CHAPTER – I
INTRODUCTION

1.1 INTRODUCTION

In the present era of information and communication, there is revolution in information and communication technologies which offer unprecedented opportunities to enhance effectiveness and expand access to high quality education. Information Technology is a new medium, a new way of representing communication and working with information. It is both an important area of study in its own right and a tool that is being integrated into everyday life of more and more people.

Literacy in the 21st century is going to be understood as computer literacy. If knowledge is power, Information Technology provides the means of knowledge, UNESCO considers Information Technology (IT) as “Scientific technological and engineering and the management techniques used in information handling and processing, their application, computer and their interaction with mean and machines and associated social, economic and cultural matters. The advent of information technology has had a profound and commanding global influence on the matrix of socio-economic activity all over the world.

ICT greatly facilitate the acquisition and absorption of knowledge, offering developing countries unprecedented opportunities to enhance educational systems, improve policy formulation and execution, and widen the range of opportunities for business and the poor. One of the greatest hardships endured by the poor, and by many others, who live in the poorest countries, is their sense of isolation. The
new communications technologies promise to reduce that sense of isolation, and to open access to knowledge in ways unimaginable not long ago.

However, the reality of the Digital Divide—the gap between those who have access to and control of technology and those who do not—means that the introduction and integration of ICT at different levels and in various types of education will be a most challenging undertaking. Failure to meet the challenge would mean a further widening of the knowledge gap and the deepening of existing economic and social inequalities.

Globalization and technological change—processes that have accelerated in tandem over the past fifteen years—have created a new global economy “powered by technology, fueled by information and driven by knowledge.” The emergence of this new global economy has serious implications for the nature and purpose of educational institutions. As the half-life of information continues to shrink and access to information continues to grow exponentially, schools cannot remain mere venues for the transmission of a prescribed set of information from teacher to student over a fixed period of time. Rather, schools must promote “learning to learn,” i.e., the acquisition of knowledge and skills that make possible continuous learning over the lifetime. “The illiterate of the 21st century,” according to futurist Alvin Toffler, “will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn.”

Information and communication technology (ICT) which include radio and television, as well as newer digital technologies such as computers and the Internet—have been touted as potentially powerful enabling tools for educational
change and reform. When used appropriately, different ICT are said to help expand access to education, strengthen the relevance of education to the increasingly digital workplace, and raise educational quality by, among others, helping make teaching and learning into an engaging, active process connected to real life.

However, the experience of introducing different 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 ICT is not automatic. The effective integration of ICT into the educational system is a complex, multifaceted process that involves not just technology—indeed, given enough initial capital, getting the technology is the easiest part!—but also curriculum and pedagogy, institutional readiness, teacher competency, and long-term financing, among others.

The process of teaching and learning started with the creation of human being.

The definition of education in common usage, that education is merely the delivery of knowledge, skills and information from teachers to students, is inadequate to capture what is really important about being and becoming educated.

Computer technology is an integral part of modern life and contemporary education. Computer education is necessary because students will continue to use computer technology in their academic and professional lives.

Teaching of human being by his creator indicated that learning is an inbuilt property of human structure.
In today’s business world, computers have become standard equipment. The computer’s ability to perform mathematical calculations with lighting speed and virtual infallibility accounts for its immediate and widespread acceptance in the world of business. Not only the computer is a valuable tool in business office, but it is also a vital part of industry. The use of robotic technology in manufacturing is one example. In the field of engineering computers are being used for designing and testing new products. Computer aided design helps eliminate costly mistakes in research and development.

The business world is not the only place where computers are found. Computer technology makes work faster and more efficient in the agriculture farm. Computers help the farmer evaluate the weather conditions, control inventory, feed and care for livestock.

Another facet of society where computers have become an integral part is the arts e.g. in music composition, film editing, animation creations in films, choreographing, textile designing etc.

Today information and knowledge are the motivating power for social development. In future the wealth and power of nations and equality of individual life will be valued in proportion to intellectual assets such as technology, information and knowledge. The new electronics-based technology has become pervasive in the work place. Education of employees in many industries increasingly depends on sophisticated technology. National security fears are an important force behind the drive to expand use of new technologies in the education.
Without the help of education, it is impossible to improve the quality of life. It is the need of the day to concentrate on information technology and science, and use its vast scope for developing teaching and learning resources and improving the quality of education.

Fast growing computer science revolution has taken its due place in India. Both in public and private sectors, it is flourishing rapidly and has become an integral part of our socio economic life. Computer plays a significant role these days in all aspects of our life and computer has become a part of our daily lives. Computers have penetrated in most human activities. The importance of computer education and the belief that the future success of our nation largely depends upon the availability of excellent computer personnel is undoubtful. It is necessary to establish a well educated and adequately prepared society to exploit the benefits of computers and to control their use when necessary. Higher Secondary students enter into professional education or practical life. So students at this stage should be computer literate.

Teaching has always been a complex exercise undergoing modification from time to time due to increased social responsibility. The role of the teacher is a complex one that has been shaped by both historical and contemporary circumstances. According to Richard (1988) nineteenth century society emphasized teachers' moral character and conduct, whereas the late twentieth century has emphasized teachers' accountability and their use of appropriate pedagogical practices. Teaching in the twenty first century will probably be characterized by a demand for quality education and more accountability.
The New Education Policy of India (1986) also focuses its attention on an educational system which can produce citizens who are by and large physically, mentally and morally healthy; who are conscious of their duties and rights and are thus socially well adjusted, who are keen to learn on a lifelong basis and incessantly eager to improve their performance and who consequently are well grounded individuals competently contributing to the uplift of the quality of life everywhere.

1.2 MEANING OF EDUCATION

The root meaning of education is given as bringing up or leading out or making manifest the inherent potentialities in a pupil. Education refers to any act or experience that has a formative effect on the personality of an individual.

In a technical sense, however, education refers to the process by which society, through its different instructions, deliberately transmits its cultural heritage to its young its accumulated values, knowledge and skills from one generation to another.

Education in broad terms means, “The life-long process of acquiring new knowledge and skills through both formal and informal exposure to information, ideas and experiences”.

Education in narrow terms means, “Systematic planned instruction that takes place in school”.

Education has a very important role to play in the present set up of world. Investment in the education of its youth is considered as most vital by all modern nations. Such an investment acquires top priority in developing countries. Along
with the knowledge exposing that is found in developed countries, we see another factor, namely the population explosion, particularly in developing countries that are trying to change the pattern of life. Most countries in the world are faced in the same form or another, with these problems and what is needed today is an “Information Explosion”. Curing illiteracy is the immediate problem in developing countries. We need more teachers to solve problem and yet, this cannot be a perfect solution for the ever-increasing problem of illiteracy.

1.3 EDUCATIONAL TECHNOLOGY

Educational Technology is a broad sense, an all-pervasive concept including both teaching and instructional technologies, emphasizing the systematic problem solving aspects of the field. It has been defined as a systematic way of designing, carrying out and evaluating the total process of learning and teaching in terms of specific objectives based on research in human learning and communication and employing a combination of human and non-human resources to bring about effective instruction. Its primary role is to increase the efficiency and effectiveness of the entire teaching-learning process through a system approach putting to use modern communication technologies and the media.

Educational Technology is in fact a growing, dynamic and vitally significant engineering in the field of pedagogy, as it seeks to Analyze, Reform, Remodel and even build-in new and various Paradigms of Learning and Teaching processes by judiciously applying the established Laws, Principles, Theories and Empirically derived findings of modern Psychology, Sociology, Engineering Management, Mathematics and other basic disciplines. Educational Technology,
thus, implies more than the total of all the Media, Methods, Materials and Techniques used for better Teaching and Learning. Educational Technology has enabled us to integrate the process of Instructional Design and the development of Instructional Media. Advances in Educational Science on the one hand and in Optical and Electronic Technologies on the other have provided an excellent scenario for a new range of developments in order to make the Teaching Learning process more efficient. Educational Technology has stimulated teachers to innovate in the area of School Organization, Curriculum Construction and Teaching Methods resulting in a variety of newer concepts such as “Modular Scheduling”, “Team teaching” and “Self study procedures”.

1.4 INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

In recent years there has been strong pressure to make use of Information and Communication Technologies (ICT) in classroom teaching, in terms of both content and methods. ICT refers to:-

- Sharing and interchanging information such as knowledge, mental skills, motor skills and attitude through the use of mass media especially electronics.

- Achieving success in this sharing and interchanging through communication which consist of receiving, i.e. hearing to seeing accepting as nothing can change unless information is accepted and getting some action, i.e., changing performance or behaviour.

- Data processors which are a key component in information technology in the processing of data.
ICT covers any product that will store, retrieve, manipulate, and transmit or receive information electronically in a digital form, for example, personal computers, digital television, email, and robots. Importantly, it is also concerned with the way these different uses can work with each other.

ICT is a potentially powerful tool for extending educational opportunities, both formal and non-formal. ICT greatly facilitates the acquisition and absorption of knowledge, offering developing countries unprecedented opportunities to enhance educational systems, improve policy formulation and execution. ICT especially computers and internet technologies enable new ways of teaching and learning rather than simply allow teachers and students to do what they have done before in a better way. These new ways of teaching and learning constitute a shift from a teacher-centered pedagogy in its worst form characterized by memorization and rote learning to one that is learner-centered. ICT supported education can promote the acquisition of the knowledge and skills that will empower students for lifelong learning.

1.5 INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) IN EDUCATION

The quality of Education depends to a great extent on the quality of teachers. It is a known fact that quality teachers opt for an innovation in their teaching aspect through integrating technology in the Classroom Instruction to give the best to student-teachers. Since Technology is a powerful tool for problem solving, conceptual development, and critical thinking, help to make the learning process much easier for the student-teachers. To be effective in the classroom
Instruction, Teacher-educators should acquire the knowledge and skills to use the new challenges in promoting innovative teaching strategies that are student centered collaborative, engaging, authentic, self-directed and based on the development of higher order thinking skills with respect to handling classes for student-teachers which aims to achieve high academic standards.

Globally, educational systems are under great pressure to adopt innovative methodologies and to integrate New Information and Communication Technologies (NICTs) in the teaching and learning process, to prepare students with the knowledge and skills they need in the 21st century. Apparently, teaching profession is evolving from an emphasis on teacher-centered, lecture- based instructions to student-centered interactive learning environments.

ICT can be used as a tool in the process of education in the following ways.

**Informative tool:** It provides vast amount of data in various formats such as Audio, Video, documents.

**Situation tool:** It creates situations, which the student experiences in real life. Thus, simulation and virtual reality is possible.

**Constructive tool:** To manipulate the data and generate analysis.

**Communicative tool:** It can be used to remove communication barriers such as space and time.

Use of ICT in education develops higher order skills such as collaborating across time and place and solving complex real world problems. It improves the perception and understanding of the world of the student. Thus, ICT can be used to prepare the workforce for the information society and the new global economy.
Institutions must promote ‘learning to learn’, i.e., the acquisition of knowledge and skills that make possible continuous learning over the life time.

1.6 VARIETIES OF INFORMATION COMMUNICATION TECHNOLOGICAL TOOLS

The following are some of the ICTs tools that can be used effectively in the Classroom Instruction like e-Learning, m-Learning, Computer Assisted Instruction (CAI), Virtual Learning Environment (VLE), On-line Learning, Blogs, Podcasting, Videoconferencing, etc.

(i) e-Learning

e-Learning which refers to the electronic learning promotes innovative strategy in teaching methods with information of diversified learning environment. It has more variety of information resources in learning experience with the use of Multimedia and non-verbal presentation by teaching material that encourages more and more self-learners to continue life-long learning without limitation of space, time and profession. It is a single point of access that serves as a gateway to a variety of e-resources.

(ii) m-Learning

Mobile Learning is termed as m-Learning which is enabled by the use of portable computing devices such as PDA’s, Palmtops, Smart Phones, and Tablet PC’s communicating over wireless networks. The use of computing in teaching and learning is being extended to spaces beyond the traditional classroom and within the classroom; the teachers and learners are gaining more flexibility. It provides new opportunities for interaction with each other through Short
Messaging Service (SMS), downloading the course-content where lessons are provided in a bit-sized format, a fact that is appealing to busy students through Bluetooth connectivity easily without Internet connectivity.

(iii) Computer Assisted Instruction (CAI)

It is a development of systematic programmed learning and teaching machine. It is a self-instructional device with the principle of automization. CAI is “Computer applications applied to traditional teaching methods such as drill, tutorial, demonstration, simulation and instructional games”. It is an effective medium and an indispensable aid in the teaching-learning process. It is perhaps the best in classroom instruction, because it offers

✓ Individualised Instruction
✓ Effective interaction with the Learner and
✓ Immediate feedback
✓ Engage students as active learners
✓ Promote student self-assessment and self-reflection

Thus, there are so many advantages for an individual to enrich his learning to a great extent as one likes. The learner may feel that a best teacher is with him whenever one learns through Computer Assisted Instruction.

(iv) Virtual Learning Environment (VLE)

VLE is a set of teaching and learning tools designed to enhance a students’ learning experience by including computers and Internet in the learning process. The principal components of VLE package include Curriculum Mapping, Student Tracking, On-line support for both Teachers and students.
(v) On-Line Learning

It is synonymous with Web-based learning where learning is fostered via World Wide Web (www) only with Internet connectivity. It is pedagogy of Online teaching and learning. The various strategies of Instruction was followed through On-line learning such as Conversing, Discussing, Mentoring, Questioning, Debating, Sharing data which are the necessary components of the teaching learning process in the Classroom Instruction. The other important features of online learning are analysing, seeking, collecting, organising and synthesing, online information of knowledge resources towards the evolutionary growth of open, flexible, anytime and anywhere in learning.

(vi) Blogs

The term ‘Blog’ is a blend of the term, ‘web’ and ‘log’ leading to ‘web log’, which finally becomes “Blog”. Blog as an educational tool can be integrated in multifaceted manner to accommodate all learners. As they are easy to create and update efficiently, they can be used to inform students of classroom requirements, post handouts, notices, home work and assignments or act as a question and answer board. It provides conversation between the batch-mates in larger classes. A teacher can create and manage a blog to his/her professional interest and disseminate academic information and give instruction to their students on-line. The information or instruction through Blogs can be accessed by the students through the Internet connectivity everywhere even after the classroom hours.
1.7 BENEFITS OF ICT IN CLASSROOM INSTRUCTION

There are enormous benefits from the usage of Technology in Classroom Instruction. The benefits of this technological feature in Classroom Instruction are summarized below.

- Improves efficiency both in teaching and learning
- Increases motivation
- Paves way for Personality Development
- Active Participation of students
- Self-paced Learning
- Very flexible and rich medium for students to access the information
- Better learning, Retention and Students’ performance
- Multisensory Learning experience

Thus, ICT has enormous potentiality to deliver many of benefits to the learners. Unless we use ICT one cannot obtain up-to-date information to face the competitive world. Using Information Communication technology is the need of the hour and essential part of the life of every individual who wishes to enrich his life.

1.8 CAPACITY BUILDING IN TEACHERS WITH THE HELP OF ICT

Training in professional development of teachers in the effective use of ICTs for improved teaching and learning, focuses on the capacity building of teachers in using ICTs to help them develop the necessary knowledge and skills of related pedagogies to enhance the teaching learning process.
The competencies of the teachers have to be improved though both pre-service education and in-service training in integrating ICT as pedagogical tools and educational resources to facilitate active student learning. Locally specific ICT pedagogical models of ICT use in different learning environments have to be identified and disseminated. Teachers as well as teacher educators must have the knowledge and skills needed to integrate ICT effectively into the learning environment. If not students will not be exposed to the wealth of Information resources available and will be prevented from learning to use ICT effectively. Teacher educators have responded to this ever changing environment and have focused on two broader areas. The first relates “learning to use” technology and the second relates to “using to learn” technology. Firstly, educators are taught the necessary skills to use ICT across a variety of personal and professional levels. Secondly, educators are taught on how ICT can be integrated into the total teaching learning process and how effectively basic knowledge and skills can be learned by using ICT.

Integration of ICT into various strategies for teaching and learning not only presents a new set of challenges but also holds great opportunities that are intrinsic to the nature of the newer ICT. The rapid movement towards a knowledge society places new demands on the knowledge, skills and competencies of teachers. The most important criteria for effective professional development is to tailor it to the learning needs and skill levels of individual teaching staff.

There are three major components of capacity building:
✓ Improvement of teachers’ knowledge base, their skills and attitudes in ICT integration.

✓ Motivation of teachers to apply innovative pedagogical approaches and models in the classroom.

✓ Making teachers competent in online / offline learning resources.

Capacity building is the sustained, continuing and lifelong process. It is not a one-time activity. Teachers need to update their knowledge and skills as the curriculum and technology change. Capacity building should be based on learning needs and skills of individuals. In order to create successful programme for capacity building and for teachers to become pioneers, inventors and shapers of new culture of learning, professional development programmes should have the following elements.

✓ Inspire teachers to invent.

✓ Focus on experiential learning.

✓ Conduct need based assessments.

✓ Provide greater opportunities for feedback and reflections.

✓ Improve teacher competence in ICT integration. (Tuviera Lecaroz, 2002)

1.9 FUTURE SCENARIO OF ICT IN TEACHER EDUCATION

ICT will be the medium of education in the near future and will change many aspects of education system known in the last century. There is an urgent need to shift the paradigm from “ICT based systems and strategies” to “ICT enabled systems and strategies” to develop capabilities in a very large number of institutions and more so in the huge population of teachers for using the new
methodologies, effectively integrating them with education. The reform in education was started with the introduction of IT and now the ICT is moving fast into education especially after the spread of internet.

1.10 ROLE OF TEACHER USING ICT IN TEACHING

Teaching is one of the most complex human endeavors imaginable. Teachers arrange content information around organizing idea, determine appropriateness of available resources, and make judgment about the people involved. Generally, the teacher serves as decision maker regarding what to teach, when to teach and how to teach it. The teacher is often the primary source. The teacher has to play a pivotal role for the success of the ICT. The teaching aids either modern or traditional only supplement the efforts of the instructor to enhance the learning process. They cannot be a substitute for the teacher. The technologies assist the teachers to do their work in an efficient manner to achieve the educational objectives.

Each Technology has its advantages and limitations and no single technology is useful for all types of learning. While selecting the media, the criteria to be kept in mind are Availability, Accessibility, Acceptability, Cost and Validity of the media. The fear about technology among the teachers is that it will replace the teacher and will create unemployment. No technology can produce new things because output depends on the nature of input. The input aspect is more important and it depends on the teacher. The instructional material cannot be prepared by educational technology. Therefore, ICT will not replace the teacher but will help in improving the teaching-learning process.
The use of ICT is very important for providing opportunities to students to learn in an informational and technological world. There are some barriers in integrating ICT in teacher education like lack of confidence, lack of time, lack of accessibility, lack of technical support etc. To overcome these obstacles teacher must be aware of how to use technology in classrooms, should acquire ICT skills, knowledge and positive attitude regarding the effective use of technology to support learning by their students, to effectively harness the power of the new ICT to improve learning, the following essential conditions must be met. They are summarized below.

✓ Student-teachers and Teacher-educators must have sufficient access to
digital technologies and the internet in their classrooms, schools and teacher
education institutions.

✓ High quality, meaningful and cultural responsive digital content must be
available for Teachers and Learners.

✓ Teacher-educators must have the knowledge and skills to use the new
digital tools and resources to help all students achieve high academic
standards.

**Bottino and Sharma (2003)** mention that the use of ICT can improve
performance, teaching, administration and develop relevant skills in the
disadvantaged communities. It also improves the quality of education by
facilitating learning by doing, real time conversation, directed instruction, self
learning, problem solving, information seeking and analysis, and critical thinking,

as well as the ability to communicate, collaborate and learn.
1.11 IMPACT OF ICT ON TEACHER-EDUCATORS

The following points discussed below are regarded as the impact of ICT on Teacher-Educators

- It acts as the gateway to world of information and enables Teacher educators to be updated.
- For professional development and awareness of innovative trends in instructional methodologies, evaluation mechanism etc.
- For effective implementation of certain student-centric methodologies such as project-based learning which puts the students in the role of active researches and technology becomes the appropriate tool.
- It is an effective tool for information acquiring so that student-teachers are encouraged to look for information from multiple sources and they are now more informed than before.
- It has enabled better and swifter communications, presentation of ideas are more effective and relevant.
- The dissemination of ideas to a larger mass now seems possible due to technology.

The above points are most beneficial for the Teacher-educators and Student teachers to develop their skills in the teaching profession and to face the challenges in the near future.
1.12 NEED FOR THE STUDY

Information Technology literacy is becoming essential for the new educator, who has to deal with new studies, in a new school, using new media, namely the internet in a new learning environment with free access to a large amount of information resources. Realizing this importance of Information Technology, the IT education in India is being incorporated as a part of the academic curriculum in schools, colleges and universities. At the school level, the basics of Information Technology and training on computer usage are focused upon to make the outgoing school children IT literate. At the college and university levels, the study of IT application in all disciplines is focused.

The National curriculum framework for school education developed by National Council for Educational Research and Training (NCERT) is recommended. The council has worked out a blueprint for smart schools, which the Ministry of Human Resource Development (MHRD) proposes to establish all over the country albeit in limited numbers. Apart from working out a conceptual framework for this school, the technological support and expenditure involved there in the changing role of the teacher, nature of learning programmes, exemplar activities for students and skills expected by them in different grades and finally, imperatives for teachers council for IT education has also been recommended for developing IT course for various levels of training to teachers.

The teachers must have knowledge about technology and be self confident enough to integrate it effectively in the class room, this motivation can be easily
provided to them at the time of their pre-service training. This point to the need for teacher educators themselves to acquire proficiency in the various means of ICT.

The NCERT is striving for the promotion of use of Information and Communication Technology in pre-service teacher education course, who would, in-turn, contribute in making every child IT literate. Keeping all these in view the researcher is instructed in study the teacher educators attitude and aptitude towards ICT.

1.13 STATEMENT OF THE PROBLEM

Teacher education is a continuous process and its pre-service and in-service components are inseparable (The National Policy On Education-1986). The teacher educators can play many roles in their working places. The flow of information enables the teacher educators to access multimedia material for teaching. The educational environment is changing rapidly as a consequence of ICT and will continue to change. It plays a vital role in teaching. It is essential to know the attitude and aptitude of teacher educators towards ICT. The problem chosen for the study is as follows, “Attitude and Aptitude of teacher educators towards Information and Communication Technology”.
1.14 OBJECTIVES OF THE STUDY

1. To develop and validate a research tool to measure the attitude of teacher educators towards Information and Communication Technology

2. To find out whether there is any significant difference between the attitude of teacher educators towards Information and Communication Technology based on the background variables; namely
   a) Gender
   b) Subject taught
   c) Locality of college
   d) Type of college
   e) Knowledge of Computer
   f) Teaching experience

3. To find out whether there is any significant difference between the aptitude of teacher educators towards Information and Communication Technology based on the background variables; namely
   a) Gender
   b) Subject taught
   c) Locality of college
   d) Type of college
   e) Knowledge of Computer
   f) Teaching experience
4. To find out whether there is any significant difference between the familiarity of teacher educators towards Information and Communication Technology based on the background variables; namely

   a) Gender
   b) Subject taught
   c) Locality of college
   d) Type of college
   e) Knowledge of Computer
   f) Teaching experience

5. To find out whether there is any correlation between the attitude and aptitude of teacher educators towards Information and Communication Technology

8. To find out whether there is any correlation between the aptitude and familiarity of teacher educators towards Information and Communication Technology

6. To find out whether there is any correlation between the familiarity and attitude of teacher educators towards Information and Communication Technology

7. To identify the background variables which are contributing to the attitude of teacher educators towards Information and Communication Technology

8. To identify the background variables which are contributing to the aptitude of teacher educators towards Information and Communication Technology

9. To identify the background variables which are contributing to the familiarity of teacher educators towards Information and Communication Technology
1.15 HYPOTHESES OF THE STUDY

1. The distribution of the scores of teacher educators' attitude, aptitude and familiarity towards Information and Communication Technology are low.

2. There is no significant difference between the attitude of teacher educators towards Information and Communication Technology based on the background variables; namely,
   a) Gender
   b) Subject taught
   c) Locality of college
   d) Type of college
   e) Knowledge of Computer
   f) Teaching experience

3. There is no significant difference between the aptitude of teacher educators towards Information and Communication Technology based on the background variables; namely,
   a) Gender
   b) Subject taught
   c) Locality of college
   d) Type of college
   e) Knowledge of Computer
   f) Teaching experience
4. There is no significant difference between the familiarity of teacher educators towards Information and Communication Technology based on the background variables; namely,

   a) Gender

   b) Subject taught

   c) Locality of college

   d) Type of college

   e) Knowledge of Computer

   f) Teaching experience

5. There is no correlation between the attitude and aptitude of teacher educators towards Information and Communication Technology

6. There is no correlation between the aptitude and familiarity of teacher educators towards Information and Communication Technology

7. There is no correlation between the familiarity and attitude of teacher educators towards Information and Communication Technology

8. The background variables do not contribute to the attitude of teacher educators towards Information and Communication Technology

9. The background variables do not contribute to the aptitude of teacher educators towards Information and Communication Technology

10. The background variables do not contribute to the familiarity of teacher educators towards Information and Communication Technology
1.16 DEFINITION OF KEY TERMS

The key terms of the title are defined below for their operational meaning in the study and for better understanding of the study.

1.16.1 Information and Communication Technology

Information and Communication Technology (ICT) is the technology required for information processing. In particular the use of computer software to convert, store, protect, process, transmit information from anywhere, anytime.

ICT can be broadly defined as a set of activities that is facilitated, by electronic means, the capturing, storing, processing, transmission, and display of information. This paper uses the term ‘Information and Communication Technology’ (ICT) to encompass the production of both computer hardware and software as well as the means of transferring the information in digital form.

ICT (information and communications technology - or technologies) is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing and distance learning.

1.16.2 Attitude

Attitude is “a mental set to respond to a situation with a prepared reaction whereas sets may be Information and Communication Technology”.
“An attitude can be defined as an enduring organization of motivational, emotional, perceptual and process with respect to some aspect of the individual’s world”.

Anastai (1990) defines Attitude as a tendency to react favourably or unfavourably towards a designated class of stimuli, such as a national or ethnic group, a custom, or an institution. It is evident that when so defined, Attitudes cannot be directly observed but must be inferred from our behavior both verbal and nonverbal. In more objective terms, the concept of Attitude may be said to relate to response consistency with regard to certain categories of stimuli. In actual practice, the term ‘Attitude’ has been most frequently associated with social stimuli and with emotionally tended responses.

Edward and David (1991) define Attitude as a psychological construct or phenomenon that cannot be directly observed rather, its existence is inferred. Although there is no set definition for Attitude, there is considerable commonality among the various definitions that do exist in the literature. It is a predisposition to act, a state of readiness to act based on past experience, or a predisposition to act based on past evaluations. It is not the act itself. Attitudes are learnt, they are not innate. Attitudes are generally not transient; rather they tend to be enduring and consistent.

Attitude towards ICT: It is referred to as the tendency to react favourably/positively or unfavourably/negatively towards ICT.
1.16.3 Aptitude

An aptitude is defined as a set of condition that is symptomatic or indicative of one’s ability to acquire some knowledge or skill in a certain field. They are latent potentials which are in environmental conditions. They are undeveloped capacities, to acquire abilities and skills in special areas. Aptitude is a discrete, specific, unitary characteristic, related to success in a particular field.

Aptitude is an innate, acquired or learned or developed component of a competency (being the others: knowledge, understanding and attitude) to do a certain kind of work at a certain level. Aptitudes may be physical or mental.

Aptitude towards ICT: It is referred to as the knowledge, understanding and competence of the teacher educators about ICT.

1.16.4 Teacher Educators

For the present study the Teachers who are working in the Colleges of Education are termed as Teacher-Educators.

1.17 VARIABLES USED IN THE STUDY

- Teacher educators Attitudes towards ICT
- Teacher educators Aptitude towards ICT
- Teacher educators Familiarity towards ICT
1.18 BACKGROUND VARIABLES

The background variables considered for the study with reference to the teacher educators are gender, subject taught, locality of college, type of college, knowledge of computer and teaching experience.

1.19 DESCRIPTION OF THE BACKGROUND VARIABLES

The Gender is classified as male and female.

The subjects taught are classified based on their optional subject (their basic degree) namely Language (Tamil and English), Arts (History, Commerce and Economics) and Science (Physics, Chemistry, Botany, Zoology and Computer Science).

The Locality of college is classified as rural and urban.

The type of college is classified as Government, Government Aided and Self Finance.

The teacher educator’s knowledge of computer is also taken into account and classified into two categories; namely the teacher educators who have basic knowledge of computer and who do not have basic knowledge of computer. Basic knowledge of computer refers to knowledge in following namely Ms-Office and Internet.

Teaching experience were classified into 0 to 10 years, 11 to 20 years and above 20 years experience.
1.20 STATISTICAL TECHNIQUES USED

For analysis of the data, the following statistical techniques have been used. Descriptive statistics principles with SPSS software were used for analyse the data.

1. Descriptive analysis (Mean & S.D)

2. Differential analysis (‘t’ test & F test)

3. Correlation analysis

4. Regression analysis

1.21 DELIMITATIONS OF THE STUDY

The delimitations of the study are summarized below.

i. The Investigator confined his study with only 300 Samples from 40 Colleges of Education in Tamil Nadu with limited time.

ii. The investigator conducted the study with only six variables such as gender, subject taught, locality of college, type of college, knowledge of computer and teaching experience.

1.22 ORGANISATION OF THE REPORT

The report of the study is organized in five chapters.

Chapter I presents the need and significance of the study, statement of the problem, definition of key terms, objectives, hypotheses and delimitations of the study.

Chapter II presents a detailed review of studies on the Attitude and Aptitude of teacher educators towards ICT.
Chapter III presents a detailed account of the methodology. This chapter also provides description of variables, tools used for the collection of data, sample details, data collection procedure and the statistical techniques used in the analysis.

Chapter IV deals with the analysis of data in detail. This chapter presents the hypotheses, preliminary statistical analysis of the data two way analysis of variance and test of significance of difference between means for large independent samples. Major findings of the study are summarized at the end along with tenability of hypotheses set for the study.

Chapter V deals with the major findings of the study, conclusion, recommendations and suggestions for further study.