CHAPTER-I
INTRODUCTION

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1.0 Introduction

The present chapter, researcher presented with an introduction to the problem, stated the problem and out the rationale of the problem. Further, researcher formulated objectives of the study and also framed research questions that guided the research work. At the end, the researcher has mentioned limitations of the study.

The rapid growth in Information Communication and Technologies (ICT) have brought remarkable changes in the twenty-first century and affected demands of the modern society. ICT is becoming increasingly important in our daily lives as well as in educational systems. Therefore, there is a growing demand on educational institutions to use ICT to teach the skills and knowledge that students need for the 21st century. Realizing the effect of ICT on the workplace and everyday life, today's educational institutions try to restructure their educational curricula and classroom facilities in order to bridge the existing technology gap in teaching and learning processes. This restructuring requires effective adoption of technologies into existing learning environments in order to provide learners with knowledge of specific subject areas, to promote meaningful learning and to enhance professional productivity.

ICT is an 'electronic means of capturing, processing, storing, communicating information. The use of ICT in the classroom teaching-learning is very important for it provides opportunities for teachers and students to operate, store, manipulate, and retrieve information, encourage independent and active learning, and self-responsibility for learning such as distance learning, motivate teachers and students to continue using learning outside school hours, plan and prepare lessons and design materials such as course content delivery and facilitate sharing of resources, expertise and advice. This versatile instrument has the capability not only of engaging students in instructional activities to increase their learning, but of helping them to solve complex problems to enhance their cognitive skills. ICT as technologies used to communicate in order to create, manage and distribute information. A broad definition of ICTs includes computers, the internet, telephone, television, radio and audio-visual equipment. She further explains that ICT is any device and application used to access, manage, integrate, evaluate, create and communicate information and knowledge. Digital technology is included in this definition as services and applications used for communication and information processing functions associated with these devices.

Information and Communications Technology forms part of the core curriculum for all Leaving Certificate Applied students. It is intended to give students the skills and understanding to use computers in both their current and future lives. The Leaving Certificate Applied programmed offers the ideal forum for students to apply these skills in a practical way, particularly in presenting task work and key assignments across the full spectrum of the curriculum. The achievable goals of developing accuracy, neatness and presentation skills generate a sense of pride in work done by students which enhances self esteem and motivates students to maximize their potential in other aspects of the course and in their personal lives.

1.1 Information Communication Technology (ICT)

ICTs stand for Information and Communication Technologies and are defined, as a "diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information." These technologies include computers, the Internet, broadcasting technologies (radio and television), and telephony.   **(UNDP, 2000)**

The term, information and communication technologies (ICT) refers to forms of technologies that are used to create, store, share or transmit, exchange information. This broad definition of ICT includes such technologies as: radio, television, video, DVD, telephone (both fixed line and mobile phones), satellite systems, computer and network hardware and software; as well as the equipment and services associated with these technologies, such as videoconferencing and electronic mail.   **(UNESCO 2002)**

Information and Communication Technologies consist of the hardware, software, networks, and media for collection, storage, processing, transmission and presentation of information (voice, data, text, images), as well as related services. ICTs can be divided into two components, Information and Communication Infrastructure (ICI) which refers to physical telecommunications systems and networks (cellular, broadcast, cable, satellite, postal) and the services that utilize those (Internet, voice, mail, radio, and television), and Information Technology (IT) that refers to the hardware and software of information collection, storage, processing, and presentation.   **(WORLD BANK 2002)**

Information and communication technology (ICT) is defined as a diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information.   **(Blurton, 2002)**

ICT is short for Information & Communications Technology. ICT covers all forms of Computer and Communications equipment as well as the software used to create, store, transmit, receive, interpret, and manipulate information in its various formats.

Information comes in various formats and it is all around us:
- Voice Conversation
- Text
- Pictures
- Data
- Motion Pictures or Video
- Multimedia Presentations
- Radio and Wireless Broadcast
- Television Broadcast

ICT deals with all the systems involved in creating, storing, sending or transmitting, receiving and manipulating these kinds of information.

The systems behind ICT include both hardware devices and the software that allow the hardware devices to carry out or to be used for their intended functions.

Hardware is the physical parts of the system that one can see and touch. For example the Computer's CPU is a hardware aspect of the Computer system. The Computer's Display or Monitor is another hardware component of the Computer system. For the Computer to perform its function there are programs or software aspects that work together with the hardware components to make the Computer usable.

A Computer needs software to help create and manipulate information such as text, data, picture or video. To manipulate information such as print a document, the Computer needs to have printer software running that can communicate with the printer (hardware). The printer software, also known as printer driver, tells the printer what to print, how to print and when to print it. Without this software you will not be able to print hard copies of your document on paper. (http://www.projectgoodwill.org/images/ICT_for_You-101.pdf)

1.1.1 History of ICT

IT defines as Information Technology, consists of study, design, advance development, accomplishment, support or administration of computer foundation information system, mostly software application and computer hardware. Information technology works with the use of electronic computers and computer software to renovate, defend, development, and broadcast and other information.

Information technology has overstuffed to cover many features of computing and technology, and this word is more familiar than ever before. Information technology subject can be quite large, encompassing many fields. IT professionals perform different types of responsibilities that range from installing applications to designing complex computer networks.

IT professional's responsibilities are data management, networking, database, software design, computer hardware, management and administration of whole system. IT (Information Technology) is combined word of computer and communications or "InfoTech". Information Technology illustrates any technology which helps to manufacture, manipulate, accumulate, communicate or broadcast information.

Recently it has become popular to broaden the term to explicitly include the field of electronic communication so that people tend to use the abbreviation ICT (Information and Communications Technology).

The term "information technology" evolved in the 1970s. Its basic concept, however, can be traced to the World War II alliance of the military and industry in the development of electronics, computers, and information theory. After the 1940s, the military remained the major source of research and development funding for the expansion of automation to replace Manpower with machine power.

Since the 1950s, four generations of computers have evolved. Each generation reflected a change to hardware of decreased size but increased capabilities to control computer operations. The first generation used vacuum tubes, the second used transistors, the third used integrated circuits, and the fourth used integrated circuits on a single computer chip. Advances in artificial intelligence that will minimize the need for complex programming characterize the fifth generation of computers, still in the experimental stage.

The first commercial computer was the UNIVAC I, developed by John Eckert and John W. Mauchly in 1951. It was used by the Census Bureau to predict the outcome of the 1952 presidential election. For the next twenty-five years, mainframe computers were used in large corporations to do calculations and manipulate large amounts of information stored in databases. Supercomputers were used in science and engineering, for designing aircraft and nuclear

reactors, and for predicting worldwide weather patterns. Minicomputers came on to the scene in the early 1980s in small businesses, manufacturing plants, and factories.

In 1975, the Massachusetts Institute of Technology developed microcomputers. In 1976, Tandy Corporation's first Radio Shack microcomputer followed; the Apple microcomputer was introduced in 1977. The market for microcomputers increased dramatically when IBM introduced the first personal computer in the fall of 1981. Because of dramatic improvements in computer components and manufacturing, personal computers today do more than the largest computers of the mid-1960s at about a thousandth of the cost.

Computers today are divided into four categories by size, cost, and processing ability. They are supercomputer, mainframe, minicomputer, and microcomputer, more commonly known as a personal computer. Personal computer categories include desktop, network, laptop, and handheld. (https://wiki.nus.edu.sg/display/cs1105groupreports/History+of+ICT)

1.2 ICT: Indian context

In India, use of ICT in education goes back to the colonial era of the British government. India aired its first radio broadcast in June 1923 by Radio Club of Mumbai In the 1930s, British Broadcasting Corporation (BBC) aired educational and cultural programs in India through broadcast radio. In 1937, All India Radio (AIR) broadcasted educational programs for school children (Agrawal, 2005). Since 2002, India's first educational radio station called Gyan Vani (Voice of Knowledge) has been on the air. This full-fledged educational radio station provides programs for different types of learners including adult learners (Agrawal, 2005).

In 1959 India acquired its first television set for an experimental televison service in Delhi. Television gradually expanded to the urban rich. In 1961 Educational Television (ETV) was introduced in the secondary schools in Delhi. This was a pilot project by UNESCO and the Ford Foundations. As part of the project, lessons for physics, chemistry and English were televised to secondary school students (Mohanty, 1984). To develop the rural community through education, in 1975 an experimental project was implemented called Satellite Instructional Television Experiment (SITE) with the help of the USA (Agrawal & Sinha, 1981). In 2000, a 24-hour educational channel was launched known as DD-Gyan Darshan. In 2003, in collaboration with Indira Gandhi National Open University (IGNOU) and Indian Institute of Technology (IIT), a technology education channel was launched targeted to 1.5 million engineering and technology students (Agrawal, 2005).

In India, using computers related to education first started in 1984. The project was called Computer Literacy and Studies in School (CLASS). As part of the project, computers were introduced to 250 higher secondary schools. An evaluation study of the CLASS project finds that students had a positive attitude towards computer learning regardless of the type of school (Agrawal, 1996, 2005). To facilitate the computer based education, the first degree in computer education was offered in 1989 in indore, India (Goel, 2000).
(https://brijuthankachan.com/2012/12/07/ict-in-indian-education-a-brief-history/

1.2.1 Department of School Education & Literacy (MHRD) Government of India
The Information and Communication Technology (ICT) in schools have been subsumed in the Rashtriya Madhyamik Shiksha Abhiyan (RMSA). Now ICT in Schools is a component of the RMSA. The Information and Communication Technology (ICT) in Schools was launched in

December, 2004 and revised in 2010 to provide opportunities to secondary stage students to mainly build their capacity on ICT skills and make them learn through computer aided learning process. The Scheme is a major catalyst to bridge the digital divide amongst students of various socio economic and other geographical barriers. The Scheme provides support to States/UTs to establish computer labs on sustainable basis.

A) Components

The scheme has essentially four components:-

I. The first one is the partnership with State Government and Union Territories Administrations for providing computer aided education to Secondary and Higher Secondary Government and Government aided schools.

II. The second is the establishment of smart schools, which shall be technology demonstrators.

III. The third component is teacher related interventions, such as provision for engagement of an exclusive teacher, capacity enhancement of all teachers in ICT and a scheme for national ICT award as a means of motivation.

IV. Fourth one relates to the development of a e-content, mainly through Central Institute of Education Technologies (CIET), six State Institutes of Education Technologies (SIETs) and Regional Institutes of Education (RIEs), as also through outsourcing.

The highlights of the revised scheme are

i. The non-recurring expenditure for school has been revised from Rs. 6.7 lakh to Rs. 6.4 lakh whereas annual recurring expenditure has been revised from 1.34 lakh to Rs. 2.70 lakh. The recurring cost will be provided for a period of 5 years from the year of sanction.

ii. The objective of the Scheme is to cover all Government and government aided secondary and higher secondary schools by giving priority for early coverage of schools in educationally backward blocks and in areas having concentration of SC/ST/minority/weaker section.

iii. Under the revised scheme, there is a provision of a suitably qualified full time computer teacher in each secondary and higher secondary school. In case of higher secondary school having computer related subjects as elective, there would be need for a post graduate in computers teacher.

iv. There are provisions for in-service (induction and refresher) training for all teachers in secondary and higher secondary schools to enable them to impart ICT enabled teaching.

v. 150 smart schools would be sent up by State Government and UTs at the district level using a grant of Rs. 25 lakh for a schools and a recurring grant of Rs. 2.5 lakh per year. This would enable provision of at least 40 computers in each such school.

vi. There is a provision to strengthen SIETs to contribute to e-content development.

vii. Management, monitoring and evaluation will be strengthened.

viii. Convergence with the existing programmed would be essential especially in teacher training and ensuring reliable power supply and internet connectivity.

ix. The scheme includes National Award for teachers using ICT in schools in the teaching learning process.

x. The sharing pattern will be 75.25 between the Centre and the State except for the north eastern States including Sikkim where the ration would on 90.10.

B) Coverage

The scheme currently covers both Government and Government aided Secondary and Higher Secondary Schools. Financial assistance is provided for procurement of computers and peripherals, educational software, training of teachers, development of e-contents, Internet connectivity & set up of smart schools. So far, 87033 government and government aided secondary and higher secondary schools have been approved for coverage under ICT in Schools Scheme.

C) Financial Assistance And Cost Norms

Financial assistance is given to States, CIET and SIETs on the basis of the approvals accorded by Project Approval Board (PAB) chaired by Secretary (School Education and Literacy). The project cost is shared between Centre and States in ration of 75:25 except for the NER states including Sikkim where it is 90:10.

D) Smart School

Under the existing Information Communication Technology in School Scheme as against the target of setting up of 150 more such schools, this Ministry has approved for coverage of 63 Smart School so far. The Smart Schools are being established in the Districts by conversion of one of the existing State Government schools to serve as a role model and Technology Demonstrator among the neighbourhood schools.

E) National Award For Teachers Using ICT For Innovation In Education

Under the ICT in Schools, to promote computer enabled learning and usage of ICT in teaching in Government and Government aided Secondary and Higher Secondary Schools has provision for instituting the National Award for innovative use of ICT to motivate the Teachers and Teacher Educators for innovative use of ICT in teaching-learning.

The National Award for Teachers using ICT for innovation in education for the year 2010, 2011, 2012 and 2013 was given away to the 9 awardees along with the National Teacher Award on Teachers Day. (http://mhrd.gov.in/ict_overview)

1.2.2 National Policy on Information and Communication Technology (ICT) In School Education, Government of India 2009

The National Policy on Education 1986, as modified in 1992, stressed upon employing educational technology to improve the quality of education. The policy statement led to two major centrally sponsored schemes, namely, Educational Technology (ET) and Computer Literacy and Studies in Schools (CLASS) paving the way for a more comprehensive centrally sponsored scheme – Information and Communication Technology @ Schools in 2004. Educational technology also found a significant place in another scheme on up gradation of science education. The significant role of ICT in school education been highlighted in the National Curriculum Framework 2005 (NCF) 2005.

Use of ICT for quality improvement also figures in Government of India's flagship programme on education, Sarva Shiksha Abhiyan (SSA). Again, ICT figured comprehensively in the norm of schooling recommended by Central Advisory Board of Education (CABE), in its report on Universal Secondary Education, in 2005.

With the convergence of technologies it has become imperative to take a comprehensive look at all possible information and communication technologies for improving school education in the country. The comprehensive choice of ICT for holistic development of education can be built

only on a sound policy. The initiative of ICT Policy in School Education is inspired by the tremendous potential of ICT for enhancing outreach and improving quality of education. This policy endeavours to provide guidelines to assist the States in optimizing the use of ICT in school education within a national policy framework. **(NICTP-2009)**

1.3 Information and Communication Technology in School Education

The policy envisages three stages of ICT implementations at the school level – ICT literacy and Competency Enhancement, ICT enabled teaching – learning and introduction of ICT related elective subjects at senior Secondary level.

1.3.1 ICT Literacy and Competency Enhancement

The policy defines ICT Literacy in terms of levels of competence. Based on the stage of schooling at which a student or teacher is introduced to ICT, they may progress to different levels. These levels are suggestive and adaptations must be made to suit local conditions. The levels do not correspond to class levels and time duration must also be locally determined. Also, these levels must be revised periodically to keep pace with changing technology. However for uniformity a certain level of competency would mean achievement of a certain stage.

A) Stage 1: Basic

Basics of computers and basic use of tools and techniques – operating a computer, storing, retrieving and managing data, using a computer to achieve basic word and data processing tasks; connect, disconnect and troubleshoot basic storage, input and output devices Connecting to the internet, using e-mail and web surfing, using search engines, keeping the computer updated and virus free, operating and managing content from external devices (sound recorders, digital cameras, scanners etc.); connect, disconnect, operate and troubleshoot digital devices;

B) Stage 2: Advanced

Creating and managing content using a variety of software applications and digital devices; using web sites and search engines to locate, retrieve and manage content, tools and resources; install, uninstall and troubleshoot simple software applications etc.

1.3.2 Implementation Strategies

- A programme of ICT literacy will be implemented across all secondary schools in the States, both government and private within the XI plan period.
- States will develop an ICT literacy curriculum and appropriate course materials mapped to the stages mentioned above for uniformity. These will be in the form of self instructional materials, enabling students and teachers to process them on their own. The ICT literacy programme will endeavour to provide a broad set of generic skills and conceptual knowledge and not focus on mastering the use of specific software applications.
- The Boards of Secondary Education will develop a suitable scheme of examination. ICT would be an additional subject, with the marks/grade listed separately together with the award of a certificate of proficiency.
- A dedicated teacher for imparting ICT literacy will be engaged in each secondary school. This teacher will also function as the ICT coordinator of the school. With the growth of infrastructure in the school, a suitably qualified technical assistant may also be provided.

- The ICT Literacy programme will be extended to the upper primary stage by the end of the XII plan period. However States may take up this expansion earlier, based on resource availability and capacity of the system.

1.3.3 ICT related Elective Courses at the Higher Secondary level

- States will initiate the process of launching/creating courses in different areas of ICT for the higher secondary stage. The courses will factor in the requirements of students of different streams.
- Courses will be modular in design to enable students to select appropriate software applications based on current needs of higher education and job prospects. Courses will be revised frequently to keep pace with emerging trends in ICT.
- A Post Graduate teacher with appropriate qualifications to teach these courses will be appointed.
- An ICT Lab attendant/technical assistant with appropriate qualifications will be appointed to manage the ICT/Multimedia Resource lab.

1.3.4 ICT enabled teaching – learning process

- ICT enabled teaching-learning encompasses a variety of techniques, tools, content and resources aimed at improving the quality and efficiency of the teaching-learning process. Ranging from projecting media to support a lesson, to multimedia self-learning modules, to simulations to virtual learning environments, there are a variety of options available to the teacher to utilise various modes/ICT tools for effective pedagogy. Each such device or strategy also involves changes in the classroom environment, understanding of which has a bearing on its effectiveness. Availability of a wide range of such teaching-learning materials will catalyse transformation of classrooms into SMART classrooms.
- All teachers, all of whom would have acquired a basic competency to handle these resources, will be encouraged to adopt ICT enabled practices in teaching learning. A wide range of appropriate software applications, digital content, tools and resources will be made available through the proposed digital repositories. Teachers will participate in selection and critical evaluation of digital content and resources. They will also be encouraged to develop their own digital resources, sharing them with colleagues through the digital repositories.
- In schools equipped with EDUSAT terminals, DTH or other media devices, relevant activities will be planned and incorporated into the time schedule of the school.
- Initially the teachers may use the Computer lab for teaching-learning but progressively more classrooms will be equipped with appropriate ICTs, making way for SMART classes.

1.3.5 NCF-2005: Educational Technology

Integration of knowledge and experience along these lines would take away the sense of burden and boredom that our present-day education induces. In science and mathematics, and in teaching children with disabilities, the potential of ET, including IT, is widely appreciated. It is important to realize this potential in achieving curricular goals, with more age-specific planning on the use of ET. Governments and other agencies responsible for financial planning need to take this fuller range of ET's demands and benefits.

(http://www.ncert.nic.in/rightside/links/pdf/framework/english/nf2005.pdf)

1.4 Importance of ICT

Move from a predetermined set of outcomes and skill sets to one that enables students to develop explanatory reasoning and other higher-order skills.

- Enable students to access sources of knowledge, interpret them, and create knowledge rather than be passive users.
- Promote flexible models of curriculum transaction.
- Promote individual learning styles.
- Encourage use of flexible curriculum content, at least in primary education, and flexible models of evaluation.

(NCERT, position paper on ET-2006, pg.15-16)

Even within the confines of conventional schooling, helping children reach school and stay with it for a longer time will need to be addressed differently. Insights gained from various experiments aimed at reforming the school environment point towards the need for reform both in the system and within the classroom. ET will have a significant role to play here.

1.5 Curricula for ICT in Education

The present curriculum for ICT in education is a step towards realizing the goals of both the National Policy and the National Curriculum Framework. It has factored in the rapid evolution of technologies and the ground realities of Indian school systems. For the teacher, it is an initiation into exploring educational possibilities of technology, learning to make the right choices of hardware, software and ICT interactions, and more importantly, growing to become a critical user of ICT. For the student, it is an initiation into creativity, problem solving, and an introduction to the world of information and technologies which could also shape career pursuits.

1.5.1 ICT Course for Teachers (Two Years)

The teachers' curriculum is considered a significant vehicle for the realisation of the goals of the National Curriculum Framework and consequently is designed to provide an enhanced exposure to information and resources for ongoing pro- fissional support, improved teaching-learning-evaluation-tracking, and increased productivity.

First Year
I. Introduction 01
- Accessing the web I – introduction to the browser and browsing
- Accessing the web II – introduction to the web
- Familiarity with the ICT environment – connections and connectors
- Inputting in Indian languages – fonts and keyboard
- Creating with ICT – handling text Session
- Creating with ICT – handling data
- Creating with ICT – handling media
- Operating systems and its requirements
- Bringing together hardware and software
- Internet to access information I – exploring web resources
- ICT in the classroom – hardware and software
- Assistive technologies
- Working with data I – exploring spreadsheets
- Working with data II – exploring spreadsheets

- Email and web based forums
- Transacting through the web – exploring e-commerce applications
- MIS systems for educational management
- Exhibition and peer evaluation
- Evaluation and portfolio submission

II. Digital Story Telling
- Deconstructing digital stories
- Image and video-recording and editing
- Demonstration of photo editing
- Combining media to tell a story – scripting
- Evaluating digital stories Special Lecture: Creating photo essays and video documentation as a source of information and a learning process
- Projects to be completed during day 3 - 8
- Digital stories for communicating and learning - possibilities of inclusion
- Exhibition and peer evaluation of project lessons; portfolio submission and evaluation

III. Data Analysis
- Look at data, read and make meaning
- Plots and graphs
- What questions to ask? When to use which methods of data representation and visualization? Limitations of data sources, data representation and data analysis
- Querying data sets and plots
- Exploring sources of data, Evaluation of data
- Excerpts from the video "The most important video you will ever see" - on the power of data
- Projects to be completed during day 3 - 8
- Communicating
- data and data analysis
- Exhibition and peer evaluation of project lessons; portfolio submission and evaluation

IV. Internet as a Learning Resource
- Demonstrating different types of websites to show the possibilities for personal learning
- Web-based learning objects, simulations and tutorials
- A grand tour of the internet
- Participating in forums for identifying learning resources, teaching-learning ideas
- Software applications and tools as and for using teaching-learning resources
- Exploring MOOCs as a space for continuous learning
- Projects to be completed during day 3 - 8
- Evaluating internet resources in terms of relevance, ease of use and context
- Exhibition and peer evaluation of project lessons; portfolio submission and evaluation

V. ICT for teaching-learning
- Curriculum analysis to determine content (what do I need to teach and what do I need to know)
- Determine the resources for teaching-learning

- ICT infusion and going beyond the textbook (Presentation of a case study of how the availability of ICT resources can actually result in a different learning experience)
- Determine appropriate ICT infusion and design a learning plan for a given topic; Identify and add metadata for ICT resources that can be used
- Exploration of the world of ICT resources for teaching-learning
- ICT Showcase – Educational applications of ICT
- Projects to be completed during day 3 – 8 (Transacting lessons using given ICT resources and evaluating it)
- Evaluation of resources – Framework for assessing and evaluating ICT resources - educational tools and applications for integrating ICT into lessons
- Exhibition and peer evaluation of project lessons; portfolio submission and evaluation

VI. ICT for teaching-learning - 2
- Exploring ICT for teaching-learning, curriculum analysis to determine methods of transacting (how do I teach it)
- Using appropriate hardware (CD/DVD, projectors, interactive boards...)
- ICT showcase, relevant technologies for the classroom
- Using appropriate software (single and multiple media, animations and simulations) Session 04: Classroom organization for ICT infused lessons (teacher led instruction, self learning and group activities)
- Focusing on enhancing learning – appropriate technologies
- Projects to be completed during day 3 – 8 (Transacting lessons using given ICT resources and evaluating it)
- Evaluation of technologies and ICT infused classrooms – criteria for effective technology use and effectiveness of technology in classrooms
- Exhibition and peer evaluation of project lessons; portfolio submission and evaluation

VII. ICT for Evaluation
- Evaluation and ICT for Evaluation – purposes and techniques of evaluation, scope of ICT for evaluation
- Exploring software tools for evaluation Special Lecture: What can data reveal – exploring data analytics
- Using appropriate software 01 (for constructing tests / quizzes)
- Using appropriate software 02 (managing data, analysis of results, tracking student achievement)
- Focusing on enhancing learning – tracking and managing student achievement
- Projects to be completed during day 3 – 8 (Constructing and implementing tests / quizzes using given ICT resources)
- Evaluation of the evaluation process – criteria for technology choice
- Exhibition and peer evaluation of project lessons; portfolio submission and evaluation

Second Year
I. Introduction 02
- Troubleshooting and seeking help
- Installing hardware and software
- Synchronous communication on the web

- Uploading to the web
- Advanced text processing 01
- Advanced graphics 01
- Advanced spreadsheets 01
- Storage and backup
- Exhibition and peer evaluation
- Evaluation and portfolio submission

II. ICT for Documentation and Communication
- Appropriate media for documentation – features and scope
- Appropriate media for communication – features and scope
- Communication showcase – what media combination and when
- Layout, format, and structuring communication
- Packaging and presenting communication in print, media and the web Special Lecture: Innovative, interactive presentations – using the features of the web
- Projects to be completed during day 3 – 8 (creating communication using multiple media and its evaluation)
- Evaluating media choice and techniques for documentation and communication
- Exhibition and peer evaluation of project lessons; portfolio submission and evaluation

III. Games
- Gaming environments for education – range and scope
- Exploring offline and online games 01
- The psychology of games – immersive gaming environments
- Exploring offline and online games 02
- Infusing games into teaching-learning; creating appropriate classroom environments Special Lecture: Gaming showcase – games for different ages
- Projects to be completed during day 3 – 8 (exploring educational games with students, documenting its effects)
- Evaluating games and gaming environments
- Exhibition and peer evaluation of project lessons; portfolio submission and evaluation

IV. Building Communities and Collectivizing
- Online Communities – analyzing interactions
- Sharing thoughts and ideas – blogs, forums and mailing lists
- Virtual communities and virtual identities
- Collaborative creations 01 – online documents
- Collaborative creations 02 – wiki as a collective
- Communities' showcase – developing common cause Session 05:
- Projects to be completed during day 3 – 8 (participating in an online community and documenting the experience)
- Evaluating online communities and participation
- Exhibition and peer evaluation of project lessons; portfolio submission and evaluation

V. Subject Specific ICT Tools
- Understanding the application, its scope for teaching-learning

- Exploring the software application
- Application showcase – what can you do with it?
- Exploring the software application
- Creating content resources
- Extending learning – using the application for activities and projects
- Projects to be completed during day 3 – 8 (Constructing and implementing a lesson incorporating the software application or content resources made with it)
- Evaluating content resources made with the software application
- Exhibition and peer evaluation of project lessons; portfolio submission and evaluation

VI. ICT for Educational Administration and Management
- Role of ICT in educational administration and management – role of information management, process and tools
- Analyzing sources, nature and collection of data Special Lecture: Databases for educational management – application showcase
- Creating databases for educational administration
- Populating data, managing the database, querying and retrieving data
- Visualization and data analytics in educational management
- Projects to be completed during day 3 – 8 (constructing a database for a school administration activity and implementing it)
- Participating in MIS applications for educational management
- Exhibition and peer evaluation of project lessons; portfolio submission and evaluation

VII. Introduction 03
- Safe and clean ICT environments
- Updating and upgrading software
- Exploring educator communities
- Exploring social networks
- Advanced text processing 02
- Advanced graphics 02
- Advanced spreadsheets 02
- Creating a web communication (blog site)
- Exhibition and peer evaluation
- Evaluation and portfolio submission

1.5.2 ICT Course for Students (Three Years)
The curriculum for students is designed to promote creativity, problem solving, and introduce Students to the world of information and communication technologies with the specific purpose of widening their horizons and better informing them of choices in their career pursuits. In particular, the curriculum focuses on training the student to working with a variety of resources; learning to critically appraise information and resources; and making safe, productive, ethical and legal use of these resources a habit.

First Year
- Programming 01 (working with programming environments like Logo, Turtle Graphics, or Scratch)

- Graphics 01 (digital art tools like Flow paint, My Paint)
- Internet and the ICT environment 01 (hardware and software, browsing)
- Data representation and processing 01 (spreadsheets) Week
- Audio visual communication 01 Week
- Programming 02 (working with programming environments)
- Graphics 02 (digital art tools)
- Data processing 02 (text and images)
- Data processing 03 (layout and output)
- Audio visual communication
- Exhibition of portfolios and evaluation

Second Year
- Programming 03 (working with programming environments)
- Software applications 01 (maps and globe)
- Internet and the ICT environment 02 (web resources, e-mail)
- Data representation and processing 04 (spreadsheets)
- Audio visual communication 03
- Programming 04 (working with programming environments)
- Software applications 02 (Geo-zebra)
- Graphics and animation 03
- Data processing 05 (text and images)
- Data processing 06 (layout and output)
- Audio visual communication
- Exhibition of portfolios and evaluation

Third Year
- Software applications 03
- Software applications 04
- Software applications 05
- Software applications 06
- Software applications 07
- Internet and the ICT environment 03
- Project 01 (web resources)
- Project 02 (programming)
- Project 03 (audio visual communication / graphics and animation)
- Project 04 (web development / app development)
- Internet and the ICT environment 04
- Exhibition of portfolios and evaluation
  (http://www.ncert.nic.in/announcements/notices/pdf_files/ICT%20Curriculuma.pdf)

1.6   Aims and objectives of ICT in school
The objectives of the National Mission on Education through ICT shall include:
  i.   Building connectivity and knowledge network among and within institutions of higher learning in the country with a view of achieving critical mass of researchers in any given field.
  ii.   Spreading digital literacy for teacher empowerment.

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iii.   Development of knowledge modules having the right content to take care of the aspirations of academic community and to address to the personalized needs of the learners.

iv.   Standardization and quality assurance of e-contents to make them world class;

v.   Research in the field of pedagogy for development of efficient learning modules for disparate groups of learners.

vi.   Making available of e-knowledge contents, free of cost to Indians.

vii.   Experimentation and field trial in the area of performance optimization of low cost access devices for use of ICT in education.

viii.   Providing support for the creation of Virtual Technological University.

ix.   Identification and nurturing of talent.

x.   certification of competencies of the human resources acquired either through formal or non-formal means and the evolution of a legal framework for it, and

xi.   Developing and maintaining the database with the profiles of our human resources.

Objectives After undergoing this course the teacher will be able to:

i.   Effectively use ICT tools, software applications and digital resources

ii.   Integrate ICT into teaching-learning and its evaluation

iii.   Acquire, organize and create his/her own digital resources.

iv.   Participate in the activities of teachers' networks

v.   Participate in the evaluation and selection of ICT resources

vi.   Practice safe, ethical and legal ways of using ICT

vii.   Use ICT for making classroom processes more inclusive and to address multiple learning abilities

http://www.aicteindia.org/downloads/National%20Mission%20on%20education.pdf

1.7   Perception

SENSATION precedes perception and is the process whereby our sensory receptors receive, transducer, and code stimulus information into electrochemical impulses in our nervous system-- it is the initial, relatively simple process of detecting individual stimuli.

PERCEPTION is the subsequent selection, organization, and interpretation of sensory input--it is the process of obtaining information about both the external and internal environments, which results, via integration utilizing memory, in the conscious experience, recognition, and interpretation of objects, object relationships, and events.(By Jay E. Gould)[FILE: Documents: Bio Psych: What is Perception. Created 7-30-90; Last Revised 2/10/03]

1.8   Perception of ICT

Several researchers have noted that knowledge workers must make sense of and interpret their environment according to preexisting knowledge structures (c.f., [36, 54, 56]. For example, Weick [69, 71] describes sense-making as the process wherein knowledge workers interpret and give meaning to some environmental uncertainty – in our context, the selection and us of an ICT in the KT process. Building upon sense-making, Orlikowski and Gash [54] describe how individuals hold frames of reference about events and objects within organizations and then give them meaning. Technology frames reflect the result of the interpretive process wherein users construct meanings around technology – in their study, a Lotus Notes® implementation.

(https://www.computer.org/csdl/proceedings/hicss/2008/3075/00/30750346.pdf)

India is perhaps the country that has most recently begun reforms to promote new teaching approaches and ICT. Across India's decentralized education system, national and state leaders face big challenges in their efforts to support an education system that must reach so many students (Cheney, Ruzzi, & Muralidharan, 2005; PROBE Team, 1999). Efforts to shift curricula from behaviorist approaches to learning to a constructivist approach that emphasizes the personal experiences of learners are recent (India—National Council of Educational Research and Training, 2006; Pandley, 2007). A growing number of policies support ICT integration, but one expert review (Vyasulu& Sinha, 2003) found that there is still great variation in implementation of these policies and access to ICT is still limited for most students. Although there is variation by state, the duration of the standard school day is five hours, divided into 35-minute lessons. The class sizes tend to be large; the classes we visited ranged from 45 to 60 students. Indian teachers are expected to cover a lot of content, and the textbook often becomes the center of the learning process (PROBE Team, 1999; Rampal, 2002). The state curriculum varies, but in Maharashtra State, for example, the students have a very full schedule by the upper grades and study 11 compulsory subjects.

(http://www.equip123.net/Jeid/articles/4_2/JEID4-2-FullIssue.pdf#page=54)

1.10 Teachers' perception of ICT

Teachers did perceive several positive benefits to the integration of ICT in the teaching of Modern Studies for both the teacher and the students. Generally, teachers viewed ICT as a "fantastic tool" for engaging learners and capturing their interest. ICT use exposed students to richer, less intimidating learning environments and encouraged them to take ownership of their learning. In addition, ICT was also seen as important motivational tool for teachers, engaging and exciting them about their craft and encouraging them to be more creative in their approach to their work. ICT use exposes both teacher and students to a wider range of resources of greater currency and made possible real world experiences that aroused students" empathy and made learning more meaningful. However, its use still needs to be carefully monitored as it could easily become a source of distraction and a deterrent to learning. The essential role of the teacher in adaptively managing its use is key to the effective integration of ICT in educational practice. Technology cannot do the teaching in lieu of the teacher so it is imperative that its use in the classroom be carefully planned and managed.

(http://uwispace.sta.uwi.edu/dspace/bitstream/handle/2139/12784/Caty-Ann%20Rampersad.pdf)

1.11 Students' perception of ICT

Students can now browse through e-books, sample examination papers, previous year papers etc. and can also have an easy access to resource persons, mentors, experts, researchers, professionals, and peers-all over the world. This flexibility has heightened the availability of just-in-time learning and provided learning opportunities for many more learners who previously were constrained by other commitments (Young, 2002). Wider availability of best practices and best course material in education, which can be shared by means of ICT, can foster better teaching. ICT also allows the academic institutions to reach disadvantaged groups and new international educational markets. As well as learning at anytime, teachers are also finding the capabilities of teaching at any time to be opportunistic and able to be used to advantage. Mobile technologies and seamless communications technologies support 24x7 teaching and learning. Choosing how much time will be used within the 24x7 envelope and what periods of time are challenges that will face the educators of the future (Young, 2002).

1.12 Parents' perception of ICT

Parents play in the interaction between technology, digital media, and reading in the home environment. The findings from this study demonstrate the conflicted feelings parents have about how to promote reading at home in a society inundated with technology and digital media. This study shows that, while many parents enthusiastically make these technologies available at home, most lack basic information that would help them better understand and make informed decisions about technology use in the home. It is important to realize that parents have technology and digital media available to them but may need encouragement and instruction from school to help them utilize these new tools in an educational way. Schools have the opportunity to partner with parents to implement educational uses of technology and digital media to develop reading and literacy skills at home. As schools implement new educational uses of technology and digital media, it is vital to consider the role parents play in the development of reading and literacy skills at home and how technology and digital media can support those skills. Children will continue to utilize technology in ways that did not exist a decade ago. The implications of technology on today's youth are just beginning to be understood. How technology will continue to change is not as important as how parents manage and utilize technology and digital media. Working together, parents and schools can find ways to utilize the ever-increasing amounts of technology and digital media to support and enhance reading at home.

(http://digitalcommons.usu.edu/cgi/viewcontent.cgi?article=3164&context=etd)

1.13 Teaching Learning process

Individual students may be better suited to learning in a particular way, using distinctive modes for thinking, relating and creating. The notion of students having particular learning styles has implications for teaching strategies. Because preferred modes of input and output vary from one individual to another, it is critical that teachers use a range of teaching strategies to effectively meet the needs of individual learners. Sound health instruction should incorporate a variety of teaching methods intended to complement the learning styles of children. This should lead to young learners who are both intrinsically and extrinsically motivated to inquire, infer, and interpret; to think reflectively, critically and creatively; and in the final analysis to make use of the knowledge and skills they have gained by becoming effective decision-makers.

(http://www.ed.gov.nl.ca/edu/k12/curriculum/guides/health/elementary/process.pd)

1.14 ICT in Teaching Learning process in the context of India

ICTs are making dynamic changes in society. They are influencing every aspects of human life. Application of ICT tools in Teaching-Learning Process has changed the total scenario of teaching learning process. Teaching–Learning Process is not now limited within the boundaries of classrooms. ICTS are making major differences in the teaching approaches and ways students are learning.

Application of ICT in education and teaching learning process has changed the traditional system of learning to modern ICT based learning. Teaching- learning process is not now limited within the boundaries of classroom. The modern technologies including new web 2.0 has changed the total scenario of teaching learning process. ICTs are making majors' difference in the teaching approaches and the ways students are learning. ICT–enhanced learning environment facilitates active collaborative, creative, integrative and evaluative learning as an

advantage over the traditional method. Several surveys are showing that ICT use in education system of developed nations is comparatively advanced than ICT used in education system of developing countries. ICT use in education system of developing countries is also facing some challenges. ICT introducing innovative pedagogies in to the classroom, creating network among educational institution, improving overall standard of education by reducing the gap between the quality of education in urban area and rural area, initiation of smart school with objectives to foster self-paced, self-assessed and self-directed through the application of ICTs, and developing ICT policy for education and training.

1.15 Need of the study

It is important for parents, and teachers, to understand why promoting and encouraging use of ICT in teaching learning process. ICT is crucial to a student's academic success at any age. Because students form self-concepts, values, and belief about their abilities at a young age, the development of ICT use in teaching learning process implications for academic achievement. A great deal of research has found that teacher and students perception of ICT use in teaching-learning process are more likely to have increased levels of academic achievement.

At this point, the significance of ICT use in teaching learning process to future academic success should be clear. However, teacher's different types of methods of ICT use in teaching learning process have different implications for academic achievement. If a student has perception of ICT, knowing his abilities and performance in ICT, may be important in making predictions about those students career.

ICT has been a compulsory subject in the teacher education to equip the teacher educators with the fundamental aspects of Information and communication technology. The impact of ICT had been monitored by the performance of the student teachers by their performance in both theory and practical components. ICT oriented teaching practice in schools of education; there is a great need to find out the perception of teachers and students about ICT use in Teaching Learning Process. Hence an attempt is made by the investigator to study the perceptions of secondary school teachers and secondary school students about effectiveness of ICT use in Teaching Learning Process.

1.16 Significant of the study

The study has the following potential benefits of considerable importance; It is meant to support teachers in developing ICT use within schools. It has provided an opportunity to teachers and students to put forth their views on ICT use in schools. It informs teachers' and students' readiness to use ICT. Teachers' experiences of integrating ICT in teaching learning process and in turn, these experiences help to determine teachers' professional development needs for proper ICT integration in the classrooms. It prepares teachers and students for the actual use of ICT in context.

In order to fulfil the above goals, ICT has been introduced as a branch of education. ICT is the application of scientific knowledge and skills about learning to improve the effectiveness and efficiency of the teaching-learning process. It is a system approach aimed at optimisation of learning. It adopts behavioural science approach to teaching and learning process making use of relevant scientific and technology methods and principles developed in psychology, sociology, communications, economic, linguistics and other related fields of education. It includes the development, application and evaluation of systems, techniques and aids in the field of learning.

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In short, educational ICT consists of all modern methods, media and materials used for effective as well as efficient learning. ICT can support basic education: Supporting education in schools, providing non-formal education for out-of-school children and adults, Supporting pre-service distance education of teachers and their in-service professional development, and Enhancing the management of schools.

1.17 Statement of the problem

The advancement in Information and Communication Technology (ICT) has vastly influenced the teaching learning process. Integration of ICT in classroom helps to create an environment for teachers and students activities that lead to meaningful and sustainable learning experiences. This integration supports teachers and students in their constructive thinking and Perception of ICT use in teaching learning process. It is possible to bring the process of learning beyond the boundaries of classroom by exploring new possibilities of ICT. This basic requirement can be available only when teachers and students are aware about ICT very well. When interaction takes place through ICT, it helps in their own development of perception of ICT in education. Therefore the present study will be helpful in realizing the ideas and thoughts on teachers and students' perception of ICT use in teaching learning process.

1.18 Objectives of the study

The present study was undertaken with the following objectives.

I.   To study the perception of secondary school teachers about effectiveness of ICT use in the following area of curriculum.
   i. Curricular subjects.
   ii. Curricular activities.
   iii. Other curricular subjects.
   iv. Personal social qualities (PSQ).

II.   To study the perception of secondary school students about effectiveness of ICT use in the following areas of curriculum.
   i. Curricular subject.
   ii. Curricular activities.
   iii. Other curricular subjects.
   iv. Personal social qualities (PSQ).

1.19 Research question of the study

The present study was undertaken with the following research question.

i.   What do the secondary school teachers perceive about the effectiveness of ICT use in teaching learning process in curricular subject?
ii.   What do the secondary school teachers perceive about the effectiveness of ICT use in teaching learning process in curricular activities?
iii. What do the secondary school teachers perceive about the effectiveness of ICT use in teaching learning process in other curricular subject?
iv.   What do the secondary school teachers perceive about the effectiveness of ICT use in teaching learning process in PSQ (personal social qualities)?
v.   What do the secondary school students perceive about the effectiveness of ICT use in teaching learning process in curricular subject?
vi.   What do the secondary school students perceive about the effectiveness of ICT use in teaching learning process in curricular activities?

vii. What do the secondary school students perceive about the effectiveness of ICT use in teaching learning process in other curricular subject?

viii. What do the secondary school students perceive about the effectiveness of ICT use in teaching learning process in PSQ (personal social qualities)?

1.20 Operation meaning of key terms

(A) Perception: Perception is closely related to attitudes. Perception is the process by which organisms interpret and organize sensation to produce a meaningful experience of the world (Lindsay & Norman, 1977). In other words, a person is confronted with a situation or stimuli. The person interprets the stimuli into something meaningful to him or her based on prior experiences. However, what an individual interprets or perceives may be substantially different from reality. (http://healthadmin.jbpub.com/borkowski/chapter3.pdf)

(B) ICT: Information Technology is a scientific, technological and engineering discipline and management technique used in handing the information, it's application and association with social, economical and cultural matters.   **- UNSECO**

Information technology is a systemic study of artifacts that can be used to give form to facts inorder to provide meaning for decision making, and artifacts that can be used for organization, processing, communication and application of information.

-Darnton and Giacoletto

(http://archive.mu.ac.in/myweb_test/ma%20edu/ICT%20-%20Edu..pdf)

(C) Effectiveness: Effectiveness is the extent to which an activity fulfils its intended purpose or function.

This is a measure of the match between stated goals and their achievement. It is always possible to achieve 'easy', low-standard goals. In other words, quality in higher education cannot only be a question of achievements 'outputs' but must also involve judgements about the goals (part of 'inputs')   **-Fraser (1994, p. 104)**

Effectiveness as the extent to which objectives are met ('doing the right things').

- Erlendsson (2002)

A measure of the extent to which a specific intervention, procedure, regimen, or service, when deployed in the field in routine circumstances, does what it is intended to do for a specified population. In the health field, it is a measure of output from those health services that contribute towards reducing the dimension of a problem or improving an unsatisfactory situation.   **-Wojtczak (2002)**

(D) Teaching-learning process: Teaching is a process of communication for achieving certain objectives these objectives should be desirable and specific to various groups of learners. Teaching aims at helping learners to learn are change their behaviour in a relatively permanent manner and involves arrangement of situations for facilitating learning. Learning is the modification of behaviour and consist of all changes in thinking, feeling and doing in course of life. The teaching learning process is made effective and efficient through various strategies and techniques among students behaviour modelling and other learning skills are essential.   **- Anita, M. (2013)**

Combined **process**es where an educator assesses learning needs, establishes specific learning objectives, develops teaching and learning strategies, implements plan of work and evaluates the outcomes of the instruction. Learn more in: Current and Future Trends in Higher Education Learning: Implications for Curriculum Design and Delivery (http://www.igi-global.com/dictionary/teaching-learning-process/48941)

1.21 Delimitations

Following were the delimitations of the study

1. The study was limited to the teachers and students perception of ICT use in teaching-learning process.
2. The researcher has delimited the study to a CBSE SCHOOL (D.M.S. and K.V.-2,) of Bhopal areas.
3. The sample of 10 teachers and 52students were taken due to the study.
4. The study was conducted on secondary school teachers and one class i.e. class IX, of each school in Bhopal area.