CHAPTER - I
INTRODUCTION

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Over the past few decades, Information Communication Technology (ICT) has completely transformed our lives in all possible ways. India, a successful ICT powered nation, has always laid a lot of accent on the use of ICT, not only for good governance but also in diverse sectors of the economy such as health, agriculture and education etc. Education, undoubtedly, is one of the most important investments in building human capital in a country and a medium that not only shapes literate citizens but also makes a nation technologically innovative, thus, paving a path to economic growth. India’s need for education is diversified and extensive, as it requires individuals who are equipped with specific knowledge to assume development responsibilities. This requires not only basic education but also comprehensive continuing education programmes to upgrade the skills in the line with development requirements and the technological developments. The internet world wide web has provided an inexpensive system for delivery of education contents anywhere 24/7. India is in a position to exploit this as its educational IT environment has the flexibility and the ability to support the recent information and communication technology initiatives. Indian education system has been working
towards imparting need based technical education from early 90s. The internet and www has added a new delivery dimension.

Information and Communication Technologies (ICTs) which include television, digital technologies such as computers and the internet are powerful tools for educational change and reform. Information and Communication Technology (ICT) used in teaching and learning includes the full range of computer hardware, computer software, and telecommunication facilities. It includes the full range of display and projection devices used to view computer output. It includes the local area and wide area networks that allow computer systems and user (teachers and students) to communicate with each other. It includes digital cameras, computer games, CDs, DVDs, cell telephones, telecommunication satellites, fibre optics, computerized instruments and computerized machinery.

The experience of introducing ICT in the classroom and other educational settings all over the world over the past several decades suggests that the full realization of the potential educational benefits of ICTs is not automatic. The effective integration of ICTs into the educational system is a complex, comprehensive process that covers a long way of implementation of different projects and action plans involving not just technology but also teachers’ technology competence, teachers’ morale and teachers’ attitude towards ICT.

1.1 CONCEPT OF ICT

Communication as well as collecting information and using them for the specific purpose are as old as the human civilization itself. In the absence of the means and the tools for information and communication, the primitive way was to carry out them orally, store them in the memory and transmit them orally to the user. In this way, paper and ink must be regarded as first breakthrough in the field of Information and Communication Technology (ICT). The other scientific inventions which provided better means for this purpose may be outlined as below:

- Photostat in 1900, by professor Abbe Rene Graffin of France.
• Xerography invented in 1938 by Chester F. Carlson of USA.
• Laser technology used for printing and memory device in 1960 by Theodore Maiman of USA.
• Magnetic video camera, video disc and computers developed in 20th century.

Besides this, the advancement in the field of telecommunication technology has contributed a lot in the evolution of ICT. Starting from the era of sending messages through pigeons, we have reached the age of satellite communication. The landmarks in such development can be cited below:
• Telegraph invented by S.F.B. Morse of USA in 1837.
• Telephone invented by Alexander Graham Bell of Scotland in 1876.
• Radio invented by G. Marconi of Italy in 1895.
• Television invented by J.L Baird of Scotland in 1925.
• Development of communication satellites (first Satellites Sputnik launched by USSR on 4th Oct. 1957)

Equipped with the modern invention in the field of collection, storage, retrieval, transmission and exchange of information, the serious attempts in the direction of exercising scientific control, the process of information and communication was introduced in the later half of the 19th century. The credit goes to USA where the term ‘Information science’ was first introduced in 1950 for the effective handling of the interchange of scientific information among the scientists of USA and foreign countries. Initially, the thrust of the ICT was primarily focused on the handling bibliographic records and textual information in the scientific sector. Later on, around 1960 it was also applied in the field of industry. At this stage computer-aided techniques and system were developed for more efficient information and communication purpose. In the later years the use of ICT applications could not remain limited to the field of science and industry but gradually got broadened to encompass other fields of operation areas & offices, Law & judiciary, the police & military and what not. As a result, we are making its use now in our classroom teaching-learning, distance and online education, establishing of virtual classrooms and, thus, harnessing its power as an effective tool and media
of formal, informal and non-formal education as well as quite reliable helping hand for the welfare and progress of the growing children.

According to Oxford Advanced Learner’s Dictionary “Information Technology is the study or use of electronic equipments, especially computers for storing, analysing and sending out information.”

According to a United Nations report (1999) ICTs cover Internet service provision, telecommunication equipment and services, information technology equipment and services, media and broadcasting, libraries and documentation centers, commercial information providers, network-based information services, and other related information and communication activities.

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)

According to Adeya (2002) ICTs are embedded in networks and services that affect the local and global accumulation and flows of public and private knowledge. Moreover, Adeya mentions about a more simplified definition describing ICT as an ‘electronic means of capturing, processing, storing and disseminating information’.

In broader sense, the term, Information and Communication Technologies (ICT) refers to forms of technologies that are used to create, store, share or transmit and 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 viz. Information and Communication
Infrastructure (ICI) which refers to physical telecommunication systems & 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)

Near the end of the 1980s, the term ‘computers’ was replaced by ‘IT’ (Information Technology) signifying a shift of focus from computing technology to the capacity to store and retrieve information. This was followed by the introduction of the term ‘ICT’ (Information and Communication Technology) around 1992, when e-mail started to become available to the general public (Pelgrum & Law, 2003).

ICT is defined as “Anything which allows us to get information, to communicate with each other, or to have an effect on the environment using electronic or digital equipment” (Siraj-Blatchford & Siraj-Blatchford, 2003).

Information and Communication Technologies are defined as all digital devices, tools, content and resources, which can be deployed for realising the goals of teaching-learning as well as management of the educational system. (ICT Policy, 2012).

1.2 ICT IN EMERGING INDIAN EDUCATION SYSTEM

India today aspires to emerge as front-runner amongst the knowledge-based societies. Thus, the benefits of Information and Communication Technology (ICT) revolution in providing education and training of desirable quality can hardly be over emphasized. In India, school computing began in the early eighties through initiatives of a handful of private schools. It gained momentum with projects and schemes started by Government of India from time to time, such as-

- The Scheme of Educational Technology (ET) was started in 1972 during the IV Plan. 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.
- The Computer Literacy And Studies in Schools (CLASS) project was launched as a pilot project by the Government of India in 1984. The objectives of the
project were to provide students with broad understanding of computers and their use, familiarize students with the range of computer applications in all walks of human life and the potentiality of the computer as an information processing tool and de-mystify computers and develop a degree of ease and familiarity with computers which would be conducive to develop individual creativity in identifying and developing applications relevant to the immediate environment of child. It is also assumed that computer literacy would have liberalizing influence on schools, if teachers were sensitive to and capable of utilizing the computer for improving the objectiveness of instruction. With limitations of resources, inadequate training of teachers and with no legitimate place for computing in the school timetable, the computer literacy programme didn’t achieve much. It failed to infuse into children the ability to do computing. At best the programme enabled children to recognise, identify or be aware of alleged facts about computers. The instructional use of computer was limited.

- The National Policy on Education and its Programme of Action (NPE & POA, 1986) had no well defined objective with respect to school computing or role of computers in school. But they indicated that since the computer was fast becoming available to schools, training in its use should be a part of education. The Programme of Action for NPE (1986) also suggested instructional use of computer in Mathematics class. Large scale literacy programmes were considered with in a specific time frame for each school stage. Revised Plan of Action (1992) recommended more computers for more schools, but the literacy targets set in POA, 1986 were not met.

Meanwhile, IT emerged as a new concept involving processes, applications and equipments by which information can be accessed, created, organized, communicated, analyzed or presented. India along with its literacy programme also adopted ICT as tools to promote constructivism among children and support others’ lifelong learning.

- Then, Government of India took the first comprehensive view of computers in school education to create an IT-literate and IT-skilled society by adopting the
Information Technology Action Plan, 1998 constituted by the Prime Minister in July, 1998, which 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.

• As a follow up of this IT Action Plan, the Government of India has undertaken a new programme for the school sector with three different components in it. Computer Literacy, Computer-Aided Learning and Smart Schools. The concept of SMART Schools started on a pilot demonstrative basis in each state, where the emphasis is not only on Information Technology in Schools but also on the use of skills and values that will be important in this millennium. The teacher’s role in a Smart School is as a navigator who would provide pupils with learning maps to chart out their learning paths. In essence, this is an argument for students to use IT as a serious tool while they are in the school, not as something they will need later. The report recommended provision of computer system to all educational institutions upto higher secondary/ secondary school by suitable investment about 1-3% of total budget during the next five years.

• After that in December 2004, the Centrally Sponsored Scheme “Information and Communication Technology [ICT] in School” was launched to provide opportunities to secondary stage students to develop ICT skills and also for ICT 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 a sustainable basis. It also aims to set up SMART schools in Kendriya Vidyalayas and Navodaya Vidyalayas to act as “Technology Demonstrators” and to lead in propagating ICT skills among students of neighbourhood schools.

• The significant role of ICT in school education has been highlighted in the National Curriculum Framework (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.
To develop an appropriate and deliberate policy to enhance the role of ICT in education and poverty eradication, the Department of School Education, MHRD, Government of India has decided to initiate a consultative and participatory process to formulate the National Policy on ICT in School Education for India. The Ministry of Human Resource Development (MHRD) has announced to reform the education system by standardization at all levels of education via its National Mission on Education through Information and Communication Technology (NMEICT). NMEICT is an important step of the Government of India through which the socio-economic condition of the under-privileged can be enhanced. The 10th five year plan envisages internet and internet connectivity for college and university teachers under UGC –net, computers and internet literacy for teachers and administrators and special support activities for SC/ST minorities, women and disadvantaged groups in computers, communication & information and biotechnology studies. The government at the centre and the state government of India have entered in the area of IT-ICT in education in a big way. The ministries, UGC, open-education systems, NCTE, NCERT, NUEPA, school boards and other organizations are supporting ICT in different forms and levels.

1.2.1 ICT in Teaching and Learning Process

Integration of ICTs in education has been a controversial issue. As Jhurree (2005), claims some people argue that technology will change the educational landscape forever and in ways that will engender a dramatic increase in the performance of learners (Papert, 1997). Unlike these extreme advocates, there are others who adopt a balanced approach (Jhurree, 2005). They are convinced that ICTs, if properly integrated, have the potential to enhance the teaching and learning process (Commission of the European Communities, 2001; Pelgrum & Law, 2003; UNESCO, 2003; Wagner & Kozam, 2003; Hepp et al. 2004;). As a tool, "ICT has the potential to transform the way that education is delivered" (Fisher, 2001). Similarly, the researchers like Smeet (2005), Wegeriff (2004), and Asan (2003) studied how ICTs help to enhance the quality of teaching. Ramsay (2001) said that learning with ICT was considered to be a means of nurturing meaningful communication, creativity, design and problem solving.
The demands of the 21st century information rich and knowledge based society, make it essential for both teachers and students to utilize technology effectively. The point has been made that within a sound educational setting, technology can empower and enable students to be capable information technology users, information seekers, analyzers, evaluators, problem solvers & decision maker, creative and effective users of productivity tools; communicators, collaborators, publishers, and producers; and informed, responsible, and contributing citizens. In the new technology era, the role of teacher has changed and continues to change from being an instructor to a constructor, facilitator, coach and creator of learning situations. So, in both teaching and learning, ICT is used. Teaching and learning are best thought of not as separate and independent activities, but rather as two sides of the same coin interconnected and interrelated. Studies of teaching and learning in schools around the world identify four broad stages in the way that teachers and students learn about and gain confidence in the use of ICT.

### 1.2.1.1 ICT Development at Different Stages

#### Discovering ICT Tools

The first stage that teachers and learners go through in ICT development is of discovering ICT tools and their general functions and uses. In this discovery stage, there is usually an emphasis on ICT literacy and basic skills.

#### Learning How to Use ICT Tools

After the stage of discovering ICT tools, comes the stage of learning how to use ICT tools and beginning to make use of them in different disciplines. This stage involves the use of general and particular applications of ICT and is linked with the applying approach in ICT development.

#### Understanding How and When to Use ICT Tools

The next stage is understanding how and when to use ICT tools to achieve a particular purpose, such as in completing a given project. This stage implies the ability to recognize situations where ICT will be helpful, choosing the most appropriate tools for a particular task, and using these tools in combination to solve real problems. This stage is linked with the infusing and transforming approaches in ICT development.
Specialising in the Use of ICT Tools

The fourth and last stage involves specializing in the use of ICT tools such as occurs when one enters more deeply into science that creates and supports ICT. In this stage, students study ICT as a subject to become specialists. Such study concerns vocational or professional education rather than general education and is quite different from previous stages involving the use of ICT tools.

1.2.1.2 ICT Development and Different Approaches

Advancements in technology and the way technology is used into a system is a dynamic process. Each school must work within the sphere of its own system to fit choices which best suit its unique situation and culture. Even within a school, various units or courses may use different approaches. The approaches are hierarchical with the emerging approach as a beginning point, and the transforming approach as a goal many perceive as the future of education.

Emerging Approach

The emerging approach is linked with schools at the beginning stages of ICT development. Such schools begin to purchase computer equipment and software or perhaps have had some donated. In this initial phase, administrators and teachers are just starting to explore the possibilities and consequences of adding ICT for school management and the curriculum. The school is still firmly grounded in traditional teacher centered practice. For example, teachers tend to lecture and provide content while students listen, take notes and are assessed on the prescribed content. School organization provides discrete time periods for each subject. Learners’ access to technology is through individual teachers. A curriculum that focuses on basic skills and an awareness of the uses of ICT assists movement to the next approach.

Applying Approach

The applying approach is linked with schools in which a new understanding of the contribution of ICT to learning has developed. In this phase, administrators and teachers use ICT for tasks already carried out in school management and in the curriculum. Teachers still largely dominate the learning environment. For example, instructing may be supplemented with ICT such as electronic slide presentations and
word processed handouts. Students receive instruction and notes to teacher prepared handouts. They use ICT tools to complete required lessons and are assessed on prescribed content.

School organization provides discrete time periods for each subject with some flexibility to combine subjects and time periods. Learners access to technology through one or two classroom computers and computer labs. Until now, ICT has been taught as a separate subject area. To move to the next phase, the school chooses to implement an ICT based curriculum that increase ICT across various subject areas with the use of specific tools and software.

**Infusing Approach**

The infusing approach is linked with schools that now have a range of computer based technologies in labs, classrooms and administrative areas. Teachers explore new ways in which ICT changes their personnel productivity and practice. The curriculum begins to merge subject areas to reflect real world applications. For example, content is provided for multiple sources including community and global resources through the World Wide Web.

Students’ access to technology enables them to choose projects and ICT tools that stimulate learning and demonstrate their knowledge across subject areas. School organisation provides the flexibility to combine subjects and time periods. Learners have more choices with regard to learning styles and pathways. They take more responsibility for their own learning and assessment.

ICT is taught to selected students as a subject area at the professional level. To advance to the next phase, schools choose an ICT curriculum that allows a project based, ICT enhanced approach. These schools begin to involve the community more in the learning environment and as resource providers.

**Transforming Approach**

The transforming approach is linked with schools that have used ICT creatively to rethink and renew schools organisations. ICT becomes an integral though invisible part of the daily personal productivity and professional practice. The focus of the curriculum is now much more learner centered and integrates
subject areas in real world applications. For example, students may work with community leaders to solve local problems by accessing, analysing, reporting and presenting information with \textit{ICT} tools.

Learners’ access to technology is broad and unrestricted. They take even more responsibility for their own learning and assessment. \textit{ICT} is taught as a subject area at an applied level and is incorporated into all vocational areas. The school has become a center of learning for the community.

\subsection*{1.2.2 Role of Teacher in Technology Classrooms}

Teachers are the key persons to use \textit{ICT} in educational settings productively and to help integrate \textit{ICT} into the curriculum. They are the vital players in any initiative which aims at improving teaching and learning process. In classroom there are no more lecture methods or other traditional methods used, teachers are required to decide how to make appropriate educational use of \textit{ICT} in classrooms. So, role of teacher is important, if teachers are not actively involved in integrating \textit{ICT} in all phases of curriculum then \textit{ICT} at schools will have little impact.

Technology using teachers plan classroom instruction on a large scale, students initiate, think and make decision daily in the classroom. Teachers think of wide things they want students to explore, find both print and electronic material related to the things and prepare students to deal with gathering and organisation and sharing their new found knowledge with others. Most teachers who recognise the benefit of using technology across the curriculum are now spending time locating materials on the internet that will support their thematic activities. Teachers are becoming better facilitators, helping students stay active in their pursuit of knowledge.

Teachers today are making more authenticated assignments and engaging students in topics that have themes of high interest to them. They are motivating students through the use of computers and telecommunication in ways that ensure that the student will participate in various literacy projects. They also are helping students design presentation of their research finding to share with their classmates, parents and people around the world.
Out of necessity, teachers are helping students learn to filter information because of the unbridled nature on internet. They are using filtering systems that block certain sites and are having students sign agreements that promise that they will not purposely visit inappropriate websites. Teachers also are monitoring where on the internet students are or have been on specific computer. This can be done easily by looking at the browser’s history; if browser history is deleted then it can be recovered through system restore, desktop search programmes, log files and data busters and many more other ways.

Today’s teachers are taking greater responsibilities for learning that occurs when students visit their school computer laboratory. Previously, teachers could allow the lab assistant or computer teacher to instruct the classes. With the advent of more in service instruction for teachers and more in classroom use of computers, behaviours have changed. Now all teachers must know how to organize instruction in the ways that computers are being placed directly in classrooms.

**ICTs** also help teachers in the following ways:

- **ICT** enables to enhance the initial preparation by giving good teaching material to use.
- with the help of **ICT**, teachers can have access to colleagues, institutions, universities, centre of expertise, rich resources and cyber space and national organization like UGC, NCTE, NCERT, NAAC etc.
- ICTs enable to interact with students over a physical distance.
- ICTs enable to access online libraries, journals and research to enable individual learning.
- ICTs enable to give feedback of students performance and evaluating students’ work objectively and fast without biases.
- ICTs provide lifelong and professionally developed courses at virtual situation, training on demand, orientation, and refresher courses through video conferencing or on-line.

The content and the presentation of the subject matter to the individual background, experience and needs of students become possible by use of **ICT**. It can facilitate differentiation and individualization in education. As Schiller & Tillett
(2004) said “ICT enhances what is possible by amplifying what teachers are able to do, by providing an entry point to content and enquiries that were not possible without the use of ICT, by extending what students are able to produce as a result of their investigations, and finally by providing teachers with the opportunity to become learners again.”

1.3 ICT AND TEACHER MORALE

Literature says that Morale is ‘moral or mental condition with respect to cheerfulness, confidence and zeal (Macquarie Dictionary, third edition).

Webster’s New World Dictionary defines morale as mental condition with respect to courage, discipline, confidence, enthusiasm, willingness to endure hardship, etc. with a group, in relation to a group, or within an individual.

Washington & Watson (1976) referred to morale as the feeling a worker had about his or her job in relationship to the importance of that job to the organization as a whole working unit.

Bentley & Rempel (1980) recognized that morale occupied many manifestations but considered it the enthusiasm and interest that an individual held towards goals and professional ambition either as a group or individually.

Lipham, Rankin, and Hoeh (1985) contended that morale was comprised of the existence of an interaction between effectiveness, efficiency, and satisfaction. To be effective, an individual’s behavior must be fitting for the expectations that exist for the job. Efficiency refers to the extent to which the group’s social behavior is in-line with that of the individual's behavior. In other words, does the individual “fit in” with the group? Finally, satisfaction refers to the matching up of the institutional role expectations and the individual’s need dispositions.

Morale is a feeling or state of mind that involves a mental and emotional attitude. (Mendel, 1987). Wilson Robert defines Morale as a configuration of many component parts all of which are important. Most important of all, morale is not a thing apart from the life of group and apart from the life of the individual.

Briggs & Richardson (1992) stated that, the internal characteristics of morale are confusion, insecurity, frustration, lack of confidence, fear of supervision and an
attitude of futility. As a result of low morale, the educators would resist change, and the school would have a high rate of teacher absenteeism. Low morale is associated with an individual’s attitudes, self-esteem, and self-concept. They also state that these internal feelings may result in external reactions. The possible external reactions are quoted by Briggs & Richardson as the relationships with other teachers and administrators. These external reactions could result from some internal feelings of educators, such as insecurity, frustrations, and lack of confidence.

While Young (1991) claims that morale is often influenced more by outside factors than internal ones, Rogers (1992) identifies both internal and external factors as influencing morale, highlighting ‘pace of bureaucratic change; discipline and management concerns; staff and staff relations; time and workload pressures’ as the most common stressors for teachers. Verdugo, Greenberg, Henderson, Uribe and Schneider (1997) claim that ‘the closer schools come to developing a community, the greater will be teachers’ job satisfaction’ while Lumsden (1998) suggests that it may be impossible to separate the issues of school culture, leadership and teacher morale arguing that although individuals can take steps to maintain their professional satisfaction and morale, they must also be ‘nurtured, supported and valued by the broader school community’.

School leaders influence and exercise a measurable effect on student achievement by an indirect process through the influence they have on teachers (Gurr, 1997; Hallinger & Heck, 1998). Lumpa (1997) found that a strong predictor of student satisfaction and success was the level of teacher satisfaction in the school. By simply involving teachers in developing a collaborative school climate, a statistical relationship between higher teacher morale and higher students’ achievement becomes evident. When schools have teachers with high morale, they also have a good chance of having students with high morale; this has a direct impact on student achievement. The level of morale depends upon the strength of motivation and the freedom to act. Teacher has freedom to communicate with students in classroom with the best tool in hand, which in turn enhances students’ achievement. Availability of latest ICT in educational settings motivates the teacher to utilize ICT tools for effective teaching and learning. This motivation, in turn, energizes the level of teachers’ morale.
When teachers’ morale is energized and productive, good things tend to happen in the classroom. When good things happen in the classroom, the future for each student in that classroom is brighter. There is enough empirical evidence to suggest that the supportive environment and the morale of the staff can have a positive effect on pupils’ attitudes and learning. Improvement in both of the things, makes teaching more pleasant. When teacher morale in a school is high and the school environment is healthy, Teachers feel good about themselves, each other and their teaching, which in turn impacts student morale and achievement (Youngman, M. & Harrison, C. 1998). Alternatively, low morale for teachers can lead to decreased productivity and a detachment from the teacher role, colleagues and students. Teachers with low morale may begin to ‘lose heart’, take increased sick leave, look for alternative employment and develop a cynical approach to students, teaching and the education system [Independent Education Union (1996)](as cited in Mackenzie, N. 2007). People with low morale tend to see obstacles as potential opportunities for failure, while people with high morale see obstacles as challenges which need to be solved (Ramsey, 2000). Keeping in view preceding important aspects of teacher morale, the researcher felt that there is a need to explore teacher morale in relation to use of ICT for effective use of it in classrooms.

1.4 ICT AND TEACHER ATTITUDE

An effective educational environment is also characterized by a positive school climate where the teachers and students feel good about teaching and learning and cooperate to foster a caring attitude. Attitude has great importance in learning and teaching. It is one of the important objectives of teaching and learning to develop attitudes in the aspects and process of school subjects. A review of the psychological literature reveals diverse definitions of attitudes.

Allport (1935) defined it as “a mental and neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual’s response to all objects and situations with which it is related”.

Anastasi (1968) defines attitude as a “tendency to react favourably or unfavourably towards a designated class of stimuli such as a nation or a racial group, a custom or an institution.”
Freeman (1968) defines it as “A dispositional readiness to respond to certain situations, persons or objects in a consistent manner which has been learned and has become one’s typical mode or response.”

According to Vernon (1964) “it is a personality disposition or drive which determines behaviour towards or opinions and beliefs about a certain type of person, object, situation, institution or concept.”

Nunnally (1967) says “Attitudes are pre-disposition to reach negatively or positively in some degree towards an object, institution, or class of persons.”

Thurstone (1959) defines attitude as “the degree of positive or negative effect associated with some psychological objects.”

A particular job may be a psychological object means any symbol, phrase, slogan, person, institutions, ideal or idea towards which people can differ with respect to positive or negative effect. In the literature of psychology, the terms ‘affect’ and ‘feeling’ are used interchangeably. An individual who has associated positive affect or feeling with some psychological object is said to like that object or to have a favourable attitude towards the object. An individual who has associated negative affect with the same psychological object would be said to dislike that object or to have an unfavourable attitude towards the object. These definitions show that an attitude is a preparation or readiness for response. It is incipient rather than overt and consummator. It is not behaviour, but the pre-condition of behaviour.

Characteristics of attitudes are – 1. There is favorableness in attitudes i.e. the degree to which a person is for or against a psychological object. This dimension determines the direction of attitude. 2. They have intensity which refers to the strength of the feeling. How strongly a person feels about something, reveals the strength of her/his feeling. 3. Salience is other characteristic which means how freely or spontaneously an individual expresses his attitude. It is the readiness or promptness with which the individual gives vent to her/his feelings. 4. Attitudes are not inborn or innate. They are not inherited by the individual but are acquired by her/him during the growth process. 5. Attitudes, once acquired, become permanent. They are lasting and enduring. They become stable over a period of time. Since they are more or less permanent, an individual’s future behaviour can be predicted on the
basis of her/his attitudes. 6. Attitudes are not formed in vacuum. They are always formed in relation to some person, object or situation. 7. Attitudes are affective, which refers to feelings, cognitive to knowledge and action to predisposition. A person will have some idea or knowledge about psychological object; will also have feelings towards it and predisposition to act positively or negatively. 8. Attitudes of a person cannot be known directly because s/he will not express them frankly. Attitudes, therefore, can be inferred from individual’s actions, behaviour or words.

Researchers define attitude as a positive or negative emotional reaction toward a specific situation. Fishbein (1967) defined attitude as “a learned predisposition to respond to an object or class of objects in a consistently favorable or unfavorable way”.

Just as other professionals utilize specific technologies as tools to enhance their work, teachers must likewise become adept in putting technology to use as the field of educational software evolves with the various academic disciplines. Regardless of grade level or subject, technology can support teachers in numerous professional activities, first and foremost, in stimulating learning in the classroom and also in simplifying their administrative duties, improving personal productivity, and advancing professional growth. The productive use of ICT depends on a teacher’s attitude towards ICT. Some teachers are often resistant of using ICT in classroom. So, the development of positive attitude towards ICT in teachers is considered to be a key factor in fostering ICT integration and enhancing the quality of learning and teaching using ICT. Teachers are using ICT tools such as computer, projector, TV and video, overhead projector and internet. Due to burst of knowledge in education field, teachers are accessing online resources, creating desktop publishing documents and developing multimedia presentations for making their teaching effective and providing the students with up-to-date knowledge so that they compete in the present scenario of cut throat competition.

Researchers also said that the successful utilization of technologies in the classroom depends mainly on the teachers’ attitudes toward these tools (Kluever, Lam, Hoffman, Green & Swearinges, 1994). Attitudes are key factors in whether teachers accept computer as a teaching tool in their teaching practices.
Correspondingly, a number of studies were carried out to determine teacher attitudes toward computer use. Harrison & Rainer (1992) conducted their research using data compiled from a 1990 survey of 776 knowledge and information workers from a large university in the Southern United States. They found that participants with negative computer attitudes were less skilled in computer use and were, therefore; less likely to accept and adapt to technology than those with positive attitudes. Albirini (2004) conducted a study to investigate the attitudes of EFL teachers in Syrian high schools toward technology in education, both quantitative and qualitative methods were employed to collect data. He found that the results from both quantitative and qualitative data indicated that teachers had positive attitudes toward technology use in education.

The importance of teachers’ attitudes toward new innovations has been universally recognized (Gressard & Loyd, 1985; Watson, 1987; Woodrow, 1992), in the process of technology implementation in schools. Implementation of ICT can be unproductive unless teachers develop positive attitudes toward the new technologies. Demetruadis et al. (2003) assert that teachers’ attitudes regarding ICT use in schools not only pose difficulties in the use of technology but also cancel the learning benefits expected to spring from the instructional reform. An innovation is a multidimensional process that involves changes in beliefs and attitudes as well as practices [Fullan & Stiegelbauer (1991)]. For change to occur, identifying teachers’ attitudes would be the first natural step. This explains the regular calls for conducting more studies on teachers’ attitudes.

1.5  **ICT AND TECHNOLOGY COMPETENCE**

The role of teacher involved in all phases of ICT integration to the curriculum is important. Teachers are required to decide how to make appropriate educational use of ICT in the classrooms, where there are no longer lecture-based or didactic teaching methods in classrooms any more. In other words, teachers need to upgrade their skills and knowledge in the field of ICT (Hargreaves, 1999). The expectations placed on teachers seem to be expanding day by day. Their role is not
only teaching specific content and mentoring students but also functioning as frontline social workers and competent in all the ways. To meet the challenges of schooling, teachers need to model in their own conduct the very qualities—flexibility, networking, creativity and also acquire and display these qualities to redefine their skills for the task of teaching through ICT that are now key outcomes for students.

A discussion paper prepared by NCET (National Council for Educational Technology, 1997) argues that “Information Technology is rapidly changing the world we live in.” ICT is changing the nature of society and employment and therefore in turn changing the requirements of schools and colleges. Across the curriculum ICT is used to enhance students’ learning. Word processing improve the quality of their written work in any subject which allows them to reflect on what they have written and make changes easily. Animated graphics and computer simulations made the difficult concept simpler. Students can access high-quality information more easily by using CD-ROMs, and the Internet. Motivation of the learner consistently increased with use of ICT. It has the flexibility to meet individual student needs, to present information in new ways; power to try out different ideas and to take risk; and make learners more confident. Teachers can use ICT tools to produce high-quality teaching materials which will stimulate and develop interest among students. All this is possible if teachers themselves have technology competence.

Each teacher needs to be proficient in the areas of technological competencies required for chats, web sites, databases, audio and video links, electronic conferencing, e-mail, picture publishing, word processing and numerical processing. Also the teaching learning needs to be organized very carefully with virtual learning environment, net dialogue, radio, television and computers. Also there is need of integrating technological competencies with principles of learning (Independent learning, Inductive learning and Team learning) and teaching learning organization as shown in subsequent figure:
Simonton (2003), defines competence as any acquired skill or knowledge that constitutes an essential component for performance or achievement in a given domain. To be competent in a creative domain a person needs to attain competence in all the components of corresponding domain. To be competent in a domain signifies a degree of skill and knowledge certainly higher than those of the novice. Teacher competence is defined as knowledge, skill, ability, personal quality, experience or other characteristics that is applicable to the profession of teaching. A teacher is expected to possess a repertoire of competencies in order to be effective in a wide range of teacher jobs and the multifarious roles he is expected to play.

UNESCO *ICT* Competency Standards for Teachers 2008 states that the potential resides in the teacher to prepare the student to acquire the important technological capabilities. Teacher is responsible for establishing classroom environment and preparing the learning opportunities which facilitate student to use technology to learn and communicate. The use of technology, and knowing how technology can support student learning have become essential skills for professional teachers in today’s world. Technology can be used as empowerment tool for improved learning achievement in students. This is because of the realization that in the new age, schools and classrooms are expected to have teachers
who are equipped with technology resources and skills, and who can effectively teach the necessary subject matter content while incorporating technology concepts and skills. This is because traditional educational practices no longer provide prospective teachers with all the necessary skills for teaching students to survive economically in today’s workplace. Meredyth et al’s (1999) & Forgasz’s (2002) research identified factors that facilitated or prevented teachers from integrating ICT, particularly the computer, into their teaching and learning process. These factors included computer ownership, level of technological skills and knowledge, teacher individual background characteristics, teachers’ beliefs about teaching and learning with ICT and their perception of their own level of basic and advanced technological skills. Thus researcher felt that technological skills in term of technological competence is also one of the domain need to be explored for use of ICT by teachers in their classrooms.

1.6 RATIONALE OF THE STUDY

The 21st century is an era of acute modernization and both teacher and students will have to cope with the changes and challenges. The information age requires a higher level of skill and knowledge of all individuals. Teachers’ professional knowledge, skill and capabilities are enhanced by ICT as their subject knowledge is expending. ICT enables teachers in planning and preparing them for more efficient teaching. Research by Sutton (2006) also shows that ICT enables effective learning. For creating learning environment ICT is recognized as an essential ingredient of education system. Power of technology to transform learning is recognized by educators worldwide. Teachers have been identified as major factor in fostering classroom ICT integration. They are the mind setters and torch bearers in the society. Hence, teachers must be able to increase conceptual understanding and analytical ability among students through the use of diverse Information and Communication Technology (ICT). Use of ICT definitely affects the performance of students and teachers in classroom. Through the ongoing and effective use of technology in the schooling process, students have the opportunity to acquire important technology capabilities. The teacher is responsible for establishing the classroom environment and preparing the learning opportunities that facilitate
students’ use of technology to learn and communicate. Consequently, it is critical that all classroom teachers are prepared to provide their students with these opportunities.

Most critical issues in developing and maximizing the benefits of *ICT* in teaching-learning process is the level of Morale, Attitude towards *ICT* and Technology Competence the teacher have in using *ICT* and accessing its benefits in their work.

Teaching in present schools requires teachers who are knowledgeable and skillful especially in using computer and other technology tools. Unfortunately researches (Yildirim, 2007) shows that teachers hesitate to use technology, don’t feel prepared and fear to integrate *ICT* in their teaching in classroom. Their reluctance to use *ICT* is mainly due to their negative views towards accepting technology as part of their new teaching methodologies (Summar, 1990).

Akbaba and kurubacack (1999) also reported that if teachers already have negative perception towards the use of technology, this may affect not only their teaching effectiveness but more importantly they may become incompetent in using technology. The act of teaching along with high teacher morale, positive attitude towards *ICT* and technology competence enforces the teacher to use *ICT* productively to enhance the effectiveness of teaching and learning process for giving the best output from the curriculum in the limited time in hand. It is important to evaluate teachers’ attitude towards *ICT* and their technology competence as *ICTs* are being implemented in both private and government schools. Thus it is essential to investigate the impact of their attitude and competencies towards *ICT* in determining the success of educational system. A perusal of research studies reveals that teacher effectiveness is related to factors like high teacher morale, positive attitude towards *ICT* and technology competence of teachers. So, the researcher has undertaken this study to find out the significance of teachers’ morale, attitude towards *ICT* and level of technology competence of secondary school teachers in the productive use of *ICT*.

1.7 STATEMENT OF THE PROBLEM

“AN EXPLORATORY STUDY OF USE OF ICT BY TEACHERS IN RELATION TO THEIR MORALE, ATTITUDE TOWARDS ICT AND TECHNOLOGY COMPETENCE.”
1.8 OPERATIONAL DEFINITIONS OF THE KEY TERMS

1. Information and Communication Technology (ICT)

Information and Communication Technology (ICT) includes the full range of computer hardware, computer software, and telecommunication facilities.

In the present study, Information and Communication Technology (ICT) includes the full range of display and projection devices like liquid crystal display and overhead projectors used in school to view computer output. It includes the local area network, wide area network, radio, television, digital cameras, educational CDs and DVDs that allow teachers to communicate with learners.

2. Morale

Morale is the confidence, enthusiasm and discipline of a person or a group at particular time.

In the present study, morale refers to the professional interest and enthusiasm that a secondary school teacher displays. Precisely, teacher morale here refers to ten factors viz-teacher rapport with principal, satisfaction with teaching, rapport among teachers, teacher salary, teacher load, curriculum issues, teacher status, community support of education, school facilities and services and community pressures.

3. Attitude towards ICT

Attitude is a settled way of thinking or feeling, typically reflected in a person’s behavior.

In the present study, attitude refers to the feelings, opinion and beliefs of secondary school teacher towards ICT use in classroom.

4. Technology Competence

Technology Competence is the ability to select and apply up to date forms of technology to solve problems or compile information.

In the present study, technology competence refers to the proficiency of secondary school teacher in using computer in the classroom, sending and receiving e-mail messages, and creating documents with graphics, accessing online resources,
creating desktop publishing documents, developing multimedia presentations, selecting and customizing instructional software to fit students' needs.

1.9 OBJECTIVES OF THE STUDY

The study has been planned with the following objectives-

1. To assess the extent of use of ICT by teachers.
2. To assess the level of teacher morale.
3. To study the attitude of teachers towards ICT use.
4. To adjudge the level of technology competence among teachers.
5. To study the relationship between use of ICT by teachers and their morale.
6. To study the relationship between use of ICT by teachers and their attitude towards ICT use.
7. To study the relationship between use of ICT by teachers and their technology competence.
8. To study differences between male and female teachers in terms of ICT use in relation to their morale, attitude towards ICT and technology competence.

1.10 HYPOTHESES OF THE STUDY

The study has been planned with the following hypotheses-

1. There is a significant positive relationship between the extent of ICT use by teachers and their morale.
2. There is a significant positive relationship between the extent of ICT use by teachers and their attitude towards ICT.
3. There is a significant positive relationship between the extent of ICT use by teachers and their technology competence.
4. There is a significant difference between the extent of ICT use by male and female teachers in relation to their morale, attitude towards ICT and technology competence.
1.11 DELIMITATIONS OF THE STUDY

➢ The study is delimited to 200 private secondary school teachers of four districts of Northern Haryana state only.

➢ The study is confined to four variables only i.e. teachers’ use of ICT, teachers’ morale, teachers’ attitude towards ICT and technology competence.