012-13 and 914 more E-libs are being established in remaining Govt. Sr. Sec. and Govt. High schools in the current financial year i.e 2013-14. These libraries are also being shared by ICT project for providing computer education in place of 1st Phase of computer labs.

- 1003 portable Gensets have been provided to the govt. institutions to meet the power failures. Cost was also provided for running.
- The special programmes for Science students on preparation for competitive classes, soft skills development programme, Career Counselling and training programmes for teachers are telecast alongwith regular courses for 8^{th} to 12^{th} class students throughout the State for the Department of School Education.
- Daily 7-8 lectures on all working days are delivered by Deptt. of School Education, 5 lectures by Deptt. of Technical Education, 2 lectures by Deptt. of Higher Education and 1 lecture by Deptt. Of Medical Education.
- This year also the Programme on preparation for Competitive exams for Medical and Non-Medical students was also imparted as a Crash Course by hiring the faculty of M/s Gyan Sewa Trust. 13000 students were enrolled for this programme.
- The training to English lecturers was imparted through EDUSAT Network under Soft Skill Development programme which was highly appreciated by the teachers. The soft skill programme for the students of 11th class have been started in this academic year i.e 2013-14.

(Source: http://ssapunjab.org/edusat/)

2.12.2. Trainings Programs imparted through Network of Punjab EDUSAT Society:

- Training to teachers of soft skill programme.
- Training on financial rules for DDOs of Govt. institutions.
- Yoga Training
- Parho Punjab
- Capacity building of BRPs (Block Resource Persons)
- Training on Budget planning of SSA Punjab
- MIS Data training
- Training on Education Methodology in Karnatka
- Training on Reading Etiquettes
- Training of Assistant Block Coordinators and Block Coordinators of SSA Punjab.

2.12.3. Content Loaded in E-Libs

The following Multimedia educational Content, CAL content has been uploaded in the EDUSAT Libraries:-

- CAL Content for the classes from VI to VIII(366 Episodes) have been preloaded on the servers in EDUSAT Libraries.
- EDUSAT multimedia Content for Class 8th to 12th - 1588 episodes, the details of which is given hereunder was found working properly:

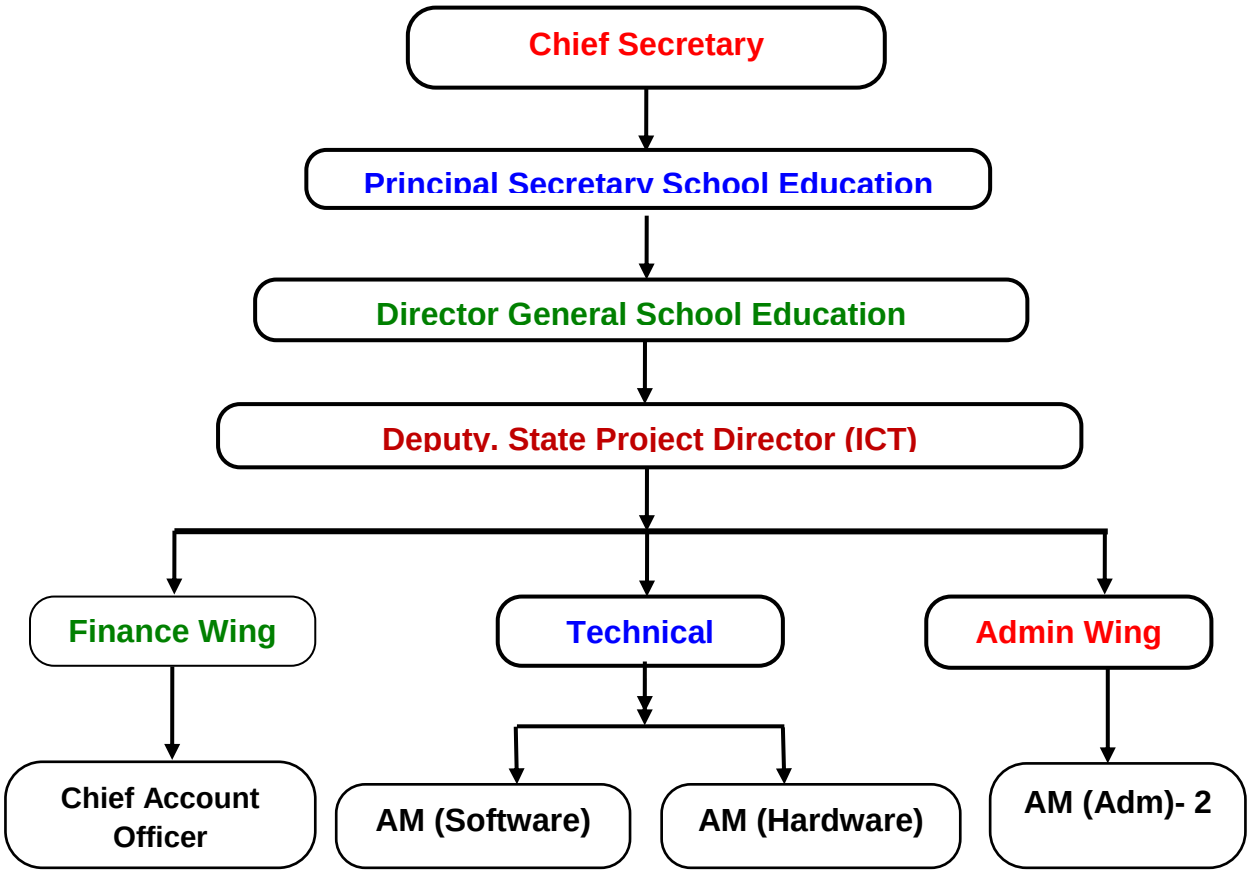
Class	Subject	No. of Chapters
8th	Biology	20
	Chemistry	21
	English	44
	Math	91
	Physics	25
9th	Biology	42
	Chemistry	24
	English	51
	Math	95
	Physics	27
10th	Biology	35
	Chemistry	20
	English	46
	Math	113
	Physics	42
11th	Biology	103
	Chemistry	76
	English	41
	Math	99
	Physics	88
	Commerce	75

12th	Biology	59
	Chemistry	65
	English	42
	Math	91
	Physics	51
	Commerce	77
Total		**1588 episodes**

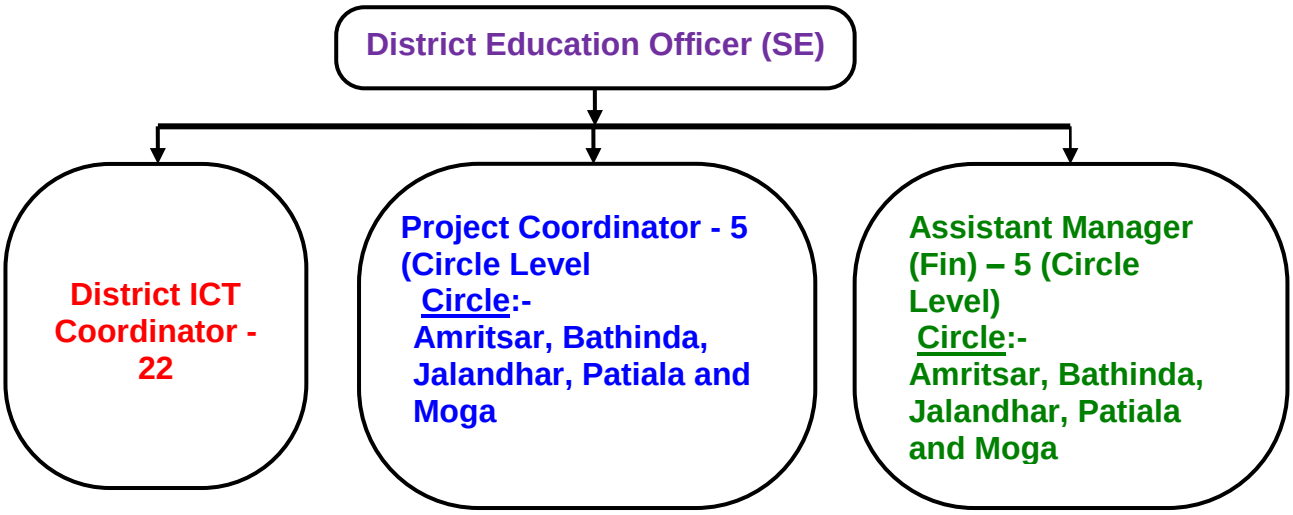
2.13. Programme Management Structure: A separate allocation has been made within the scheme for management purposes, especially in view of the increasing coverage and mandate of the new scheme both at the State levels by MHRD. An amount @ Rs 10,000 per school for the States has been allocated for the purpose. At the State level the provision would be utilized for undertaking external impact assessment studies at State, District and school levels to make course corrections and for meeting expenses on the staff salary at State level and District level.

In Punjab an administrative set up has been established for the programme management in PICTES as well as Punjab EDUSAT Society:

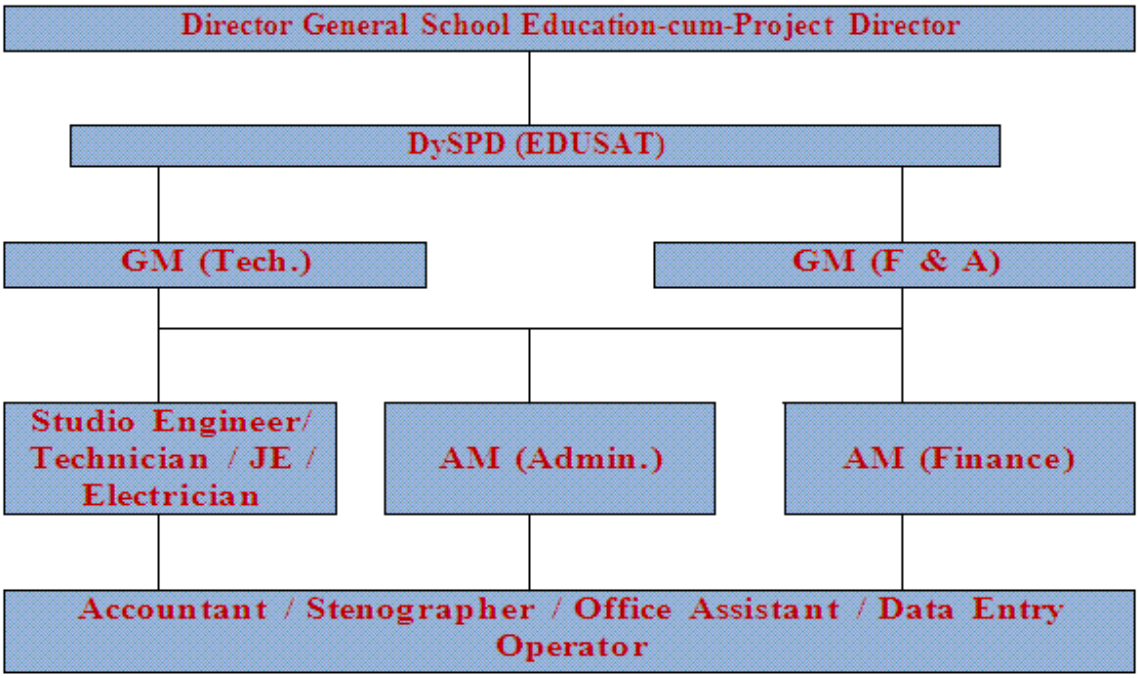
❖ **Administrative State Level Hierarchy of PICTES**



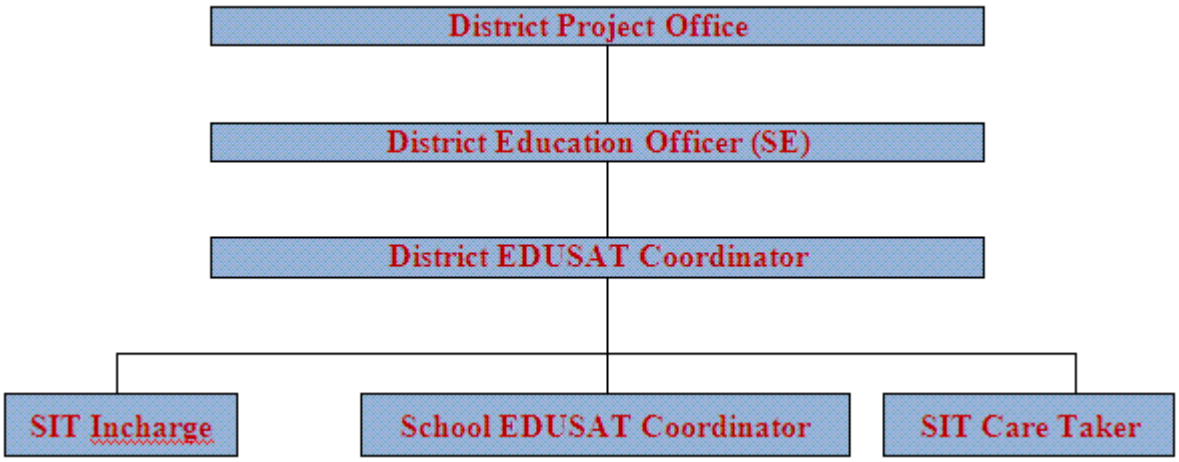
❖ **Administrative Field Level Hierarchy of PICTES**



- **Administrative State Level Hierarchy of Punjab EDUSAT Society:**



- **<u>At District Level:</u>**



2.14. Monitoring of the Project:

For monitoring of this project District ICT Coordinator is appointed who is responsible for smooth running of the project in district. In addition to district coordinator Project Coordinator is also appointed at circle level who is responsible for smooth running of this project at circle level .In addition to this various inspection teams from DGSE office to District office visits these schools. Coordinators and Inspection Teams conduct on the spot tests of students to check the progress of students and check the computer labs to rectify the problems faced by the schools so that the necessary actions can be taken for quality improvement.

The Monitoring in Punjab is conducted at three levels:

- By district coordinators who monitor the schools for Infrastructure availability and effective use.
- By Project coordinators who monitor the schools for checking the quality of Education..
- By Inspection teams who monitor the schools for Administrative purposes.

An NGO, The American India foundation trust is also involved in monitoring and evaluation of ICT project on sample basis. They collect the monitoring report from 200 schools per month. And now virtual platform is also created www.epunjabschool.gov.in to collect, monitoring and feedback report about project from schools directly.

Chapter-III

Evaluation of ICT@ School Scheme in Schools of Punjab

3.0. Objectives of Evaluation:

As per the Terms of Reference for the Third Party Evaluation of the Information and Communication Technology (ICT) in School Scheme in the schools of Punjab. The objectives of Evaluation is as under:

- The core objective of undertaking evaluation is to assess the a) relevance of the project b) benefits derived from the project (Impact) c) whether benefits will continue after the project ends (sustainability) d) the attainment of specific targets for key indicators (effectiveness) e) the amount of effort and resource used (efficiency/ economy) and institutional development and sustainability;
- The study shall be aimed at evolving a critical evaluation of the implementation of the ICT in School Scheme and its impact on overall use of ICT in School;
- Implementation Models;
- Usage and skills to use ICT by various stakeholders such as Students, Teachers, School Head, Principal, DEO, State level authorities etc.;
- Impact on learning process;
- ICT in School Governance.

3.1. Selection Criteria of Districts for Evaluation of ICT @ School Scheme:

As per the ToR, six districts have to be selected on the given criteria i.e. Urban districts – 1; Rural districts– 1; Districts with high tele-density – 1 ; Districts with lower tele-density – 1; Districts characterized as backward by the state – 1; and Districts with electricity problems – 1.

Six districts have been selected in consultation of the state education department representatives as per the guidelines. The detail is as follows:

Table 3.1. T. Detail of Selected Districts

S. No.	Name of District	Criteria of Selection
1	Ajitgarh	Most Urbanized district
2	Mansa	Most Rural and Educationally Backward district
3	Muktsar	Educationally Backward District
4	Sangrur	District with Electricity Problems
5	S.B.S. Nagar	High tele-density
6	Fazilka	Border District (having Low Tele density)

- Ajitgarh is the most urbanized district in Punjab.
- Mansa is the district having larger rural area from all the districts of Punjab and on the basis of education and literacy; it is the most backward district with district Muktsar.
- The problem of electricity cut is there in all districts of the Punjab but Sangrur district has a mixed area of urban and rural schools and it is adjacent to border of state of Haryana and it has maximum problem in the past related to electricity when the researcher done the monitoring of SSA project and it is also confirmed by the authorities.
- The district with highest tele density is SBS Nagar as no school has complained about the problem of network.
- District Fazilka is very near to Pakistan Border and in many schools near the border belt there is reported problem of networking.

- **Districts of Punjab Map**

3.2. Selection Criteria of Schools for Evaluation of ICT @ School Scheme:

As per the ToR, 10 Secondary or Higher Secondary Govt. or Govt. aided schools in each district as per the criteria as far as possible i.e. .schools covered under ICT in School Scheme; schools with higher gender gap in enrolment; schools having higher proportion of SC/ST / Minority/ Weaker Section students; schools in the localities where problem of electricity connection and supply exists; schools in the localities where there is problem of 'no internet connectivity' or 'connectivity problem'; and the schools located in rural areas.

The district wise list of schools as per specified guidelines for selection is as follows:

District: AJITGARH (Urban District)		
Sr. No.	**Name of School**	**Criteria of Selection**
1	GSSS Mataur	Suburban school
2	GSSS (G) Sohana	High SC Students
3	GSSS Banur	problem of Electricity & EDUSAT
4	GSSS- 3 B-1 Ajitgarh	Urban
5	GSSS Sarkulapur	High SC Students
6	GSSS Tira	Problem of EDUSAT range
7	GHS Dera Bassi	High SC Students
8	GHS Landran	High SC Students/ Gender
9	GHS Bhakharpur	High SC Students
10	GHS Motemajra	Problem of EDUSAT range

District: Mansa (Rural and Educationally Backward District)		
Sr. No.	**Name of School**	**Criteria of Selection**
1	GHS GURADDI	Rural School
2	GHS BACHHOANA	High SC students
3	GHS MADHALI,	High Gender gap
4	GHS RAMPUR MANDER	Problem of Electricity
5	GHS Khokhar Kalan	High SC students
6	GSSS Jhanduke	High SC students
7	GSSS Bir HODLA KALAN	Rural School
8	GSSS DATEWAS	High Gender gap
9	GHS DHALEWAN	Problem of Electricity
10	GSSS (G) Bhikhi	Urban School
11	GSSS Biro Ke Kalan	Rural school

District: Muktsar (Educationally Backward District)		
Sr. No.	**Name of School**	**Criteria of Selection**
1	GHS Danewala	High Gender Gap
2	GSSS Phullu Khera	Electricity Problem
3	GSSS Dabwali Rahurianwali	High SC students
4	GSSS Hakkuwala	High Gender Gap
5	GHS Chotian	Electricity Problem
6	GHS Khudian Gulab singh	High SC students
7	GSSS Faquarsar Theri	Laboratory/ EDUSAT problem
8	GHS Husnar	Urban school
9	GSSS Badal	Good Facilities
10	GSSS Lambi	High Strength

District: Sangrur (Electricity Problems)		
Sr. No.	**Name of School**	**Criteria of Selection**
1	GSSS, Sherpur (B)	High SC Students
2	GHS, Inna Bajwa	High SC Students
3	GSSS, Tibba	Rural School
4	GSSS, Dirba	High gender gap
5	GSSS, Daska	Electricity problem
6	GHS, Chotian	Electricity problem
7	GSSS, Mahila Chowk	Sub urban
8	GHS, Himtana	High gender gap
9	GSSS, Cheema	High gender gap
10	GHS, Kheri	Rural school

District: SBS Nagar (High Tele density District)		
Sr. No.	**Name of School**	**Criteria of Selection**
1	GSSS Nawan Shahar	High SC students & Urban
2	GSSS SANDHAWAN	High SC students
3	GSSS RAHON (G)	High SC Girl students
4	GSSS JADLA	Rural School
5	GSSS BALACHAUR	Urban school/ SC students
6	GHS BEHRAM	High SC students
7	GHS MEHRAMPUR	High SC students
8	GHS SIMBAL MAJARA	Gender Gap
9	GSSS BAGOWAL	Rural School
10	GHS, Sanava	High SC Students

District: FAZILKA (Border District and Problems in Tele density)		
Sr. No.	**Name of School**	**Criteria of Selection**
1	GSSS GHUBAYA	High SC students
2	GSSS CHIMNE WALA	Problem of Electricity
3	GSSS CHAK Budho KE	EDUSAT range problem
4	GSSS TAHLI WALA BODLA	Problem of Electricity
5	GSSS Karni Khera	Near Border school
6	GSSS Sabuana	Problem of EDUSAT range
7	G.H.S.CHAK BAN WALA	Suburban School
8	G.H.S.JHANGER BHANI	EDUSAT range
9	GHS Shateer Wala	Near Border School
10	G.H.S.BEHAK BODLA	High SC students

3.3. The Evaluation framework:

The information required for evaluation of the scheme is collected with the help of the provided questionnaires by a team who has been trained for the purpose in the field. Some modifications in the questionnaires are made by the investigator with the help of experts. One questionnaire to collect information from students is translated in Punjabi. Focus Group discussions are done in each district in five schools by the investigator himself and those are recorded on paper and with camera by the team.

3.4. Tools for Evaluation: The following tools are used for data collection

- An information schedule on ICT @ School scheme (to collect information from the state) .
- An information schedule on ICT @ School scheme for District (to collect information from the district)

- An observation schedule to check the facilities in school available under ICT @ school scheme.
- A questionnaire for students to know attitude and capacity building towards ICT and computer skills of students (In Punjabi Language).
- A questionnaire for teachers to explore the attitude and capacity building towards ICT usage, computer skills, integration of ICT in teaching by teachers and barriers for ICT integration in teaching and learning.
- FGD's (Focus Group Discussions) with teachers, computer teachers and head teachers/ principals and students to gather information about ICT programme and E- content in all sampled schools.

3.5. Procedure of Data collection:

As per ToR, 6 districts in the State of Punjab and 10 schools in each district were selected as per the guidelines. The data was collected with the help of Field investigators and for six districts six experienced district in charges were appointed. Interaction with all the stakeholders such as Principal/ Head Teacher/ Teachers/ Students/ Parents/ Administrative staff etc. was done. The Focus Group Discussions with Head Teacher, teachers, students and administrative staff was done and recorded. The relevant questionnaires and observation schedule were used to collect information.

3.6. Detail of Sample for Quantitative data: The data is collected from students, teachers and ICT teachers of six selected districts. The number of respondents in each district is as follows:

3.2.T. Detail of Sample for Data Collection

Name of District	Students	Teachers	ICT Teachers
Ajitgarh	198	82	20
Mansa	194	64	16
Muktsar	191	71	17
Sangrur	200	78	19
SBS Nagar	206	67	18
Fazilka	195	60	17

Chapter-IV

A Quantitative Assessment of ICT @ School Scheme implementation in the Schools of Punjab

4.0. Quantitative Analysis:

In order to analyze and interpret the quantitative data, the statistical technique Percentage was used. The analysis of data has been presented in the following tables district wise on the various parameters:

4.1. Availability of Infrastructure: The observations are made on the following provisions related to infrastructure i.e. availability of Computer laboratory; E-library installed; Computers installed; UPS Working; Furniture in Computer Lab; Furniture in Computer Lab; Computers not working; Internet connectivity; Availability of Printers; Electricity Supply (interruption duration); Availability of Gensets; Fuel Availability for Gensets; Internet Problems; Electricity Voltage problem; Operating Software; availability of EDUSAT Room (Exclusive); SIT / ROT installed; EDUSAT (ROT)Room Furniture; Cleanliness of EDUSAT (ROT) Room; EDUSAT (ROT) in Working Condition; Voice of ROT good; and ROT signal Problem are presented in Table 4.1. T.

4.2. Use of ICT facilities & Integration of Technology in Teaching and Learning: The observations and responses of teachers and students are made on the following provisions related to use of ICT facilities and integration of technology in teaching and learning i.e. Duration to use computer for Students in Time table; Positive Perceptions of Students regarding ICT programs; Positive Perceptions of Students regarding EDUSAT programs; Students having E- mail account; Computer fee charged from students@-----; Teachers using computers actively; Teachers Using Technology in teaching; Teachers have Email account; Any ICT enabled material prepared by teachers; Capacity building of teachers for ICT; Positive Perceptions of Teachers regarding ICT programs; Positive Perceptions of Teachers regarding EDUSAT programs; IT infrastructure sufficient in school-

Students Reponses; IT infrastructure sufficient in school- Teachers Reponses; and Students get sufficient time to practice on computers- Student responses are presented in Table 4.2. T..

4.3. Appointment of ICT teachers and their duties: The observations and responses of ICT teachers are made on the following provisions related to appointment of ICT teachers and their duties i.e. Recruitment of ICT Teachers; ICT teachers as content developers; Capacity Building of ICT teachers; Positive Perceptions of ICT Teachers regarding ICT programs; Positive Perceptions of ICT Teachers regarding EDUSAT programs; ICT teachers doing non- academic work and IT infrastructure sufficient in school are presented in Table 4.3. T.

4.4. ICT usage in Administrative Work: The observations and responses of teachers are made on the following provisions related to ICT usage in administrative work i.e. Use of Email Facility for Administrative work; IT applications for administrative functions; MIS Report generation; and Information on Internet through State are presented in Table 4.4. T.

4.5. Curriculum of ICT and Computer books: The observations and responses of teachers are made on the following provisions related to Curriculum of ICT and Computer books **i.e.** Computer Education Curriculum framed; Need of revision of Computer Education Curriculum; Computer Education books provided to all students; and Need of revision of computer education books are presented in Table 4.5. T.

4.6. Perceptions of Teachers towards Quality of E- content and EDUSAT based Lessons: The observations and responses of teachers are made on the following provisions related to Quality of E- content and EDUSAT based Lessons i.e**.** Good Quality of E- Content; Transmission of EDUSAT Lessons is a good initiative; Experts delivering lessons using innovative methodology; Students learn from EDUSAT based lessons; and voice of ROT transmission clear and audible are presented in Table 4.6. T.

4.7. Perceptions of Students towards Quality of E- content and EDUSAT based Lessons: The observations and responses of students are made on

the following provisions related to Quality of E- content and EDUSAT based Lessons i.e. Good Quality of E- Content; Transmission of EDUSAT Lessons is a good initiative; Experts delivering lessons using new teaching aids**;** more clarity of concept from EDUSAT based lessons; Teachers discuss transmitted topic after the EDUSAT lessons in class; EDUSAT lesson language easy to understand ; and voice of ROT transmission clear and audible are presented in Table 4.7. T.

4.8. Monitoring of ICT in Schools: The observations and responses of teachers are made on the following provisions related to Monitoring of ICT in Schools **i.e.** Monitoring done by District Officials once in three months are presented in Table 4.8. T.

4.9. Maintenance of ICT facilities in Schools: The observations and responses of teachers are made on the following provisions related to maintenance of ICT facilities in schools i.e. Computer maintenance Funds provided to schools; External support in Schools for repair of computers; Hardware problem got solved in 5-10 days; and Software problem got solved in 5-7days are presented in Table 4.8. T.

Table 4.1.T.	DISTRICTS – (10 school in each and Observation in %ages)					
Infrastructure Provisions in Schools	**Ajitgarh**	**Mansa**	**Muktsar**	**Sangrur**	**SBS Nagar**	**Fazilka**
Exclusive Computer Room/Lab:	100%	90%	80%	90%	100%	90%
E- library installed	60%	60%	100%	60%	80%	100%
Computers installed	100%	100%	100%	100%	100%	100%
UPS Working	70%	60%	70%	60%	70%	50%
Furniture in Computer Lab	100%	100%	100%	100%	100%	100%
Computers not working	11%	13%	14%	15%	16%	15%
Internet connectivity	90%	100%	100%	100%	100%	100%
Availability of Printers	100%	100%	100%	100%	100%	100%
Electricity Supply (interruption duration)	1-2 hrs	1.30-2 hrs	1.30-2.30	2-3 hrs	1-2 hrs	2-3 hrs
Availability of Gensets	60%	50%	60%	60%	60%	50%
Fuel Availability for Gensets	60%	50%	60%	60%	60%	50%
Internet Problems	40%	30%	40%	40%	20%	40%
Electricity Voltage problem	40%	30%	30%	50%	40%	50%
Operating Software	Microsoft	Microsoft	Microsoft	Microsoft	Microsoft	Microsoft
EDUSAT Room (Exclusive)	80%	70%	60%	70%	90%	80%
EDUSAT (ROT)Room Furniture	40%	20%	30%	10%	10%	10%
Cleanliness of EDUSAT (ROT) Room Poor	40%	50%	40%	40%	50%	30%
SIT / ROT installed	100%	100%	100%	100%	100%	100%
EDUSAT (ROT) in Working Condition	90%	100%	90%	80%	100%	80%
Voice of ROT good	50%	40%	50%	50%	60%	40%
ROT signal Problem	30%	30%	20%	30%	10%	40%

Table 4.2.T.	DISTRICTS – (10 School in each and Observation in %ages)					
Use of ICT facilities & Integration of Technology in Teaching and Learning	**Ajitgarh**	**Mansa**	**Muktsar**	**Sangrur**	**SBS Nagar**	**Fazilka**
Duration to use computer for Students in Time table	1.30 hrs	1.30 hrs	1.30 hrs	1.30 hrs	1.30 hrs	1.30 hrs
Positive Perceptions of Students regarding ICT programs	100%	100%	100%	100%	100%	100%
Positive Perceptions of Students regarding EDUSAT programs	63.13%	62.37%	57.59%	78%	70.87%	63.58%
Students having E- mail account	19.69%	8.24%	9.94%	11%	17.47%	8.71%
Computer fee charged from students	100%	100%	100%	100%	100%	100%
Teachers using computers actively	36.58%	26.56%	28.16%	32.05%	37.31%	30%
Teachers Using Technology in teaching (Not EDUSAT)	9.75%	4.68%	4.22%	5.12%	7.46%	6.66%
Teachers have active Email account	53.53%	45.31%	45.07%	49.5%	53.73%	51.66%
Any ICT enabled material prepared by teachers	6%	3.12%	1.4%	2.56%	5.97%	6.66%
Capacity building of teachers for ICT	89.28%	90.24%	88.09%	87.75%	83.33%	91.89%
Satisfied with ICT training programmes (trained teachers)	51.78%	65.85%	69.04%	57.14%	61.90%	56.75%
Positive Perceptions of Teachers regarding ICT programs	100%	100%	100%	100%	100%	100%
Positive Perceptions of Teachers regarding EDUSAT programs	68.29%	57.81%	56.73%	61.53%	56.71%	5833%
IT infrastructure sufficient in school- Students Reponses	62.12%	58.76%	54.97%	62%	66%	56.92%
IT infrastructure sufficient in school- Teachers Reponses	48.78%	43.75%	36.61%	44.87%	44.77%	43.33%
Students get sufficient time to practice on computers- Student responses	18.18%	20.61%	16.23%	19%	16.50%	18.46%

Table 4.3.T.	DISTRICTS – (10 school in each and Observation in %ages)					
Appointment of ICT teachers and their duties	**Ajitgarh**	**Mansa**	**Muktsar**	**Sangrur**	**SBS Nagar**	**Fazilka**
Recruitment of ICT Teachers	100%	100%	100%	100%	100%	100%
ICT teachers as content developers	5%	0%	5%	0%	0%	11.76%
Capacity Building of ICT teachers	0%	0%	0%	0%	0%	0%
Positive Perceptions of ICT Teachers regarding ICT programs	100%	100%	100%	100%	100%	100%
Positive Perceptions of ICT Teachers regarding EDUSAT programs	85%	81.25%	88.23%	89.47%	83.33%	76.47%
ICT teachers doing non- academic work	100%	100%	100%	100%	100%	100%
IT infrastructure sufficient in school – ICT Teacher responses	65%	62.5%	52.94%	47.36%	50%	52.94%

Table 4.4.T.	DISTRICTS – (10 school in each and Observation in %ages)					
ICT usage in Administrative Work	**Ajitgarh**	**Mansa**	**Muktsar**	**Sangrur**	**SBS Nagar**	**Fazilka**
Use of Email Facility for Administrative work	100%	100%	100%	100%	100%	100%
IT applications for administrative functions	100%	100%	100%	100%	100%	100%
MIS Report generation	100%	100%	100%	100%	100%	100%
Information on Internet through State	100%	100%	100%	100%	100%	100%

Table 4.5.T.	**DISTRICTS – (10 school in each and Observation in %ages)**					
Curriculum of ICT & Computer Books (ICT Teachers Response)	**Ajitgarh**	**Mansa**	**Muktsar**	**Sangrur**	**SBS Nagar**	**Fazilka**
Computer Education Curriculum framed	100%	100%	100%	100%	100%	100%
Need of revision of Computer Education Curriculum	75%	68.75%	70.58%	57.89%	66.66%	76.47%
Computer Education books provided to all students	100%	100%	100%	100%	100%	100%
Need of revision of computer education books	75%	68.75%	70.58%	57.89%	66.66%	76.47%

Table 4.6.T.	**DISTRICTS – (10 school in each and Observation in %ages)**					
Quality of E- content & EDUSAT (Teachers Responses)	**Ajitgarh**	**Mansa**	**Muktsar**	**Sangrur**	**SBS Nagar**	**Fazilka**
Good Quality of E- Content	86.52%	82.81%	84.50%	80.76%	80.59%	81.66%
Transmission of EDUSAT Lessons: A Good Initiative	81.70%	85.93%	85.71%	82.33%	77.61%	80%
Experts delivering lessons using innovative methodology	25.66%	29.68%	28.16%	30.76%	28.35%	26.66%
Students learn from EDUSAT based lessons	59.75%	57.81%	53.52%	55.12%	61.19%	61.66%
Voice of ROT transmission clear and audible	37.80%	31.25%	30.98%	30.76%	34.32%	28.33%

Table 4.7.T.	**DISTRICTS – (10 school in each and Observation in %ages)**					
Quality of E- content & EDUSAT (Students Responses)	**Ajitgarh**	**Mansa**	**Muktsar**	**Sangrur**	**SBS Nagar**	**Fazilka**
Good Quality of E- Content	82.82%	84.02%	89.52%	89%	82.03%	88.20%
Transmission of EDUSAT Lessons: A Good Initiative	91.41%	90.72%	94.24%	93%	89.80%	92.82%
Experts deliver lessons using new teaching aids	42.92%	46.90%	43.97%	48.50%	47.08%	42.05%
More Clarity of concept from EDUSAT based lessons	40.90%	45.87%	45.02%	41.50%	45.63%	40.51%
Teachers discuss transmitted topic after the EDUSAT lessons in class	31.81%	30.92%	28.27%	28%	27.18%	23.07%
EDUSAT lesson language easy to understand	42.92%	41.75%	39.26%	38%	39.32%	38.97%
Voice of ROT transmission clear and audible	30.80%	31.95%	30.36%	36%	35.92%	27.69%

Table 4.8.T.	**DISTRICTS – (10 school in each and Observation in %ages)**					
Monitoring and Maintenance of ICT facilities in Schools	**Ajitgarh**	**Mansa**	**Muktsar**	**Sangrur**	**SBS Nagar**	**Fazilka**
Monitoring done by District Officials once in three months	100%	100%	100%	100%	100%	100%
Computer maintenance Funds provided to schools	100%	100%	100%	100%	100%	100%
External support in Schools for repair of computers	100%	100%	100%	100%	100%	100%
Hardware problem got solved in 5-10 days	80%	80%	70%	70%	80%	70%
Software problem got solved in 5-7days	100%	100%	100%	100%	100%	100%

4.10. District wise Summary of Findings:

District: Ajitgarh (Total Schools Sampled: 10)

- **Availability of Infrastructure:** The observations are made on the following provisions related to infrastructure
  - Computer laboratories were available in separate room in all the sampled schools.
  - Computers installed in all schools.

Computer labortary in GSSS, 3 B-!, Ajitgarh

- E- Library installed in 60% of the sampled schools. In GHS Mataur; GHS, Motemajra; GHs , Bhakharpur; and GHS Landran; the E- library having 24 computer was not installed.

E- Librasry not installed in GHS, Bhakharpur and ROT in E-Lib

- UPS not working in 30% of the sampled schools i.e. GHS Mataur; GHS, Motemajra and GHS Landran at the time of visit.
- Furniture is available in all Computer Laboratories.
- In all 11% computers were not working; but in GHS Mataur; and GHS Landran only a few computers were working and those need to be replaced however in GHS Mataur, only furniture for 24 computers E- Lib was there.
- Internet connectivity was there in 90% schools. Only in GSSS Tira internet was not working as it is declared Technically Not Fit for Internet.
- Printers were available in all schools.
- The electricity supply interruption was there. It was more in summer and less in winter and it ranges from 1-2 hours duration.
- Generators were available in 60% of the sampled schools and fuel for the generators was also available.

- Internet connectivity problem is there in40% sampled schools as due to wind storm or rain or breaking of wire.
- Electricity Voltage problem is there in 40% schools. In rural area schools due load shedding was there and due to that its very difficult to use computers sometimes especially in summer.
- Microsoft was the operating software for all computers.
- Receive only terminal (ROT) / satellite interactive terminal (SIT) / installed in all schools.

EDUSAT Lesson inn Progress

- 80% sampled schools had the exclusive (ROT) / (SIT) Room. In two schools ROT installed in library/ E- Lib.
- EDUSAT (ROT/ SIT) Room Furniture was available in 40% of the sampled schools. In other schools students were seating on mat.
- Cleanliness of EDUSAT (ROT) Room was poor in 40% of the sampled schools. In GSSS 3B-1, Ajitgarh, ROT room was on the top floor and it's very difficult to sit there in summer.
- EDUSAT (ROT) in Working Condition in 90% of the schools. In GSSS,

Tira it's not working due to signal problem. ;

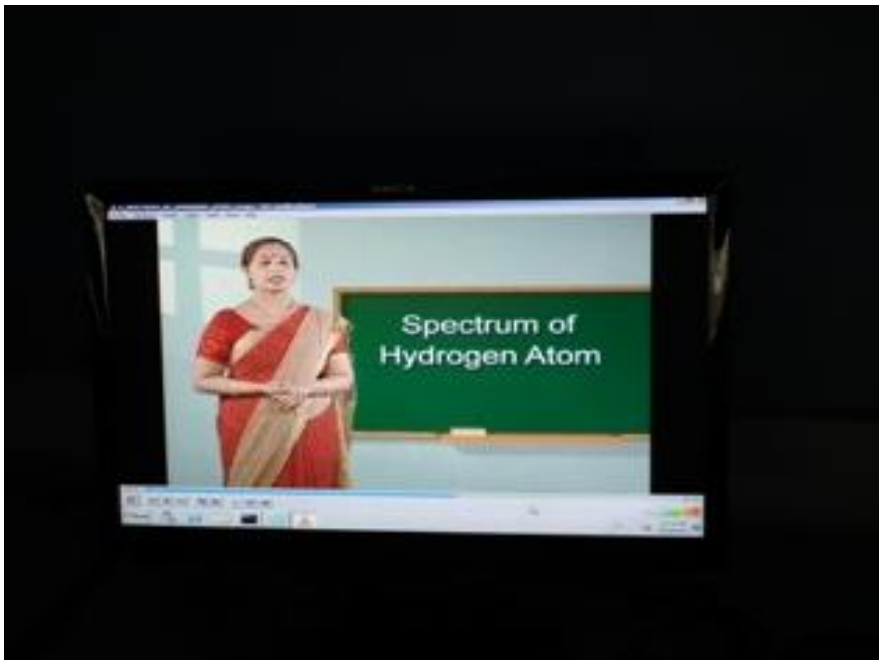
- Voice of ROT good and audible only in 50% schools as in other schools no extra speakers were installed and voice was not audible top the back benchers.
- ROT signal Problem was there in 40% schools i.e. GSSS, Tira; GHS Mataur; GHS, Motemajra; and GHS Bhakharpur.

❖ **Use of ICT facilities and integration of technology in teaching and learning:** The observations are made from students and teachers on the following provisions related to Use of ICT facilities and integration of technology in teaching and learning

- The duration to use computer by students was specified in time table but only 1.30 hrs were provided to students once in schools with high student enrolment and twice in schools with less enrolment. Only four periods a week were given for computer theory and practice. In schools having high enrolment, its very difficult to provide computers to all students for practice.
- All students have positive perceptions regarding ICT programs and were much interested to practice on computers.
- Only 63.13% students have positive perceptions regarding EDUSAT programs.
- Only 19.69% students were having E- mail account. Out of which 12.45% were boys and 7.24% of the girl students who were using Email.
- Computer fee charged from students of 9^{th} and 10^{th} @ Rs 30/- and of 11^{th} and 12^{th} @ Rs. 35/- per month.
- Only 36.58% teachers were using computers actively for works like typing the results or making reports.
- Only 9.75% of the teachers were using technology in teaching like power

point presentation or computer assisted instruction in school.

- Only 53.53% of the teachers have an active Email account. Male teachers here outnumbered the female teachers.
- Only 6% of the teachers developed ICT enabled material at their own related to their subject.
- Capacity building for ICT of 89.28% teachers was done by the department of school education by induction training and also by American India Foundation by its program of Techno-Pedagogy.
- But 51.78% of the teachers were satisfied with the provisions of ICT training program.
- All teachers had positive perceptions regarding ICT programs in schools and they reported that it's a good initiative.



E- library Content Delivery

- Only 68.29% of teachers have positive perceptions regarding EDUSAT programs and consider it a good learning program.

- Only 62.12% of students considered IT infrastructure sufficient in school.
- Only 48.78% teachers considered IT infrastructure sufficient in school as per strength and needs of students and teachers.
- Only 18.18% students responded that they get sufficient time to practice on computers in school hours.

❖ **Appointment of ICT teachers and their duties:** The observations and responses of ICT teachers are made on the following provisions related to appointment of ICT teachers and their duties:

- In all sampled schools, ICT teachers were appointed.
- Only 5% of the ICT teachers of sampled schools have developed some E-content.
- No special training for capacity building of ICT teachers was done in last three years.
- All of the ICT teachers had positive perceptions regarding presently executed ICT programs.
- 85% of the ICT teachers had positive perceptions regarding presently executed EDUSAT programs.
- All the ICT teachers were doing non academic work like data entry for E-Punjab; Scholarship filling; admission work; time table making; MIS; other typing work or report making work in schools from 1-2.30 hrs daily in a school.
- Only 65% of the ICT teachers considered present ICT infrastructure sufficient for the students in the school.

❖ **ICT usage in Administrative Work:** The observations and responses of teachers are made on the following provisions related to ICT usage in administrative work:

- Email Facility was used for administrative work in all schools.
- ICT applications were used for administrative functions like result making;

report making and data for MIS etc. in all schools.

- MIS report generation was done in all schools.;
- State and district provide the information through Internet to the schools.

❖ **Curriculum of ICT and Computer books:** The observations and responses of ICT teachers are made on the following provisions related to Curriculum of ICT and Computer books:

- All teachers reported that Computer Education curriculum is framed by the state.
- 75% of the ICT teachers reported that there is an urgent need to revise the computer education curriculum.
- In all schools computer Education books were provided to all students.
- 75% of the ICT teachers reported that computer books need to be upgraded as per the new computers and operating windows.

❖ **Perceptions of Teachers towards Quality of E- content and EDUSAT based Lessons:** The observations and responses of teachers are made on the following provisions related to Quality of E- content and EDUSAT based Lessons:

- 86.52% of teachers judged the E- content as of good quality and relevant.
- 81.70% of the teachers considered transmission of EDUSAT Lessons is a good initiative.

EDUSAT based Lesson in Progress

- Only 25.66% teachers considered that experts for EDUSAT based lessons were delivering lessons by using innovative methodology or teaching techniques else than them.
- Only 59.75% teachers reported that students learn from EDUSAT based lessons.
- Regarding voice of ROT transmission, only 37.80% teachers said that its clear and audible.

❖ **Perceptions of Students towards Quality of E- content and EDUSAT based Lessons:** The observations and responses of students are made on the following provisions related to Quality of E- content and EDUSAT based Lessons:

- 82.82% of students stated that E- content as of good quality.
- 91.41% of the students considered transmission of EDUSAT Lessons as a good initiative.
- Only 42.92% students stated that experts delivering lessons were using

new teaching aids not available in school.

- Only 40.90% of students accounted that EDUSAT based lessons lead to more clarity of concept.
- Only 31.81% of students reported that teachers discuss transmitted topic after the EDUSAT lessons in class.
- Only 42.92% of students considered EDUSAT lesson language easy to understand.
- Only 30.80% students stated that voice of ROT transmission clear and audible to the whole class.

❖ **Monitoring of ICT in Schools:** The observations and responses of teachers are made on the following provisions related to Monitoring of ICT in Schools**:**

- All schools reported that monitoring was done by District Officials once in three months.

❖ **Maintenance of ICT facilities in Schools:** The observations and responses of head teachers are made on the following provisions related to maintenance of ICT facilities in schools:

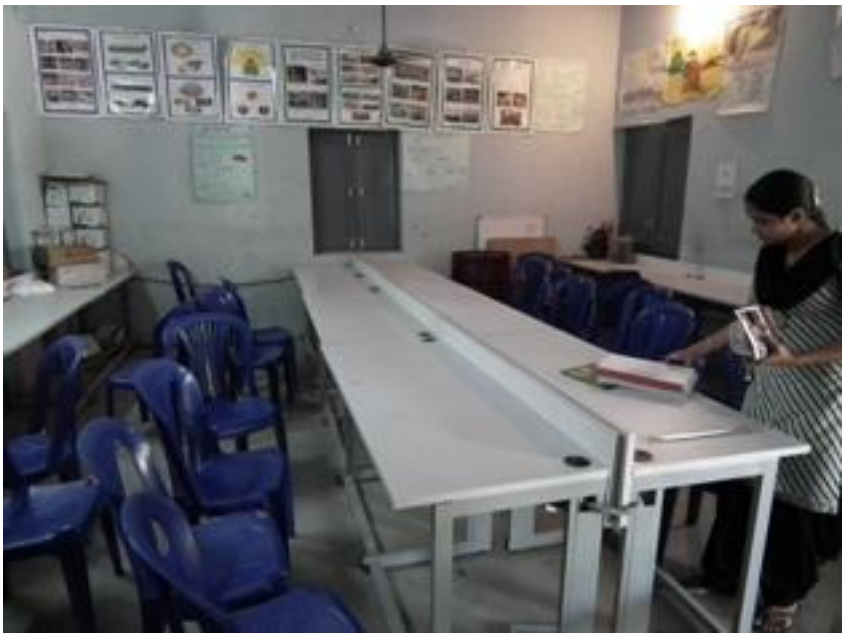
- Computer maintenance funds provided to schools @ Rs 3200/- per year.
- External support in Schools for repair of computer and ROT is provided by the vendor in all schools as telephone numbers were provided and complaint can be recorded by the phone and email also.
- Hardware problem got solved in 5-10 days up to the maximum time in 80% of the schools as reported by schools.
- Software problem got solved in 5-7days by the vendor in all schools or by the computer teacher of the school.

District: Mansa (Total Schools Sampled: 10)

- **Availability of Infrastructure:** The observations are made on the following provisions related to infrastructure
  - Computer laboratories were available in separate room in 90% of the sampled schools.
  - Computers installed in all the sampled schools.
  - E- Library installed in 60% of the sampled schools. In GHS, Guraadi; GHS Bachhoana; GSSS Bir Hodla Kalan; and GSSS Biro Ke Kalan; E- Libraries having 24 computers were not installed at the time of visit.

E- library in GSSS, Bhikhi

  - UPS not working in 50% of the sampled schools i.e. GHS, Guraadi; GHS Bachhoana; GSSS Bir Hodla Kalan; GSSS Biro Ke Kalan ; and GHS Dhalewan at the time of visit.
  - Furniture is available in all Computer Laboratories.
  - In all 13% computers were not working; but in GHS, Guraadi; GHS Bachhoana; and GSSS Bir Hodla Kalan; only a few computers were working and those need to be replaced however in GHS, Guraadi , only furniture for 24 computer E- Lib was there.



E- Library Furniture in GHS, Guraadi (No Computers installed)

- Internet connectivity was there in all schools.
- Printers were available in all schools.
- The electricity supply interruption was there. It was more in summer and less in winter and it ranges from 1.30 - 2 hours duration.
- Generators were available in 50% of the sampled schools and fuel for the generators was also available.
- Internet connectivity problem is there in 40% sampled schools as due to wind storm or rain or breaking of wire.
- Electricity Voltage problem is there in 30% schools. In rural area schools due load shedding was there and due to that its very difficult to use computers sometimes especially in summer.
- Microsoft was the operating software for all computers.
- Receive only terminal (ROT) / satellite interactive terminal (SIT) / installed in all schools.

- 70% sampled schools had the exclusive (ROT) / (SIT) Room. In three schools ROT installed in library or computer lab.
- EDUSAT (ROT/ SIT) Room Furniture was available in 20% of the sampled schools. In other schools students were seating on mat.

ROT Room in GHS, Bachhoana (Without Furniture in the Laboratory

- Cleanliness of EDUSAT (ROT) Room was poor in 50% of the sampled schools. In GSSS, Datewas , ROT room and computer laboratory was on the top floor and it's very difficult to sit there in summer.
- EDUSAT (ROT) in Working Condition in 100% of the schools.
- Voice of ROT good and audible only in 40% schools as in other schools no extra speakers were installed and voice was not audible top the back benchers.
- ROT signal Problem was there in 30% schools i.e GSSS, Datewas; GHS, Guraadi; and GHS Bachhoana.

- **Use of ICT facilities and integration of technology in teaching and learning:** The observations are made from students and teachers on the following provisions related to Use of ICT facilities and integration of technology in teaching and learning

  - The duration to use computer by students was specified in time table but only 1.30 hrs were provided to students once in schools with high student enrolment and twice in schools with less enrolment. Only four periods a week were given for computer theory and practice. In schools having high enrolment, its very difficult to provide computers to all students for practice.
  - All students have positive perceptions regarding ICT programs and were much interested to practice on computers.
  - Only 62.37% students have positive perceptions regarding EDUSAT programs.

Students using computers in GHS, Gurradi

  - Only 8.24% students were having E- mail account. Out of which 6.54% were boys and 1.7% of the girl students who were using Email.
  - Computer fee charged from students of 9th and 10th @ Rs 30/- . and of 11th

and 12th @ Rs. 35/- per month.

- Only 26.56% teachers were using computers actively for works like typing the results or making reports.
- Only 4.68% of the teachers were using technology in teaching like power point presentation or computer assisted instruction in school.
- Only 45.31% of the teachers have an active Email account. Male teachers here outnumbered the female teachers.
- Only 3.12% of the teachers developed ICT enabled material at their own related to their subject.
- Capacity building for ICT of 90.24% teachers was done by the department of school education by induction training and also by American India Foundation by its program of Techno-Pedagogy.
- But 65.85% of the teachers were satisfied with the provisions of ICT training program.
- All teachers had positive perceptions regarding ICT programs in schools and they reported that it's a good initiative;
- Only 57.81% of teachers have positive perceptions regarding EDUSAT programs and consider it a good learning program.
- Only 58.76% of students considered IT infrastructure sufficient in school.
- Only 43.75% teachers considered IT infrastructure sufficient in school as per strength and needs of students and teachers.
- Only 20.61% students responded that they get sufficient time to practice on computers in school hours.

❖ **Appointment of ICT teachers and their duties:** The observations and responses of ICT teachers are made on the following provisions related to appointment of ICT teachers and their duties:

- In all sampled schools, ICT teachers were appointed.

- None of the ICT teacher of sampled schools have developed some E-content.
- No special training for capacity building of ICT teachers was done in last three years.
- All of the ICT teachers had positive perceptions regarding presently executed ICT programs.
- 81.25% of the ICT teachers had positive perceptions regarding presently executed EDUSAT programs.
- All the ICT teachers were doing non academic work like data entry for E-Punjab; Scholarship filling; admission work; time table making; MIS; other typing work or report making work in schools from 1- 3 hrs daily in a school.
- Only 62.5% of the ICT teachers considered present ICT infrastructure sufficient for the students in the school.

❖ **ICT usage in Administrative Work:** The observations and responses of teachers are made on the following provisions related to ICT usage in administrative work:

- Email Facility was used for administrative work in all schools.
- ICT applications were used for administrative functions like result making; report making and data for MIS etc. in all schools.
- MIS report generation was done in all schools.;
- State and district provide the information through Internet to the schools.

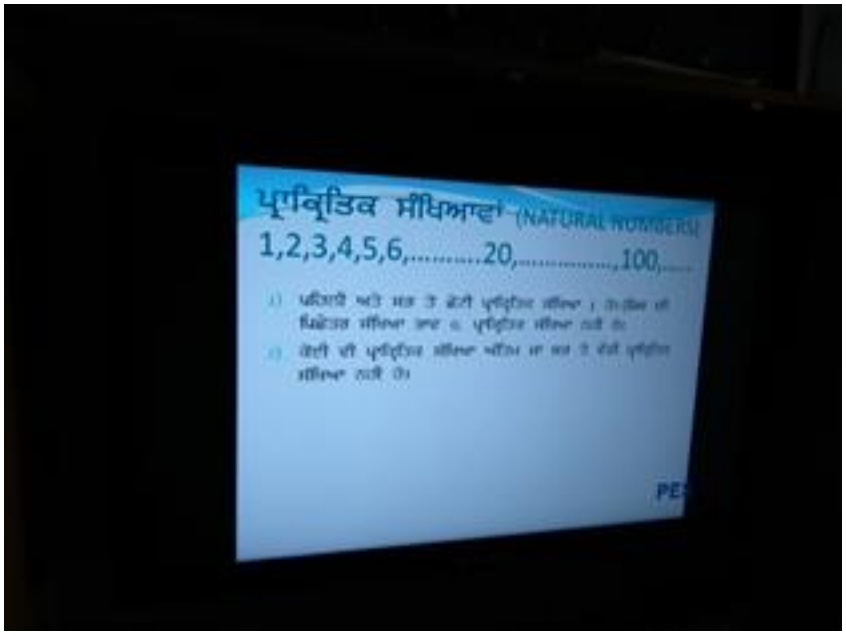
❖ **Curriculum of ICT and Computer books:** The observations and responses of ICT teachers are made on the following provisions related to Curriculum of ICT and Computer books:

- All teachers reported that Computer Education curriculum is framed by the state.

- 68.75% of the ICT teachers reported that there is an urgent need to revise the computer education curriculum.
- In all schools computer Education books were provided to all students.
- 68.75% of the ICT teachers reported that computer books need to be upgraded as per the new computers and operating windows.

❖ **Perceptions of Teachers towards Quality of E- content and EDUSAT based Lessons:** The observations and responses of teachers are made on the following provisions related to Quality of E- content and EDUSAT based Lessons:

- 82.81% of teachers judged the E- content as of good quality and relevant.
- 85.93% of the teachers considered transmission of EDUSAT Lessons is a good initiative,



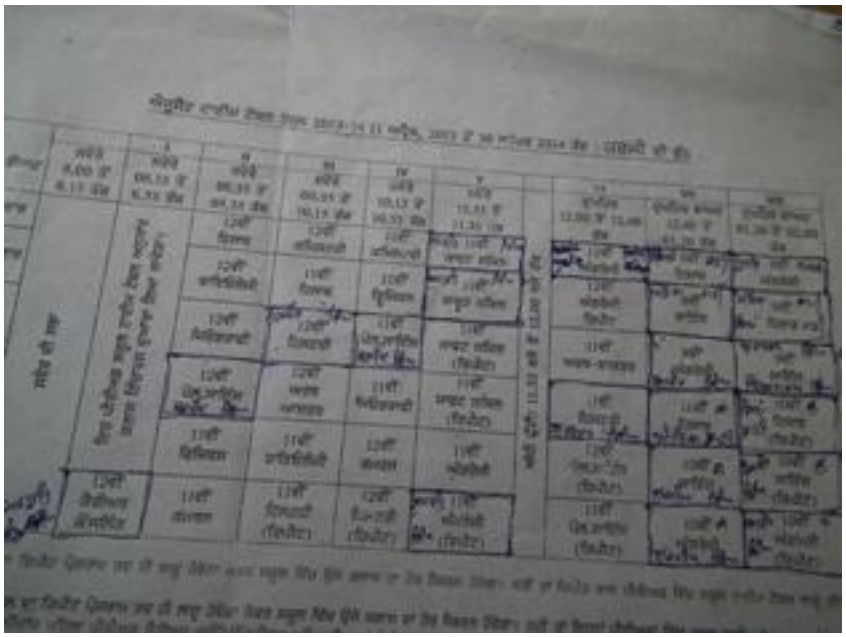
EDUSAT based Lesson in progress- GSSS, Bachoana

- Only 29.68% teachers considered that experts for EDUSAT based lessons were delivering lessons by using innovative methodology or teaching techniques else than them.

- Only 57.81% teachers reported that students learn from EDUSAT based lessons.
- Regarding voice of ROT transmission, only 31.25% teachers said that its clear and audible.

❖ **Perceptions of Students towards Quality of E- content and EDUSAT based Lessons:** The observations and responses of students are made on the following provisions related to Quality of E- content and EDUSAT based Lessons:

- 84.02% of students stated that E- content as of good quality.
- 90.72% of the students considered transmission of EDUSAT Lessons as a good initiative.



EDUSAT Time table

- Only 46.90% of the students stated that experts delivering lessons were using new teaching aids not available in school.
- Only 45.87% of students accounted that EDUSAT based lessons lead to more clarity of concept.
- Only 30.92% of students reported that teachers discuss transmitted topic

after the EDUSAT lessons in class.

- Only 41.75% of students considered EDUSAT lesson language easy to understand.
- Only 31.95% of students stated that voice of ROT transmission clear and audible to the whole class.

❖ **Monitoring of ICT in Schools:** The observations and responses of teachers are made on the following provisions related to Monitoring of ICT in Schools**:**

- All schools reported that monitoring was done by District Officials once in three months.

❖ **Maintenance of ICT facilities in Schools:** The observations and responses of head teachers are made on the following provisions related to maintenance of ICT facilities in schools:

- Computer maintenance funds provided to all the schools in district @ 3200/- per year.
- External support in Schools for repair of computer and ROT is provided by the vendor in all schools as telephone numbers were provided and complaint can be recorded by the phone and email also.
- Hardware problem got solved in 5-10 days up to the maximum time in 80% of the schools as reported by schools.
- Software problem got solved in 5-7days by the vendor in all schools or by the computer teacher of the school.

District: Muktsar (Total Schools Sampled: 10)

- **Availability of Infrastructure:** The observations are made on the following provisions related to infrastructure
  - Computer laboratories were available in separate room in 70% of the sampled schools. In GHS, Chotian; GSSS, Faqarsar Theri; and GHS, Khudia Gulab Singh the computer and ROT labortary in the same room.
  - Computers installed in all the sampled schools.
  - E- Library installed in 80% of the sampled schools. In GHS, Chotian and GHS, Khudia Gulab Singh; E- Libraries having 24 computers were not installed at the time of visit.

E-Library in GSSS, Lambi

  - UPS not working in 70% of the sampled schools i.e. GHS, Chotian; GSSS, Faqarsar Theri; and GHS, Khudia Gulab Singh at the time of visit.
  - Furniture is available in all Computer Laboratories.

- In all 20% computers were not working. In GHS, Chotian and GHS, Khudia Gulab Singh only a few computers were working and those need to be replaced. In GSSS, Faqarsar Theri; E- Library installed but due to seepage no computer was working from last 45 days at the time of visit.

Non- Functional E- Lib in GSSS, Faqarsar Theri

- Internet connectivity was there in all schools.
- Printers were available in all schools.
- The electricity supply interruption was there. It was more in summer and less in winter and it ranges from 1.30 – 2.30 hours duration.
- Generators were available in 60% of the sampled schools and fuel for the generators was also available.
- Internet connectivity problem is there in 40% sampled schools as due to wind storm or rain or breaking of wire.
- Electricity Voltage problem is there in 30% schools. In rural area schools due load shedding was there and due to that its very difficult to use computers sometimes especially in summer.

- Microsoft was the operating software for all computers.
- Receive only terminal (ROT) / satellite interactive terminal (SIT) / installed in all schools. But in GSSS, Faqarsar Their; due to seepage and electricity problem in the labortary; ROT was not working.
- 60% sampled schools had the exclusive (ROT) / (SIT) Room. In three schools ROT installed in library or computer lab.
- EDUSAT (ROT/ SIT) Room Furniture was available in 30% of the sampled schools. In other schools students were seating on mat.

EDUSAT Class-50% students sitting on mat in GSSS, Badal

- Cleanliness of EDUSAT (ROT) Room was poor in 40% of the sampled schools. In GSSS, Lambi and GSSS, Badal the classroom management in ROT class was very poor..
- EDUSAT (ROT) in Working Condition in 90% of the schools. In GSSS, Faqarsar Theri – due to seepage in ROT room the ROT was not working from last 45 days.

Non- functional ROT in GSSS, Faqarsar Theri

- Voice of ROT good and audible only in 50% schools as in other schools no extra speakers were installed and voice was not audible top the back benchers.
- ROT signal Problem was there in 20% schools i.e GSSS, Husnar; and GHS Chotian.

❖ **Use of ICT facilities and integration of technology in teaching and learning:** The observations are made from students and teachers on the following provisions related to Use of ICT facilities and integration of technology in teaching and learning

- The duration to use computer by students was specified in time table but only 1.30 hrs were provided to students once in schools with high student enrolment and twice in schools with less enrolment. Only four periods a week were given for computer theory and practice. In schools having high enrolment, its very difficult to provide computers to all students for practice.
- All students have positive perceptions regarding ICT programs and were much interested to practice on computers.
- Only 57.59% students have positive perceptions regarding EDUSAT

programs.

- Only 9.94% students were having E- mail account. Out of which 6.94% were boys and 3.0% of the girl students who were using Email.
- Computer fee charged from students of 9th and 10th @ Rs 30/- . and of 11th and 12th @ Rs. 35/- per month.
- Only 28.16% teachers were using computers actively for works like typing the results or making reports.
- Only 4.22% of the teachers were using technology in teaching like power point presentation or computer assisted instruction in school.
- Only 45.07% of the teachers have an active Email account. Male teachers here outnumbered the female teachers.
- Only 1.4% of the teachers developed ICT enabled material at their own related to their subject.
- Capacity building for ICT of 88.09% teachers was done by the department of school education by induction training and also by American India Foundation by its program of Techno-Pedagogy.
- But 69.04% of the teachers were satisfied with the provisions of ICT training program.
- All teachers had positive perceptions regarding ICT programs in schools and they reported that it's a good initiative;
- Only 56.73% of teachers have positive perceptions regarding EDUSAT programs and consider it a good learning program.
- Only 54.97% of students considered IT infrastructure sufficient in school.
- Only 36.61% teachers considered IT infrastructure sufficient in school as per strength and needs of students and teachers.
- Only 16.23% students responded that they get sufficient time to practice on computers in school hours.

❖ **Appointment of ICT teachers and their duties:** The observations and responses of ICT teachers are made on the following provisions related to appointment of ICT teachers and their duties:

- In all sampled schools, ICT teachers were appointed.
- 5% of the ICT teachers of sampled schools have developed some E- content.
- No special training for capacity building of ICT teachers was done in last three years.
- All of the ICT teachers had positive perceptions regarding presently executed ICT programs.
- 88.23% of the ICT teachers had positive perceptions regarding presently executed EDUSAT programs.
- All the ICT teachers were doing non academic work like data entry for E-Punjab; Scholarship filling; admission work; time table making; MIS; other typing work or report making work in schools from 1- 3 hrs daily in a school.
- Only 52.94% of the ICT teachers considered present ICT infrastructure sufficient for the students in the school.

❖ **ICT usage in Administrative Work:** The observations and responses of teachers are made on the following provisions related to ICT usage in administrative work:

- Email Facility was used for administrative work in all schools.
- ICT applications were used for administrative functions like result making; report making and data for MIS etc. in all schools.
- MIS report generation was done in all schools.;
- State and district provide the information through Internet to the schools.

❖ **Curriculum of ICT and Computer books:** The observations and responses of ICT teachers are made on the following provisions related to Curriculum of ICT and Computer books:

- All teachers reported that Computer Education curriculum is framed by the state.
- 70.58% of the ICT teachers reported that there is an urgent need to revise the computer education curriculum.
- In all schools computer Education books were provided to all students.
- 70.58% of the ICT teachers reported that computer books need to be upgraded as per the new computers and operating windows.

❖ **Perceptions of Teachers towards Quality of E- content and EDUSAT based Lessons:** The observations and responses of teachers are made on the following provisions related to Quality of E- content and EDUSAT based Lessons:

- 84.50% of teachers judged the E- content as of good quality and relevant.
- 85.71% of the teachers considered transmission of EDUSAT Lessons is a good initiative.

ROT Lesson in Progress in GHS, Khudia Gulab Singh

- Only 28.16% teachers considered that experts for EDUSAT based lessons were delivering lessons by using innovative methodology or teaching techniques else than them.

- Only 53.52% teachers reported that students learn from EDUSAT based lessons.
- Regarding voice of ROT transmission, only 30.98% teachers said that its clear and audible.

❖ **Perceptions of Students towards Quality of E- content and EDUSAT based Lessons:** The observations and responses of students are made on the following provisions related to Quality of E- content and EDUSAT based Lessons:

- 89.52% of students stated that E- content as of good quality.
- 94.24% of the students considered transmission of EDUSAT Lessons as a good initiative.
- Only 43.97% of the students stated that experts delivering lessons were using new teaching aids not available in school.

EDUSAT based Lesson in GSSS, Badal (No teacher present)

- Only 45.02% of students accounted that EDUSAT based lessons lead to more clarity of concept.
- Only 28.27% of students reported that teachers discuss transmitted topic after the EDUSAT lessons in class.

Poor Classroom Management during EDUSAT Lesson in GSSS, Lambi

- Only 39.26% of students considered EDUSAT lesson language easy to understand.
- Only 30.36% of students stated that voice of ROT transmission clear and audible to the whole class.

❖ **Monitoring of ICT in Schools:** The observations and responses of teachers are made on the following provisions related to Monitoring of ICT in Schools**:**

- All schools reported that monitoring was done by District Officials once in three months.

❖ **Maintenance of ICT facilities in Schools:** The observations and responses of head teachers are made on the following provisions related to maintenance of ICT facilities in schools:

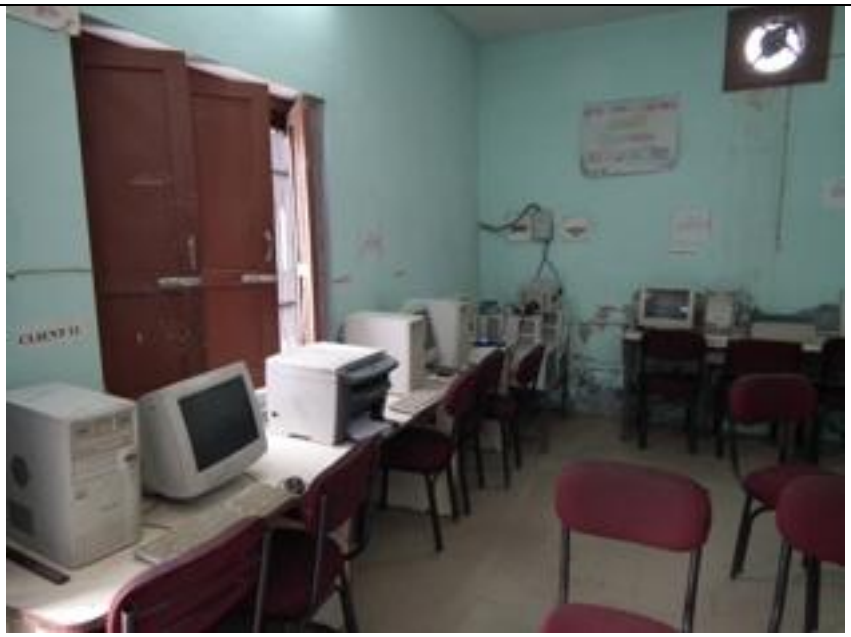
- Computer maintenance funds provided to all the schools in district @ 3200/- per year.
- External support in Schools for repair of computer and ROT is provided by the vendor in all schools as telephone numbers were provided and complaint can be recorded by the phone and email also.
- Hardware problem got solved in 5-10 days up to the maximum time in 70% of the schools as reported by schools.
- Software problem got solved in 5-7days by the vendor in all schools or by the computer teacher of the school.

District: Sangrur (Total Schools Sampled: 10)

- **Availability of Infrastructure:** The observations are made on the following provisions related to infrastructure
  - Computer laboratories were available in separate room in 90% of the sampled schools. In GSSS, Mahila Chowk, ROT laboratory and computer laboratory in same room.
  - Computers installed in all the sampled schools.
  - E- Library installed in 80% of the sampled schools. In GHS, Inna Bajwa and GHS, Chotian; E- Libraries having 24 computers were not installed at the time of visit.

Computer Laboratory in GHS, Inna Bajwa

  - UPS not working in 40% of the sampled schools i.e. GHS, Inna Bajwa; GHS, Chotian; GSSS, Mahila Chowk; and GSSS Sherpur. at the time of visit.
  - Furniture is available in all Computer Laboratories.
  - In all 15% computers were not working; but in GHS, Inna Bajwa and GHS, Chotian; only a few computers were working and those need to be replaced.



Computer Labortary of GHS, Chotian (poor condition Non-functional Computers)

- Internet connectivity was there in all schools.
- Printers were available in all schools.
- The electricity supply interruption was there. It was more in summer and less in winter and it ranges from 2 - 3 hours duration.
- Generators were available in 60% of the sampled schools and fuel for the generators was also available.
- Internet connectivity problem is there in 40% sampled schools as due to wind storm or rain or breaking of wire.
- Electricity Voltage problem is there in 50% schools. In rural area schools due load shedding was there and due to that it's very difficult to use computers sometimes especially in summer.
- Microsoft was the operating software for all computers.
- Receive only terminal (ROT) / satellite interactive terminal (SIT) / installed in all schools.
- 70% sampled schools had the exclusive (ROT) / (SIT) Room. In three

schools i.e GHS, Inna Bajwa; GHS, Chotian and GSSS, Mahila Chowk; ROT installed in library or computer lab.

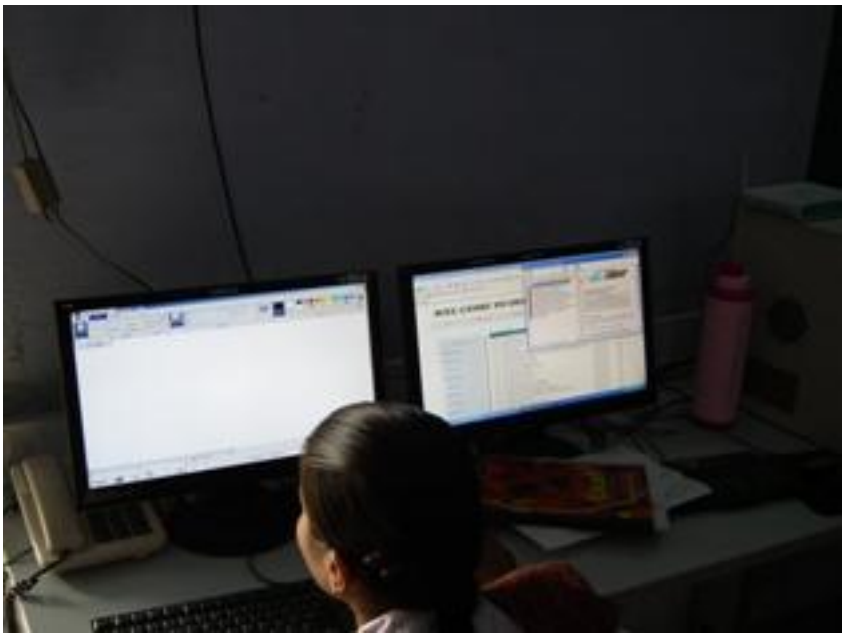
- EDUSAT (ROT/ SIT) Room Furniture was available in 20% of the sampled schools. In other schools students were seating on mat.
- Cleanliness of EDUSAT (ROT) Room was poor in 40% of the sampled schools. In GSSS, Dirba, there was a pit in the centre of the ROT room and in GSSS, Mahila chowk; ROT room cleanliness was very much poor and GSSS, Sherpur; ROT room seemed to be not used as there was too much dirt in the ROT room.

ROT Room in GSSS< Sherpur (Poorly Cleaned having Dirt on Chairs)

- EDUSAT (ROT) in Working Condition in 80% of the schools. In GSSS, Dirba and GSSS, Mehlan Chowk; it was not working at the time of visit due to signal problem.
- Voice of ROT good and audible only in 50% schools as in other schools no extra speakers were installed and voice was not audible top the back benchers.
- ROT signal Problem was there in 30% schools i.e GSSS, Dirba; GSSS, Mehlan Chowk; and GHS, Chotian.

❖ **Use of ICT facilities and integration of technology in teaching and learning:** The observations are made from students and teachers on the following provisions related to Use of ICT facilities and integration of technology in teaching and learning

- The duration to use computer by students was specified in time table but only 1.30 hrs were provided to students once in schools with high student enrolment and twice in schools with less enrolment. Only four periods a week were given for computer theory and practice. In schools having high enrolment, its very difficult to provide computers to all students for practice.



Student Practicing on Computers

- All students have positive perceptions regarding ICT programs and were much interested to practice on computers.
- Only 78% students have positive perceptions regarding EDUSAT programs.
- Only 11% students were having E- mail account. Out of which 9% were boys and 2% of the girl students who were using Email.
- Computer fee charged from students of 9^{th} and 10^{th} @ Rs 30/- .and of 11^{th} and 12^{th} @ Rs. 35/- per month.

- Only 32.05% teachers were using computers actively for works like typing the results or making reports.
- Only 5.12% of the teachers were using technology in teaching like power point presentation or computer assisted instruction in school.
- Only 49.5% of the teachers have an active Email account. Male teachers here outnumbered the female teachers.
- Only 2.56% of the teachers developed ICT enabled material at their own related to their subject.
- Capacity building for ICT of 87.75% teachers was done by the department of school education by induction training and also by American India Foundation by its program of Techno-Pedagogy.
- But 57.14% of the teachers were satisfied with the provisions of ICT training program.
- All teachers had positive perceptions regarding ICT programs in schools and they reported that it's a good initiative.

E- library Content on English

- Only 61.53% of teachers have positive perceptions regarding EDUSAT

programs and consider it a good learning program.

- Only 62% of students considered IT infrastructure sufficient in school.
- Only 44.87% teachers considered IT infrastructure sufficient in school as per strength and needs of students and teachers.
- Only 19% students responded that they get sufficient time to practice on computers in school hours.

❖ **Appointment of ICT teachers and their duties:** The observations and responses of ICT teachers are made on the following provisions related to appointment of ICT teachers and their duties:

- In all sampled schools, ICT teachers were appointed.
- None of the ICT teacher of sampled schools has developed any E- content.
- No special training for capacity building of ICT teachers was done in last three years.
- All of the ICT teachers had positive perceptions regarding presently executed ICT programs.
- 89.47% of the ICT teachers had positive perceptions regarding presently executed EDUSAT programs.
- All the ICT teachers were doing non academic work like data entry for E-Punjab; Scholarship filling; admission work; time table making; MIS; other typing work or report making work in schools from 1- 3 hrs daily in a school.
- Only 47.36% of the ICT teachers considered present ICT infrastructure sufficient for the students in the school.

❖ **ICT usage in Administrative Work:** The observations and responses of teachers are made on the following provisions related to ICT usage in administrative work:

- Email Facility was used for administrative work in all schools.

- ICT applications were used for administrative functions like result making; report making and data for MIS etc. in all schools.
- MIS report generation was done in all schools.;
- State and district provide the information through Internet to the schools.

❖ **Curriculum of ICT and Computer books:** The observations and responses of ICT teachers are made on the following provisions related to Curriculum of ICT and Computer books:

- All teachers reported that Computer Education curriculum is framed by the state.
- 57.89% of the ICT teachers reported that there is an urgent need to revise the computer education curriculum.
- In all schools computer Education books were provided to all students.
- 57.89% of the ICT teachers reported that computer books need to be upgraded as per the new computers and operating windows.

❖ **Perceptions of Teachers towards Quality of E- content and EDUSAT based Lessons:** The observations and responses of teachers are made on the following provisions related to Quality of E- content and EDUSAT based Lessons:

- 80.76% of teachers judged the E- content as of good quality and relevant.
- 82.33% of the teachers considered transmission of EDUSAT Lessons is a good initiative;
- Only 30.76% teachers considered that experts for EDUSAT based lessons were delivering lessons by using innovative methodology or teaching techniques else than them.
- Only 55.12% teachers reported that students learn from EDUSAT based lessons.
- Regarding voice of ROT transmission, only 30.76% teachers said that its

clear and audible.

- **Perceptions of Students towards Quality of E- content and EDUSAT based Lessons:** The observations and responses of students are made on the following provisions related to Quality of E- content and EDUSAT based Lessons:
  - 89% of students stated that E- content as of good quality.
  - 93% of the students considered transmission of EDUSAT Lessons as a good initiative.
  - Only 48.50% of the students stated that experts delivering lessons were using new teaching aids not available in school.
  - Only 41.50% of students accounted that EDUSAT based lessons lead to more clarity of concept.

EDUSAT based Lesson in Progress

  - Only 28% of students reported that teachers discuss transmitted topic after the EDUSAT lessons in class.
  - Only 38% of students considered EDUSAT lesson language easy to understand.

- Only 36% of students stated that voice of ROT transmission clear and audible to the whole class.

❖ **Monitoring of ICT in Schools:** The observations and responses of teachers are made on the following provisions related to Monitoring of ICT in Schools**:**

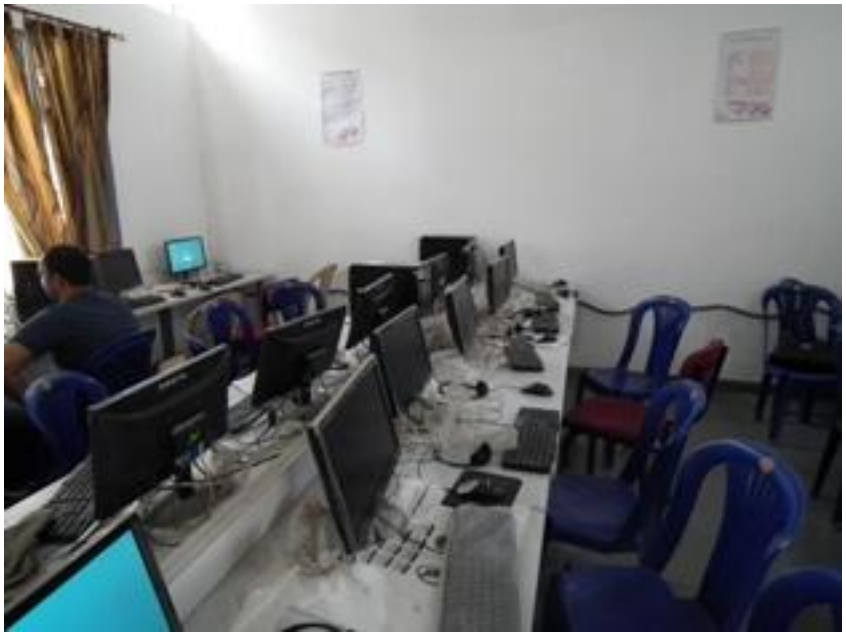
- All schools reported that monitoring was done by District Officials once in three months.

❖ **Maintenance of ICT facilities in Schools:** The observations and responses of head teachers are made on the following provisions related to maintenance of ICT facilities in schools:

- Computer maintenance funds provided to all the schools in district @ 3200/- per year.
- External support in Schools for repair of computer and ROT is provided by the vendor in all schools as telephone numbers were provided and complaint can be recorded by the phone and email also.
- Hardware problem got solved in 5-10 days up to the maximum time in 70% of the schools as reported by schools.
- Software problem got solved in 5-7days by the vendor in all schools or by the computer teacher of the school.

District: SBS Nagar (Total Schools Sampled: 10)

- **Availability of Infrastructure:** The observations are made on the following provisions related to infrastructure
  - Computer laboratories were available in separate room in all of the sampled schools. Computers installed in all the sampled schools.
  - E- Library installed in 60% of the sampled schools. In GHS, Sanava; GHS, Mehrampur; GHS, Behram and GHS Simbal Majara, E- Libraries having 24 computers were not installed at the time of visit.



E- library In GSSS, SBS Nagar

  - UPS not working in 40% of the sampled schools i.e. GHS, Sanava; GHS, Mehrampur; GHS, Behram and GHS Simbal Majara at the time of visit.
  - Furniture is available in all Computer Laboratories.
  - In all 16% computers were not working; but in GHS, Sanava and GHS Simbal Majara; only a few computers were working and those need to be replaced.

No E- Library at GHS, Simbal Majara (only furniture)

Non- functional computers at GHS, Simbal Majara

- Internet connectivity was there in all schools.
- Printers were available in all schools.

- The electricity supply interruption was there. It was more in summer and less in winter and it ranges from 1 - 2 hours duration.
- Generators were available in 60% of the sampled schools and fuel for the generators was also available. In the district some schools have purchased silent generators by donation from public.

Generator in GSSS, Nawanshahar

- Internet connectivity problem is there in 20% sampled schools as due to wind storm or rain or breaking of wire.
- Electricity Voltage problem is there in 40% schools. In rural area schools due load shedding was there and due to that it's very difficult to use computers sometimes especially in summer.
- Microsoft was the operating software for all computers.
- Receive only terminal (ROT) / satellite interactive terminal (SIT) / installed in all schools.
- 90% sampled schools had the exclusive (ROT) / (SIT) Room. In GHS, Sanava school ROT installed in library.
- EDUSAT (ROT/ SIT) Room Furniture was available in 10% of the sampled schools. In other schools students were seating on mat.

- Cleanliness of EDUSAT (ROT) Room was poor in 50% of the sampled schools. In GSSS, Balachaur, GHS Behram; GHS, Sanava; GHS, Mehrampur and GHS Simbal Majara; cleanliness was required in ROT rooms.
- EDUSAT (ROT) in Working Condition in all of the schools. But in GSSS (G) Balachaur - SIT was not working.

Non- functional SIT at GSSS (G) Balachaur

- Voice of ROT good and audible only in 60% schools as in other schools no extra speakers were installed and voice was not audible top the back benchers.
- ROT signal Problem was there in 10% schools i.e. GHS, Simbal Majara.

❖ **Use of ICT facilities and integration of technology in teaching and learning:** The observations are made from students and teachers on the following provisions related to Use of ICT facilities and integration of technology in teaching and learning

- The duration to use computer by students was specified in time table but only 1.30 hrs were provided to students once in schools with high student enrolment and twice in schools with less enrolment. Only four periods a

week were given for computer theory and practice. In schools having high enrolment, its very difficult to provide computers to all students for practice.

- All students have positive perceptions regarding ICT programs and were much interested to practice on computers.
- Only 70.87% students have positive perceptions regarding EDUSAT programs.
- Only 17.47% students were having E- mail account.
- Computer fee charged from students of 9^{th} and 10^{th} @ Rs 30/- .and of 11^{th} and 12^{th} @ Rs. 35/- per month.
- Only 37.31% teachers were using computers actively for works like typing the results or making reports.

Teachers using E- Library in GSSS, Jadla

- Only 7.46% of the teachers were using technology in teaching like power point presentation or computer assisted instruction in school.
- Only 53.73% of the teachers have an active Email account. Male teachers here outnumbered the female teachers.
- Only 5.97% of the teachers developed ICT enabled material at their own

related to their subject.

- Capacity building for ICT of 83.33% teachers was done by the department of school education by induction training and also by American India Foundation by its program of Techno-Pedagogy.
- But 61.90% of the teachers were satisfied with the provisions of ICT training program.
- All teachers had positive perceptions regarding ICT programs in schools and they reported that it's a good initiative;
- Only 56.71% of teachers have positive perceptions regarding EDUSAT programs and consider it a good learning program.
- Only 66% of students considered IT infrastructure sufficient in school.
- Only 44.77% teachers considered IT infrastructure sufficient in school as per strength and needs of students and teachers.
- Only 16.50% students responded that they get sufficient time to practice on computers in school hours.

❖ **Appointment of ICT teachers and their duties:** The observations and responses of ICT teachers are made on the following provisions related to appointment of ICT teachers and their duties:

- In all sampled schools, ICT teachers were appointed.
- None of the ICT teacher of sampled schools has developed any E- content.
- No special training for capacity building of ICT teachers was done in last three years.
- All of the ICT teachers had positive perceptions regarding presently executed ICT programs.
- 83.33% of the ICT teachers had positive perceptions regarding presently executed EDUSAT programs.
- All the ICT teachers were doing non academic work like data entry for E-

Punjab; Scholarship filling; admission work; time table making; MIS; other typing work or report making work in schools from 1- 3 hrs daily in a school.

- Only 50% of the ICT teachers considered present ICT infrastructure sufficient for the students in the school.

❖ **ICT usage in Administrative Work:** The observations and responses of teachers are made on the following provisions related to ICT usage in administrative work:

- Email Facility was used for administrative work in all schools.
- ICT applications were used for administrative functions like result making; report making and data for MIS etc. in all schools.
- MIS report generation was done in all schools.;
- State and district provide the information through Internet to the schools.

❖ **Curriculum of ICT and Computer books:** The observations and responses of ICT teachers are made on the following provisions related to Curriculum of ICT and Computer books:

- All teachers reported that Computer Education curriculum is framed by the state.
- 66.66% of the ICT teachers reported that there is an urgent need to revise the computer education curriculum.
- In all schools computer Education books were provided to all students.
- 66.66% of the ICT teachers reported that computer books need to be upgraded as per the new computers and operating windows.

❖ **Perceptions of Teachers towards Quality of E- content and EDUSAT based Lessons:** The observations and responses of teachers are made on the following provisions related to Quality of E- content and EDUSAT based Lessons:

- 80.59% of teachers judged the E- content as of good quality and relevant.
- 77.61% of the teachers considered transmission of EDUSAT Lessons is a

good initiative;

- Only 28.35% teachers considered that experts for EDUSAT based lessons were delivering lessons by using innovative methodology or teaching techniques else than them.
- Only 61.19% teachers reported that students learn from EDUSAT based lessons.
- Regarding voice of ROT transmission, only 34.32% teachers said that its clear and audible.

❖ **Perceptions of Students towards Quality of E- content and EDUSAT based Lessons:** The observations and responses of students are made on the following provisions related to Quality of E- content and EDUSAT based Lessons:

- 82.03% of students stated that E- content as of good quality.
- 89.80% of the students considered transmission of EDUSAT Lessons as a good initiative.
- Only 47.08% of the students stated that experts delivering lessons were using new teaching aids not available in school.
- Only 45.63% of students accounted that EDUSAT based lessons lead to more clarity of concept.
- Only 27.18% of students reported that teachers discuss transmitted topic after the EDUSAT lessons in class.
- Only 39.32% of students considered EDUSAT lesson language easy to understand.
- Only 35.92% of students stated that voice of ROT transmission clear and audible to the whole class.

❖ **Monitoring of ICT in Schools:** The observations and responses of teachers are made on the following provisions related to Monitoring of ICT in Schools**:**

- All schools reported that monitoring was done by District Officials once in

three months.

- **Maintenance of ICT facilities in Schools:** The observations and responses of head teachers are made on the following provisions related to maintenance of ICT facilities in schools:
  - Computer maintenance funds provided to all the schools in district @ 3200/- per year.
  - External support in Schools for repair of computer and ROT is provided by the vendor in all schools as telephone numbers were provided and complaint can be recorded by the phone and email also.
  - Hardware problem got solved in 5-10 days up to the maximum time in 80% of the schools as reported by schools.
  - Software problem got solved in 5-7days by the vendor in all schools or by the computer teacher of the school.

District: Fazilka (Total Schools Sampled: 10)

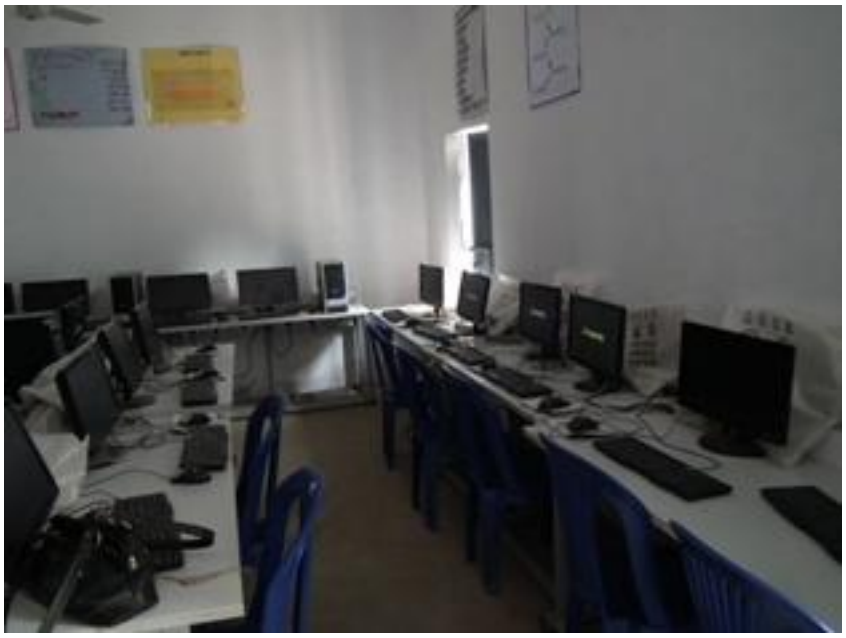
- **Availability of Infrastructure:** The observations are made on the following provisions related to infrastructure
  - Computer laboratories were available in separate room in 90% of the sampled schools. In GHS, Behak Bodla, computer laboratory and ROT in same room and it's not possible to take class of 30 students there.

Common Computer and ROT room in GHS, Behak Bodla

- Computers installed in all the sampled schools.
- E- Library installed in all of the sampled schools.
- UPS not working in 50% of the sampled schools i.e. GHS, Chak Ban Wala; GSSS, Chak Budho Ke; GHS, Behak Bodla; GHS Shateer Wala; and GSSS, Tahli Wala Bodla at the time of visit.

Non- functional UPS at GHS, Chak Ban Wala

- Furniture is available in all Computer Laboratories.
- In all 15% computers were not working.



Computer Lab of GSSS, Chak Budho Ke – 12 computers not working of E- Lib

- Internet connectivity was there in all schools.

- Printers were available in all schools.
- The electricity supply interruption was there. It was more in summer and less in winter and it ranges from 2-3 hours duration.
- Generators were available in 50% of the sampled schools and fuel for the generators was also available.
- Internet connectivity problem is there in 40% sampled schools as due to wind storm or rain or breaking of wire and due to international border.
- Electricity Voltage problem is there in 50% schools. In rural area schools due load shedding was there and due to that it's very difficult to use computers sometimes especially in summer. In GSSS, Tahli wala Bodla and GSSS, Chak Budho Ke; the problem of low electricity voltage was too much.
- Microsoft was the operating software for all computers.
- Receive only terminal (ROT) / satellite interactive terminal (SIT) / installed in all schools.
- 80% sampled schools had the exclusive (ROT) / (SIT) Room.

No Furnituere- EDUSAT Room in Chak Budho Ke

- EDUSAT (ROT/ SIT) Room Furniture was available in 10% of the sampled schools. In other schools students were seating on mat.Cleanliness of EDUSAT (ROT) Room was poor in 30% of the sampled schools. In GHS, Chak Ban Wala; GSSS, Chak Budho Ke; and GHS, Behak Bodla; cleanliness was required in ROT rooms.
- EDUSAT (ROT) in working condition in 80% of the schools as in GHS, Chak Ban Wala; GSSS, Chak Budho Ke due to signal problem; there was interruption in telecast.
- Voice of ROT good and audible only in 40% schools as in other schools no extra speakers were installed and voice was not audible top the back benchers.
- ROT signal Problem was there in 40% schools i.e GHS, Chak Ban Wala; GSSS, Chak Budho Ke; GHS, Shatir Wala; and GSSS, Sabuana.

❖ **Use of ICT facilities and integration of technology in teaching and learning:** The observations are made from students and teachers on the following provisions related to Use of ICT facilities and integration of technology in teaching and learning

- The duration to use computer by students was specified in time table but only 1.30 hrs were provided to students once in schools with high student enrolment and twice in schools with less enrolment. Only four periods a week were given for computer theory and practice. In schools having high enrolment, its very difficult to provide computers to all students for practice.
- All students have positive perceptions regarding ICT programs and were much interested to practice on computers.
- Only 63.58% students have positive perceptions regarding EDUSAT programs.
- Only 8.71% students were having E- mail account.
- Computer fee charged from students of 9^{th} and 10^{th} @ Rs 30/- .and of 11^{th}

and 12th @ Rs. 35/- per month.

- Only 30% teachers were using computers actively for works like typing the results or making reports.
- Only 6.66% of the teachers were using technology in teaching like power point presentation or computer assisted instruction in school.
- Only 51.66% of the teachers have an active Email account. Male teachers here outnumbered the female teachers.
- Only 6.66% of the teachers developed ICT enabled material at their own related to their subject.
- Capacity building for ICT of 91.89% teachers was done by the department of school education by induction training and also by American India Foundation by its program of Techno-Pedagogy.
- But 56.75% of the teachers were satisfied with the provisions of ICT training program.
- All teachers had positive perceptions regarding ICT programs in schools and they reported that it's a good initiative.

E-Library of GSSS, Chimne wala- Students learning by CAL

- Only 58.33% of teachers have positive perceptions regarding EDUSAT programs and consider it a good learning program.
- Only 56.92% of students considered IT infrastructure sufficient in school.
- Only 43.33% teachers considered IT infrastructure sufficient in school as per strength and needs of students and teachers.
- Only 18.46% students responded that they get sufficient time to practice on computers in school hours.

❖ **Appointment of ICT teachers and their duties:** The observations and responses of ICT teachers are made on the following provisions related to appointment of ICT teachers and their duties:

- In all sampled schools, ICT teachers were appointed.
- 11.76% of the ICT teacher of sampled schools has developed some E-content.
- No special training for capacity building of ICT teachers was done in last three years.
- All of the ICT teachers had positive perceptions regarding presently executed ICT programs.
- 76.47% of the ICT teachers had positive perceptions regarding presently executed EDUSAT programs.
- All the ICT teachers were doing non academic work like data entry for E-Punjab; Scholarship filling; admission work; time table making; MIS; other typing work or report making work in schools from 1- 3 hrs daily in a school.
- Only 52.94% of the ICT teachers considered present ICT infrastructure sufficient for the students in the school.

❖ **ICT usage in Administrative Work:** The observations and responses of teachers are made on the following provisions related to ICT usage in

administrative work:

- Email Facility was used for administrative work in all schools.
- ICT applications were used for administrative functions like result making; report making and data for MIS etc. in all schools.
- MIS report generation was done in all schools.;
- State and district provide the information through Internet to the schools.

❖ **Curriculum of ICT and Computer books:** The observations and responses of ICT teachers are made on the following provisions related to Curriculum of ICT and Computer books:

- All teachers reported that Computer Education curriculum is framed by the state.
- 76.47% of the ICT teachers reported that there is an urgent need to revise the computer education curriculum.
- In all schools computer Education books were provided to all students.
- 76.47% of the ICT teachers reported that computer books need to be upgraded as per the new computers and operating windows.

❖ **Perceptions of Teachers towards Quality of E- content and EDUSAT based Lessons:** The observations and responses of teachers are made on the following provisions related to Quality of E- content and EDUSAT based Lessons:

- 81.86% of teachers judged the E- content as of good quality and relevant.
- 80% of the teachers considered transmission of EDUSAT Lessons is a good initiative;
- Only 26.66% teachers considered that experts for EDUSAT based lessons were delivering lessons by using innovative methodology or teaching techniques else than them.
- Only 61.66% teachers reported that students learn from EDUSAT based lessons.
- Regarding voice of ROT transmission, only 28.33% teachers said that its

clear and audible.

- **Perceptions of Students towards Quality of E- content and EDUSAT based Lessons:** The observations and responses of students are made on the following provisions related to Quality of E- content and EDUSAT based Lessons:
  - 88.20% of students stated that E- content as of good quality.
  - 92.82% of the students considered transmission of EDUSAT Lessons as a good initiative.
  - Only 42.05% of the students stated that experts delivering lessons were using new teaching aids not available in school.
  - Only 40.51% of students accounted that EDUSAT based lessons lead to more clarity of concept.
  - Only 23.07% of students reported that teachers discuss transmitted topic after the EDUSAT lessons in class.
  - Only 38.97% of students considered EDUSAT lesson language easy to understand.
  - Only 27.69% of students stated that voice of ROT transmission clear and audible to the whole class.

- **Monitoring of ICT in Schools:** The observations and responses of teachers are made on the following provisions related to Monitoring of ICT in Schools**:**
  - All schools reported that monitoring was done by District Officials once in three months.

- **Maintenance of ICT facilities in Schools:** The observations and responses of head teachers are made on the following provisions related to maintenance of ICT facilities in schools:
  - Computer maintenance funds provided to all the schools in district @ 3200/- per year.
  - External support in Schools for repair of computer and ROT is provided by the vendor in all schools as telephone numbers were provided and complaint can

be recorded by the phone and email also.

- Hardware problem got solved in 5-10 days up to the maximum time in 80% of the schools as reported by schools.
- Software problem got solved in 5-7days by the vendor in all schools or by the computer teacher of the school.

Chapter-V

ICT implementation in the schools of Punjab – A Qualitative Assessment

5.0. Qualitative Analysis:

The qualitative responses on focus group discussions were analyzed by means of content analysis. Data reduction, data display, and conclusion drawing phases were employed in this process. The content of open - ended focused group discussions with teachers and students was coded and organized according to the identified themes. The data based on themes was organized and labeled into structured summaries. The conclusions were drawn by comparing, contrasting and clustering the displayed data.

5.1. Focus Group Discussions: In all selected six districts in five schools each; focused group discussions with teachers were conducted with science, Maths, English language teachers and all the lecturers available in the school including computer teachers and head teacher. The focus group discussions with students were also conducted in these 30 schools i.e. 5 in each district.

5.2. Focus Group discussions with Teachers: The major areas of discussion with teachers were the usage of computers by teachers; computer training to teachers; capacity building and skill development of teachers in computing; student's interest in computers; effect of ICT on student's achievement, motivation, learning and attitude towards learning; EDUSAT based lessons quality; relevance of EDUSAT based lessons; duties of computer teachers; and barriers to ICT integration in teaching-learning.

- **ICT use in timetable of the school: ICT theory and practicals prescribed in the time table for four days a week in every school.**
- **Training:** 90% of the teachers have got the in-service induction training of computers of five days duration. But as revealed by majority of teachers that training was not properly given. Teachers stressed that practical training for skill development was not provided adequately and in pre-service teacher education curriculum, syllabus of computer education need to be revised in

the state. Secondly, lecturers need to be given ICT training. No training for ICT based pedagogy is given.

FGD with Teachers at GSSS, Bir Hodla Kalan (Mansa)

- **Usage of Computers by teachers:** Only 30% teachers were using computers for data entry and making results. 50% of the teachers were enthusiastic to use computers but they demanded that 1-2 computers be installed in the staff room exclusively for teachers. Problem of overcrowded laboratories and irregular power supply were highlighted by majority of the teachers
- **Development of Digital teaching aids/ videos:** Only a few teachers have developed some power point presentations in science, mathematics and language but majority of teachers have not taken any initiative in this regard.
- **Anxiety due to ICT:** None of the young teacher was anxious about ICT usage but they stressed that if ICT is to be used properly then training should be provided for ICT based pedagogy. However the older teachers said that they have to work extra to learn the ICT.
- **E-mail addresses of Teachers:** Only 50% teachers have their active email addresses and are using it for official work only.
- **Education through technology Meaning:** Majority of the teachers asserted that use of technological aids and integrating technology resources in teaching is the meaning of education through technology.

- **ICT enhanced teaching capacity:** Only 12% of the teachers considered that they are using the technology for capacity building i.e. to read extra material sometimes but majority was not using it as a capacity building tool however they knew its importance.
- **Benefits and challenges of integrating technology in your teaching learning process:**
  - Majority of teachers considered ICT as good initiative as it has benefits to learn things in a new way.
  - But the main issue was of the facilities to integrate technology in teaching and learning. The major hurdle is the irregular power supply and overcrowded classes which is a big hinderance for integration of ICT in teaching and learning.
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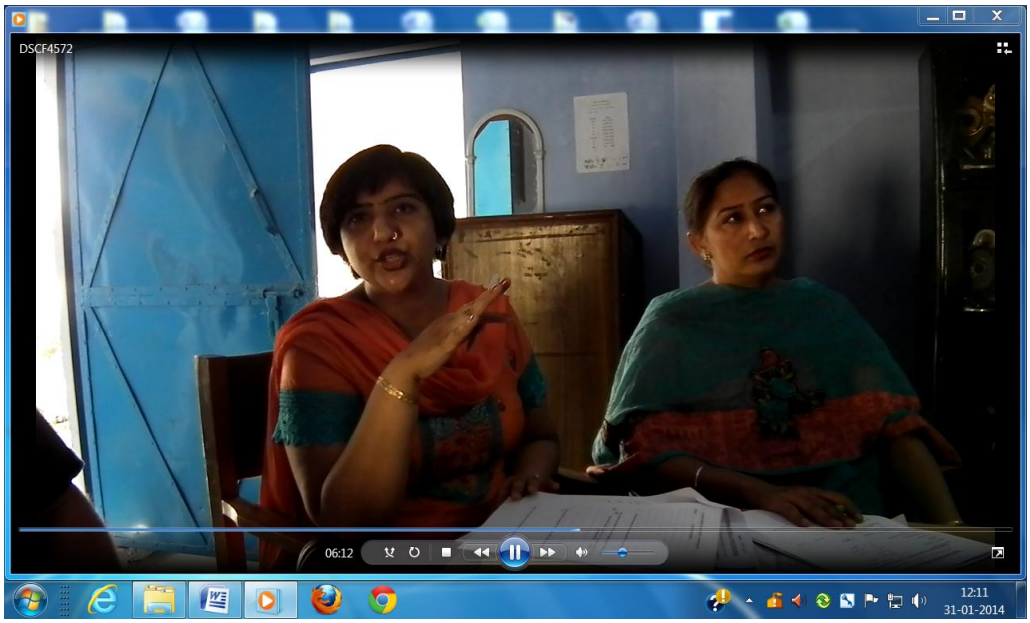
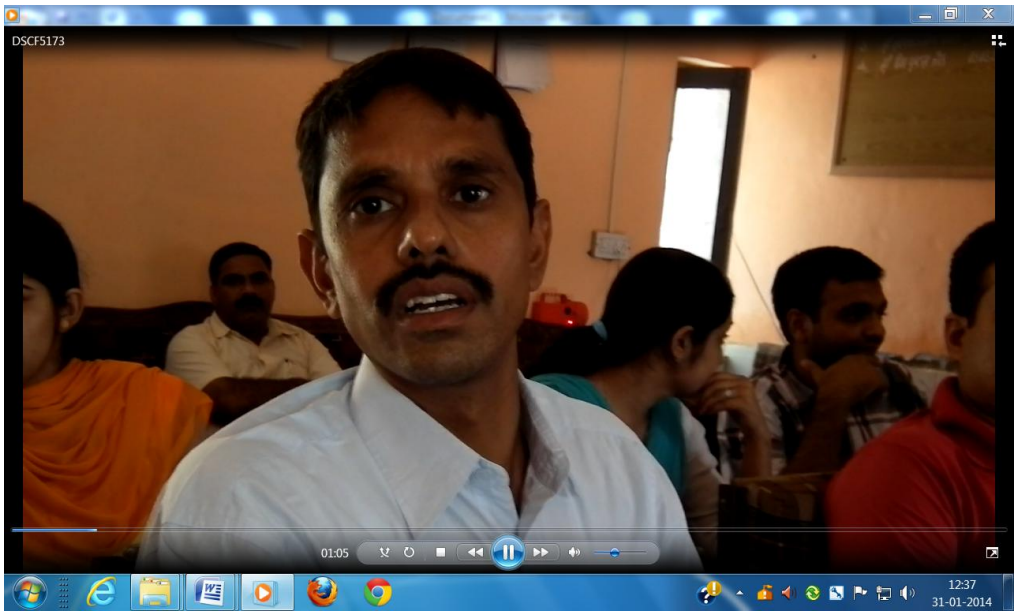


FGD with Teachers at GHS, Bhakharpur (Ajitgarh)

- Firstly most of the students in Govt. schools are from poor socio economic status and they do not have computers at home.
- Secondly, teachers should be given PC's to do work and develop E-content.
- Thirdly the teachers need regular training and support for ICT based pedagogy.

- **Effect of ICT on Students:** The responses of teachers on different parameters are as follows:
  - **Interest in Computers:** Teachers reported that students have a good interest in computer applications and are doing well.
  - Achievement: The viewpoint of teachers varied a lot; the majority opined that a little bit of impact is there on achievement especially in computers.
  - **Overall learning of students and knowledge enhancement**: Teachers agreed that students have become more curious and are more confident to use computers than them. As EDUSAT lessons provided them the new things and they ask sometimes new questions however the ratio of such students is very small.



FGD in Progress in GSSS, Tahli wala Bodla (Fazilka)

- **Change in Attitude towards learning:** There is change in attitude towards learning as students want to learn more about computers. They want to know more about computers and from EDUSAT based lessons they leaned new things.
- **Change in attendance pattern: S**tudents are more motivated to attend computer class and they ask for more time for practical work and there was no difference due to gender or family background in this regard. But

no major effect on attendance only due to computers was there as reported by teachers.

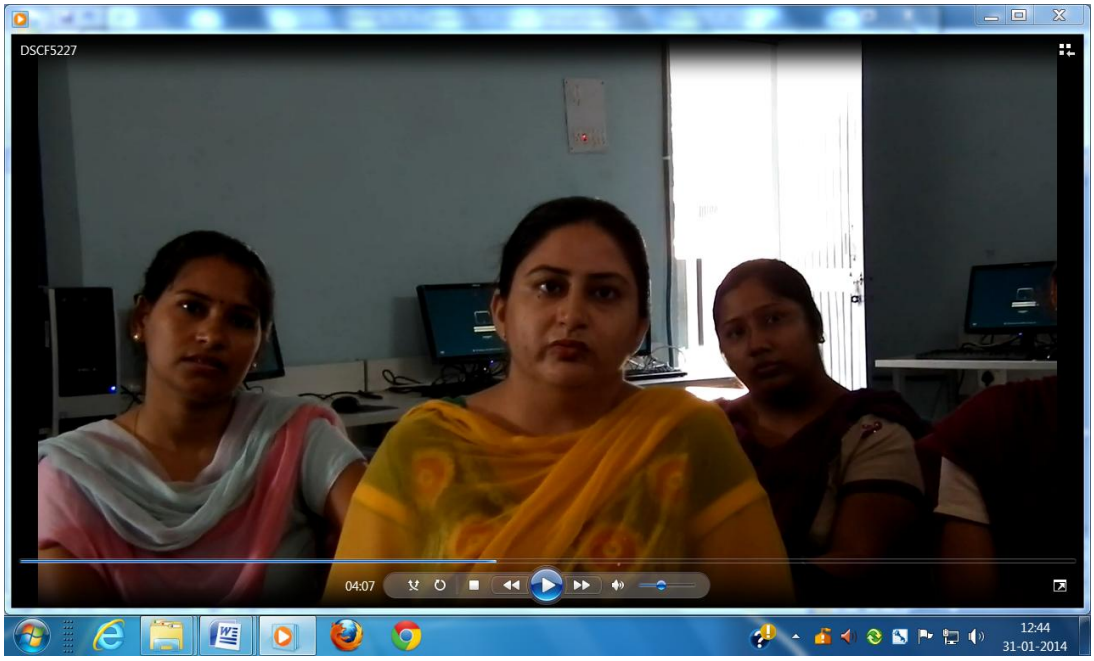
- **Any anxiety due to ICT among students:** No such thing reported by any teacher.
- **Students more confident and extrovert:** The ICT based lessons and EDUSAT based lessons especially in English have made students somewhat confident to get good marks. But no effect on extroversion.
- **Students intellectually more aspired and curious:** Teachers discussed that students started to ask about the NTSC as they have seen the presentations about this on EDUSAT based lessons and few students aspire to be in computer profession.

FGD in GSSS, Chimne Wala (Fazilka)

❖ **Problems faced by Computer teachers:** Computer teachers have been appointed in all the schools who are managing the computer education and EDUSAT lessons delivery. But computer teachers in all the schools were engaged in data entry work As communicated by all of the computer teachers, they have to make entries of DISE data, E- Punjab data, scholarship forms etc. In a week, a computer teacher spends minimum 10-12 hours on average on data entry work which affects his/her teaching.

- **Syllabus revision:** Computer teachers stressed that syllabi of computer need to be revised and books also need to be revised.
- **EDUSAT based Lessons Quality:** Regarding lessons telecasted by the EDUSAT, majority of teachers considered it a good initiative. The issues raised by teachers for quality of EDUSAT based lessons are summarized as follows:
- **EDUSAT based Lessons Quality for Secondary Classes:**

  - In the subject of Mathematics, majority of Mathematics teachers reported that nothing new is there and use of teaching aids is very rare. It's as usual of the classroom teaching. Its one way communication and lead to more boredom among the students.
  - In Science, teachers argued that demonstrations need to be given as mere lecturing or showing the traditional teaching aids did not serve the purpose of innovation.



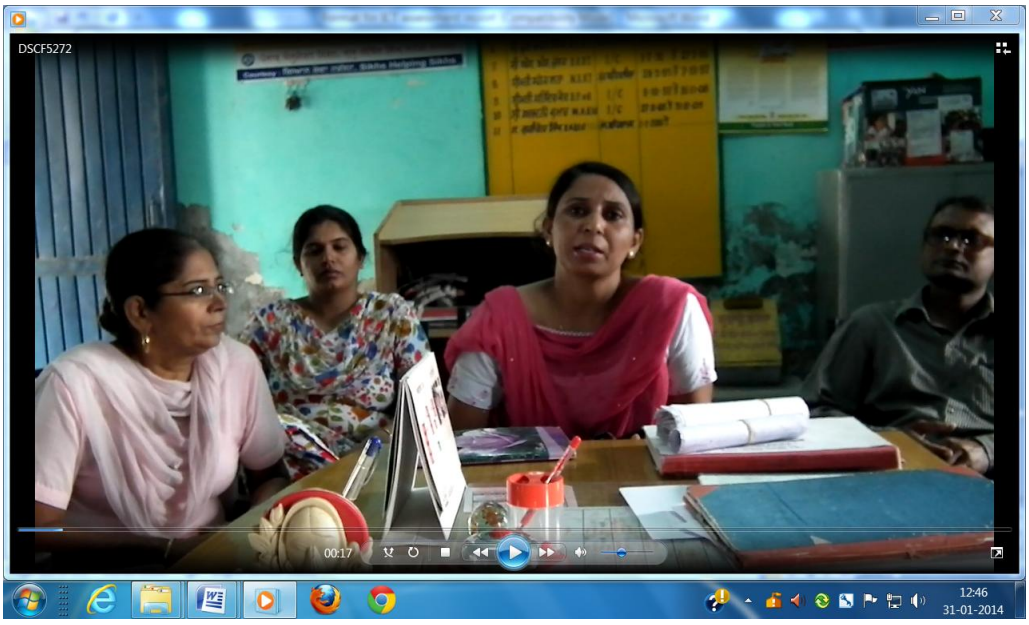
FGD with Teachers at GSSSS, Husnar (Muktsar)

  - In the subject of English, the response was very good as role plays and new teaching aids were shown. But the major problem quoted by teachers was that of fast speed of delivery and no use of bilingual method in teaching of

English language as students face difficulty in understanding the difficult words.

❖ **For Senior Secondary Classes:**

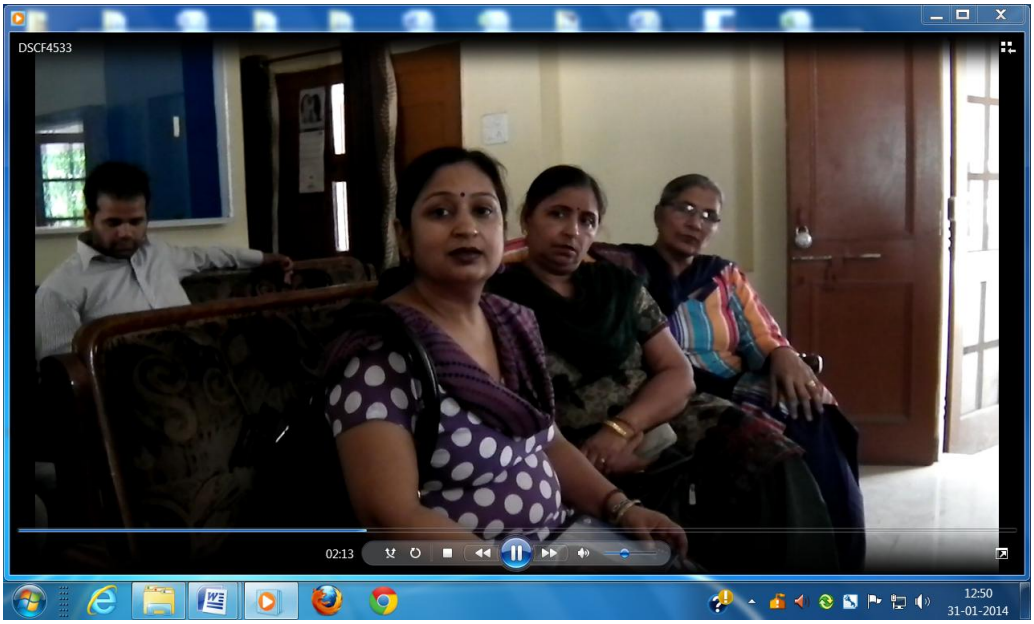
- In the subject of Mathematics, majority of Mathematics teachers reported that teaching was as usual of classroom teaching. It's one way communication and nothing novel there.
- In the subject of Physics, teachers reported that working models need to be shown as mere lecturing that too in English did not serve any purpose.
- In the subject of Chemistry, teachers detailed that animated bonding structures and procedures etc. need to be shown which are not shown in real classrooms. To give examples and to shoe two dimensional diagrams lead to repetition and boredom for students.
- For Biology, teachers reported that working models and bilingual language need to be used in transmitted lessons. Mere lecturing in only English language did not achieve the objective of learning.
- In subject of English, teachers appreciated the role plays and examples but need to be less fluent as students level is not as par with the expert speaker.



FGD with Teachers at GHS Khudia Gulab Singh (Muktsar)

- In subjects of History and Political Science teachers stated that teaching was as per classroom teaching only; historical movements need to be shown on maps by the expert teacher and lessons on political science need to be related to the present scenario.

❖ **Relevance of EDUSAT based lessons:** As per teachers, lessons are related to class topics but majority of teachers considered it as a repetition exercise most of the times. However, teachers reported that students enjoy it and learn from these delivered lessons.



FGD with Teachers at GSSS (G) Raho (SBS Nagar)

❖ **Administrative Problems related to EDUSAT:** In schools having high enrolment, problem of adjustment of time table was faced by the administrators as EDUSAT based lessons are transmitted twice but schools having more than two sections of students cannot adjust the time table accordingly. There was no furniture in 80% schools in which Receive only Terminal (ROT) installed; students were seating on mats.

❖ **Voice clarity of EDUSAT based Lessons:** But 35% of the teachers complained about poor voice clarity of transmitted lessons and those were not audible to all of the students. Extra speakers need to be installed in schools with ROT's.

- **Problem of EDUSAT Signal:** Teachers discussed that EDUSAT signal sometimes got interrupted and this mars the whole pace of the learning and interest of students.

5.3. Focus Group discussions with Students:

For focus group discussion, 20 students were selected from each school i.e. 10 boys and 10 girls of 9^{th}- 12^{th} class. The major areas of discussion with students were knowledge and interest of students in computer usage; time available in school for computer usage; problems in ICT integration benefits and quality of EDUSAT based lessons; and teacher's role in EDUSAT based lessons.

- **Knowledge and interest of students in computer usage:** All of the students were very keenly using the computers. Students had a good knowledge of applications like Microsoft Word, Excel and Power point, HTML etc. Students revealed that they have knowledge to use Internet resources but only a few students have an active E- mail address.
- **Availability of Computers for usage:**
  - In the discussion, 80% of the students revealed that they get very little time in school to do practice on computers.
  - Students were very enthusiastic about computers learning.
  - No major difference in interest of boys and girls about computers.
  - As reported by 61% (approx) students, computers were not sufficient in schools.
  - Majority of students reported that they need more time to work on computers.
  - About 33% of students informed that their computer practical classes have got missed due to irregular power supply or some fault in computers many a times.

FGD with Students in GSSS, SBS Nagar

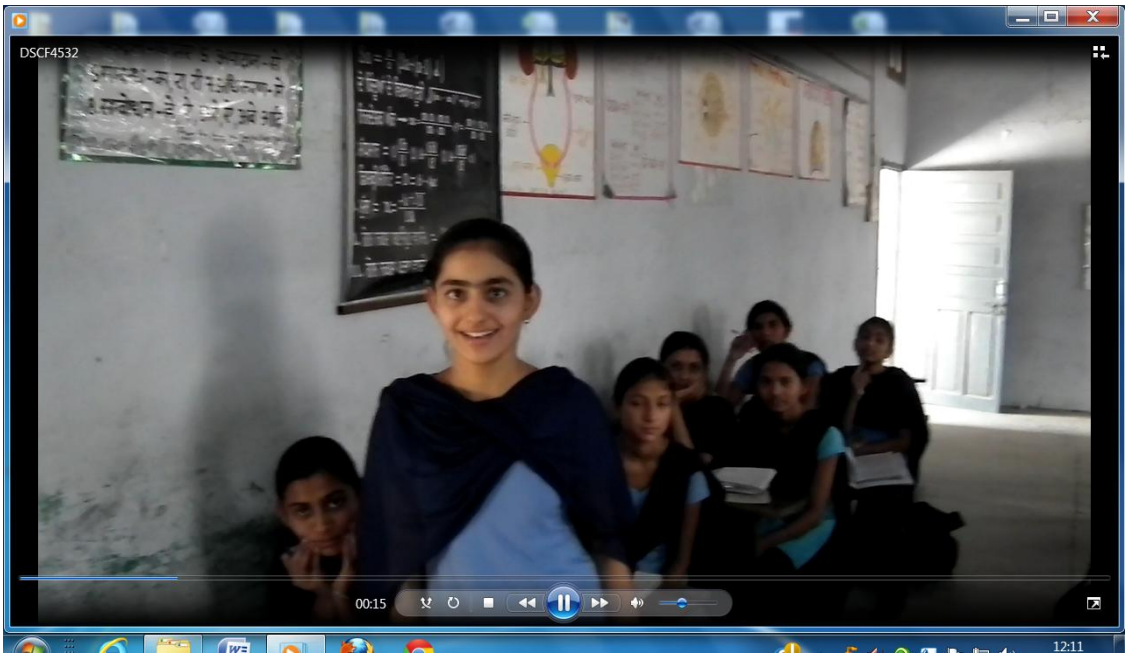
FGD with Students in GHS, Bhakharpur (Ajitgarh)

- **Benefits of EDUSAT:** Lessons delivered through EDUSAT in the schools on receive only terminals for the subjects of English, Science and Mathematics for 9th and 10th; and in the subjects of English, Physics, Chemistry, Biology, History and Political Science for 10+1 and 10+2. As per the discussion with students.
- **EDUSAT based Lessons Quality:** Regarding lessons telecasted by the EDUSAT, all students were taking it as an innovative step. But 76% of the students complained about poor voice clarity.
    - In secondary classes, majority of students liked the lessons in English subject as there were animations and role plays and a different medium of teaching. But on the language part in case of English, students suggested that bilingual method should be used.

FGD with Students in GSSS, Fagarsar Theri (Muktsar)

FGD with Students in GHS, Mataur (Ajitgarh)

- Secondary school Mathematics students complained about the boredom.
- Secondary school students proposed that new teaching aids need to be used and practical demonstrations need to be shown on screen.
- The senior secondary students also appreciated the role plays and examples in the subject of English and suggested that speed need to be slow and lessons should be somewhat bilingual.
- Senior secondary students, in the case of Physics, Chemistry and Biology lessons; they complained of use of only English language in explanation and it's very difficult for rural students to understand and they suggested more use of new teaching aids and working models.
- For subjects like History, Political Science and Mathematics senior secondary students stated that nothing new in descriptions and no new supporting teaching aid used.



FGD with Students in GSSS, Jadla

- **Teacher's role in EDUSAT based lessons:** As per discussion with students', in 50% schools teachers did not take any stock before or after the delivery of the EDUSAT lessons. More than 60% students took the EDUSAT lessons only as a repetition exercise but 40% students consider this repetition very useful for them for concept clarity. About 40% students stated that teachers ask them to note the main points of transmitted lesson on note books and later on discuss these in classes.

5.4. Summary of Focus Group Discussions: On the basis of overall discussion, its revealed that there was a strong agreement between the open ended focused group discussions and closed ended responses of teachers; and the responses of the students and teachers were also in agreement and supporting each other. Majority of the participants stressed the following problems of ICT integration in teaching – learning:

- Lack of adequate and objective based in-service and pre-service training for teachers.
- Emphasis on only computer working in the in-service training programmes; no training of ICT integration in teaching learning process.
- Overburdened computer teachers with data entry work.
- Overcrowded classrooms.
- Less time for practice to students.
- Poor quality of voice of transmitted lessons.
- No use of innovative teaching aids or methods by experts in transmitted lessons.
- Inadequate facilities in computer laboratories as 1-2 computers in each school were not working.
- No computers in classrooms and disrupted power supply.
- Majority of teachers and principals stated that by providing only computers in schools is not sufficient as the continuous training should be provided.
- In pre-service training more ICT related courses should be integrated and during in-service training programmes, training of integrating ICT in teaching and learning should be given.
- The principals and teachers also stressed that computer teachers should not be assigned the work of data entry.
- Training to use EDUSAT based pedagogy and ICT based pedagogy to be provided to teachers.

5.5. Suggestions by Teachers: In focus group discussions, the suggestions given by teachers are as follows:

- More computer infrastructure in schools having high enrolment.
- Instructional technology centers have to be founded in DIETs and SCERTs to train the teachers to use ICT tools effectively and integrate them into an educational environment efficiently.
- In-service training in ICTs should be improved in both quantity and quality.
- Computers should be provided to teachers in the staff room.
- Syllabus of pre-service training has to be revised with an active coordination between Department of School Education and Universities and SCERT of the state.
- Syllabus of computer education needs to be revised. after every three years and books should be designed according to latest Operating System(Window) and Microsoft Office Packages.
- In school time table to six period per week for each class should be there including theory and practical for Computer Science as in the existing time table of four period per week are there to ensure quality of ICT education and provide more time to the students to use computers.
- Special refresher courses for the subject teachers need to be organized at district and state level by experts.
- Quality of transmitted lessons needs to be improved.
- More receive only terminals to be installed in schools having high strength of students.
- Experienced and innovative teachers should be invited for delivering EDUSAT based lessons.
- At school level expert technical support should be provided to teachers to use ICT tools and materials in instruction.
- Computer teachers should be freed from the job of data entry and special refresher courses for computer teachers required to be conducted with the involvement of reputed institutes in computer education.
- Capacity building of ICT teachers need to be done regularly.

Chapter – VI

Conclusion and Suggestions

6.0. Major Conclusions and Suggestions: The major conclusions and suggestions regarding the ICT @ School Scheme in the six selected districts of Punjab are summarized as follows:

6.1. Infrastructure:

6.1.1. Implemented Provisions:

- The Computer laboratories available in all schools.
- Computers available in all schools.
- E- Libraries installed in 70% of schools.
- ROT/SIT installed in all schools.
- Generators available in 60% of the schools.
- Internet connection is there in all schools.
- Printer/ UPS available in all schools.
- Computers purchased on Boot model.
- Provisions for hardware and software maintenance made.

6.1.2. Points of Concern & Suggestions:

- Computer laboratories maintenance to be done in schools. In GHS, Mataur (Ajitgarh) ; GSSS, Faqarsar Theri (Muktsar); GSSS, Chak Budho Ke (Fazilka); and GSSS, Mahila Chowk (Sangrur) - special steps to be taken to improve the laboratories.
- Computers of 1st phase (2005-06) and 2nd phase (2006-07) need to be replaced from schools.
- E- Libraries need to be installed in all schools especially of District: Mansa

and SBS Nagar.

- Generators to be provided to all schools.
- Cleanliness of Computer laboratory and ROT room need to be taken care of.
- More computers to be provided in schools having high enrolment.
- Special EDUSAT rooms need to be constructed in schools.
- More ROT/ SIT to be installed in schools having high enrolment.
- UPS need to be maintained properly.
- Signal problem of internet and ROT signal need to be taken care of.

6.2. ICT Facilities for Skill development of students and teachers

6.2.1. Implemented Provisions:

- Computer education curriculum framed.
- Computer education in time table.
- Four periods a week (1.30 hours approx.) for theory and practical of computers.
- Computer teachers appointed in all schools.
- Computer Education books given to all students.
- In service teachers capacity building for computers done by Microsoft.
- Teachers using computers only for report making; result making etc.

6.2.2. Points of Concern & Suggestions:

- Computer education curriculum got outdated; it needs to be revised after three years.
- Computer education time table need to be increased from 4 to 6 periods

per week.

- Computer education should also be revised as per new operating systems.
- More time for practice on computers to be given to students.
- More rigorous in service training for computer education required for teachers.
- In pre-service training at M.Ed / B.Ed / ETT level, computer curriculum need to be incorporated as compulsory subject.
- Teachers' capacity building for developing digital teaching aids and to use technology based pedagogy need to be done seriously.
- Incentives should be given to teachers who are using technology in teaching.
- Teachers need to be motivated to use ICT resources for professional development in academics also.

6.3. Importance of EDUSAT based Lessons

6.3.1. Implemented Provisions:

- EDUSAT based lessons transmitted in all schools.
- EDUSAT based lesson time table made.
- Display by EDUSAT society for EDUSAT transmissions for whole state.
- Teachers delivering lesson in Science, Maths and English for high school students and for senior secondary school students in the subjects of Physics; Chemistry, Biology, Mathematics, Commerce, English.
- 1588 episodes are developed by EDUSAAT society for transmission.

6.3.2.Points of Concern & Suggestions:

- EDUSAT based lessons voice clarity need to be improved.
- Teacher orientation needed to use EDUSAT based pedagogy.

- Bilingual method need to be used for Science and Maths lessons.
- Some modulation of pace need to be made in delivery of EDUSAT based lessons.
- Experienced and innovative teachers should be invited for delivering EDUSAT based lessons who use innovative teaching aids or working models to clear the concept.
- Comfortable seating arrangement should be made in EDUSAT class.

6.4. Issues of ICT teachers:

6.4.1. Implemented Provisions:

- Computer teachers appointed in all schools.
- Computer teachers are well qualified,
- Computer teachers are taking care of computer laboratory; EDUSAT and other administrative work in school.
- Computer teachers are involved in data entry work of DISAE; MIS; Scholarships; E- Punjab etc for 1-2 hours per day.

6.4.2.Points of Concern & Suggestions:

- Computer teachers should not work as data entry operators.
- Capacity building of computer teachers needs to be done as some teachers have adopted the data entry operator attitude.
- Computer teachers need to be motivated to develop E- content.
- Capacity building of computer teachers need to be done for guiding subject teachers to use computers.

6.5. Use of ICT in Administrative Work and Monitoring and Maintenance of ICT Facilities:

6.5.1. Implemented Provisions:

- ICT used for administrative correspondence and to make results and reports.
- Monitoring set up is there. An administrative set up for the PICTES and EDUSAT society is developed in the state.
- District project coordinators are taking care of the ICT implementation in schools at district level.
- Instructions to heads and teachers issued regarding MOU of Maintenance and the telephone numbers are provided at school level. **(ANNEXURE-IV)**
- A format for maintain register is given by the state which is to be maintained in every school and register are maintained in schools.. **(ANNEXURE- V)**
- A service level requirement procedure is made with the vendor of Boot model for maintenance of computer hardware and software. **(ANNEXURE- VI)**
- Time to time memos issued to the vendor for any irregularity in maintenance.**(Annexure- VII)**
- Instructions to use computers and maintain computers are given by vendor with the help of a display chart to all schools.

6.5.2. Points of Concern & Suggestions:

- District project coordinators of computer background only for the ICT implementation in schools at district level should be appointed.
- A service level requirement procedure is made with the vendor of Boot model for maintenance of computer hardware and software; but in some

schools it took too much time for the repair or replacement of hardware; it should not be more than a week in any case as in some schools it has taken more than a month.

- Instructions to use computers and maintain computers are not displayed in any of the visited school.

6.6. Role of NGO's in ICT implementation

6.5.1. Implemented Provisions:

- The American India Foundation (AIF) is a NGO, associated with ICT program since 2005.
- AIF started the Dell Connected Classroom (DCC) program in 3 government schools (GSSS Manauli, GSSS Kharar-M & GHS Bhago Majra) in district Mohali in year 2010.
- AIF singed a MoU in May'12 with RMSA, Punjab to implement centralized Digital Education program. Under the program, S.St. teacher would be trained at State & District level by AIF trainers. Subject experts from govt. will hand-hold with AIF for training of teachers at district level. 50 govt. schools in Patiala have been selected as well for training & support to teachers at school level. The program tenure is 2 years from 2012 to 2014.
- NGO also provide information of the problems related to ICT in schools on monthly basis.

6.5.2. Points of Concern & Suggestions:

- It is a good initiative. But an independent impact study need to be done related to ICT impact on teachers and students capacity building in schools adopted by NGO in the last 5 years.