"Education is the manifestation of the divine perfection, already existing in man."

- Vivekananda

1.1 Education:

The universe is the creation of God. Man cannot imagine the power, deeds and creation of God. He cannot even imagine the shape or structure of God. So, many known and unknown things are there in the universe beyond the knowledge of man. Right from the origin of our civilization, man is in search of understanding the creation, because among the living and non-living organisms only man has got the power of thinking. Without the faculty of thinking, man is to an animal. So, for this thinking education is must. Only through education man’s knowledge will be developed. Knowledge is power, according to K.K. Bhatia & C. L. Narang say. “Man is the image of God, Roof and Crown of all things”.

Man has two aspects. The Biological and Sociological or Cultural, while the former is maintained and transmitted by food and reproduction, the later is preserved and transmitted by Education. Through Education man tries to speak new ideas and new ways of life. Man attempts to understand himself in relation gained to succeeding generations. His life in the complex world is governed not only by the
biological process, but also by a social process. While the functioning of
the organism is the biological heredity, education is the social heredity.

Education is the most important invention of mankind. Man
without education would still be living just like an animal. It is an
education which transformed man from a mere “two legged animal into
human”. The word education is like a diamond which appears to be off a
different colour when seen from different angles. Education of man
does not begin at school, it begins at birth. It ends, not when he
graduates from the university, but at his death. Hence, education is a
lifelong process.

The term education has been variously defined by various
thinkers. While the Indian thinkers have taken a spiritual view of the
concept of education, the western thinkers have taken the pragmatic
view.

According to John Dewey, "Education is the development of all
those capacities in the individual which will enable him to control his
environment and fulfill his possibilities"

Knowledge as the center of education, the very term 'Veda'
means 'Knowledge'. In Rig Veda," Education has been understood as
something which makes a man self-reliant and selfless". In Upanishads:
“Education is that whose end product is salvation”.

The second view of education is derived from Latin word
'educare' meaning to educate, to bring up, to raise, to nourish. This
means, bringing up the child according to certain ends or aims.
“Educere” is also a Latin word and it means to lead out or to draw out. This means, educating a child implies drawing out what is ingrained in the child or leading him out of darkness into light. The third view of education is, it holds education as an art of leading out the inborn knowledge, powers and virtues of the child. The fourth view of education is comprehensive and tries to reconcile all these points of view.

Education, it says, consists in a modification of natural development. It should recognize the inborn nature of a man and also reconcile it with, adopt it to the ways of the society. Education means the modification of behaviour of the child. The teacher has to modify the behaviour of student in relation to the social conditions existing. In other words, modification of behaviour should take place in the direction of social values or conditions. Social forces usually influence education because both the teacher and the student belong to society and they live in it. The child’s personality will always be developed in accordance with his social skills needed to lead his social life efficiently and successfully. One of the aims of education is to develop a nation as a social welfare state, where there is not much gap between the rich and the poor and that every man’s basic needs are satisfied. Education also needs to raise a social order not based on traditional thinking only but also on modern thinking, new equipment, view and the modern ways of life there by developing scientific thinking and attitudes instead of irrational and illogical thinking. Education is a process of development; Education should make an individual vocationally self-dependent,
intellectually mature, socially efficient, culturally refined, morally virtuous and spiritually advanced. Education should help the child to adjust himself physically and mentally to his environment and to the changing circumstances in life.

One of the major specific aims of education is vocational aim. With industrial and scientific advancement the vocational aspect of education became an important aim of education. According to Secondary Education Commission (1965), knowledge gained is useless if an individual is not able to secure a job. Indian Education Commission (1964-66) recommended ‘work experience’ as the basis of all education and emphasized the science and technology oriented education. Students must be aware of technical knowledge and thus get active practical skills.

Kothari Commission (1964-66) has suggested that education must increase productivity. For that it suggested science education and work experience. Modern societies are distinct from traditional societies, for their use of science-based technology. In order to enhance this distinctive merit, Science education must become an integral part of school education. According to the commission work experience implies participation in productive work in school, in the home, in workshop, on a farm, in a factory or in any other professional institution. In the program of relating education, to life and productivity, work-experience must be introduced as an integral part of all education general and vocational. The Kothari Commission also suggested
education for modernization. The present century made a great advancement in scientific and technical knowledge as a result of industrial revolution.

The quality and efficiency of education depends to a great extent on the quality of teachers. Restructuring of teacher preparation process is highly essential for professionalization and empowerment of the teachers. It is corroborated fact that the progress of any country squarely rests on the teachers as such the teacher educator has to act as a facilitator and mental in organizationally focused active learning situation in order to keep pace with the growing needs of the society.

1.2 **Teacher Education:**

“A good Teacher is an eternal student. A teacher is the one who teaches the true meaning of life. A teacher introduces to a new vision of life. A teacher helps in accomplishing a target. A teacher is a source of inspiration.”

-- Dr. S. Radha Krishnan

In the olden times, there was no systematic provision for the education of teacher but it was assumed that he alone had a right to teach who had acquired complete mastery over knowledge and could also translate it into practical life.

Indian teachers imparted education with a unique devotion. Society gave these teachers the highest respect because they were committed to bring about the comprehensive and harmonious development of the student’s personality as it is expressed in the statement "aacharya devobhava" which occurs In the Taitriya
Upanishad.

Even during the Buddhist and Jain periods, a teacher occupied a much respected place in society. It was presumed that he gave the student real self-knowledge. Respect was shown to him by saying "Na devah shri guroh" During the middle ages, a person well versed in religious rituals and predominance was regarded as a good teacher. The need for systematic education of teachers came to be felt during the British period, which led to Teacher Training.

In 1904, the Indian Education policy laid special stress upon the appointment of able and highly trained individuals to the Indian Education service. A training period of one year was fixed for graduate lecturer and in this training importance was given to theory as well as practice. Different curricula were prepared for pre-graduate and graduate lecturer and in addition model schools were attached to each teacher training center.

In 1913, the government took the definite step of declaring the policy that no individual should be allowed to teach, in the modern education system as long as he did not possess a certificate providing his ability as a teacher. In 1910, the Calcutta University Commission introduced education as a subject at the intermediate and graduate levels. In 1929, the Hartog Committee suggested the introduction of refresher courses, and the idea was again stressed latter by Mudaliar and Radhakrishnan Committee. The Kothari Commission gave great importance to the establishment of intensive education colleges for the
training of teachers.

In the system of personal relationship with in which children learn, the teacher is probably next to members of the immediate family. In the classroom group, where children, adolescents and adults interact, the teacher acts as the leader, the one who gives or withholds security and is responsible for law and order. The teacher is considered as the pivot of any educational system of education. If the teachers are well educated and trained and if they are intellectually alive and take interest in their job, then only the success is ensured but on the other hand, if they lack training in education and if they cannot give their heart to their job, the system is destined to fail.

Teaching is an art. Teacher is an artist. To know the art of teaching requires considerable knowledge, a wide variety of interests and skills and a very positive attitude on the part of teacher. A teacher is to understand his subject as well as his pupil, he is to motivate, to instruct, to organize, to evaluate, etc., It means that he is to play many roles and that too very efficiently. To attain efficiency in every aspect of teaching it is essential that a teacher should undergo a well designed course of teacher education. Not only to this extent but teacher education should continue as long as teacher is in the profession.

The development of new methods of teaching and learning in schools and higher education has been rapid. The last decade in particular has seen an explosion in the literature on a wide variety of methodological innovations: resource-based learning and resource
centers: simulations, games and role play, independent and distance learning education based on computers and micro process. These developments are significant not only for the content of teacher education, but also for its methods. In other words, there is no point in telling teachers about innovative methods, it is far more effective to use them.

The use of ICT in education improves the quality of education and brings about desirable changes both qualitative and quantitative. Teacher education need to imbibe the skill of using computers more than any body else in the educational setup because these teacher educators are the persons who mold the teachers and the input in the process of education. Therefore it is a need to train teachers in the use of computers to get good results in the field of education.

1.3. 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 that acquisition of the knowledge and skills that will empower students for lifelong learning.

1.4. Implications for preparing teachers to use ICT:

One of the most commonly cited reasons for using ICT in education has been to better prepare the current generation of students
for a workplace where ICT, particularly computers, the internet and related technologies, are becoming more and more ubiquitous.

ICT is an essential tool in the modern classroom. It can engage pupils on a number of levels and make the job of the teacher considerably easier. However, the use of ICT does not necessarily ensure good learning. There could even be a situation where the class is quite and engrossed in their computer web based activity, but getting no lasting benefit from the activity. All activities, ICT or not, should challenge pupils thinking at a high level and try to make them better learners. It is impossible to separate engagement from getting pupils to think at a high level and making them independent learners—they are all linked.

Information and Communication Technology helps to develop simulated programmes in education, which are design to depict the real world happenings without the danger, expense or time needed to experience the actual event. They provide continuous feedback to the user regarding the status of the event and the opinions available. When it is considered that learning to read is process, it only makes good sense to teach reading in meaningful context.

There are many benefits of using information and communication technology in the teaching learning process.

1. There are no longer geographical boundaries for learning any concept. Full independence is giving to the learner to select desirable education.
2. It links learners to multimedia resource doing away with over dependence on textbooks. Learners will have access to online education.

3. It promotes independent, flexible according to one's own level and pace, a type of learning where learners take projects that relates to application of curriculum in practical aspects.

4. It allows individuals to use his/her multiple cognitive abilities to the fullest extent. It assures lifelong learning.

With the advent of Information and Communication Technology the learner is not just dependent on the teacher for formal interaction. A learner living anywhere in the world can pay fees through draft and get access to any course of interest through email and internet. One can refer to library resource in virtual system.

Using ICT in the classroom instruction, teacher educators would have enormous positive impact on different aspects such as,

- Teachers using ICT can plan and prepare lessons more efficiently and more effectively.
- Teachers become multi facilitators.
- It helps to promote interdisciplinary approach.
- Teaching-learning enterprise becomes more result-oriented.
- Helps the teachers in guiding the student’s needs and explore in the learning process.
- Develop effective teaching tools and designing of the modules.
All the above aspects would help in teaching the content and enrich their teaching profession.

The effective and efficient use of ICT depends on technically competent educators/teachers. They should be able to appreciate the potentiality of ICT and have positive attitude towards ICT. Four phases are conducted to implement ICT content in Teacher Education Program so that the student teachers when they become teachers in school would able to utilize ICT tools in classroom instruction in promoting flexible Learning Environment to meet individual learning objectives of the subject-matter content. The four phases are.

a. ICT literacy
b. Effective and efficient use of ICT hardware and software for teaching-learning activities.
c. ICT-based pedagogy, online support, networking and management, and
d. Adopting best innovative practices in the use of ICT.

All the above phases are very essential for the effective and efficient use of ICT in the classroom instruction. There is no doubt that ICT-integrated teaching helps a teacher to discharge his/her duty effectively.

1.5. ICT in Elementary and Secondary Education:

Due to the widespread use of Information and Communication Technologies (ICT), there is understandable interest in the impact of ICT
on teaching and learning. Although it is often claimed that computer technologies and the Internet have the potential to change both teaching and learning, teachers, have been subjected to public pressures to use new technologies before they have a clear understanding of their impact on classroom practices and student learning. Schools and classrooms are being equipped without adequate research or attention to the professional preparation of teachers.

Many studies show that preschoolers are “learning optimists” who rate their own abilities highly, underestimate task difficulty, and hold positive expectations of success. During middle childhood, children begin to distinguish ability, effort, and external factors in explaining their performance.

Enables greater learner autonomy, unlocks hidden potential for those with communication difficulties. It enables students to demonstrate achievement in ways which might not be possible with traditional methods and also enables tasks to be tailored to suit individual skills and abilities.

**1.6. Impact of ICT:**

Computers can improve independent access for students to education. Students with special educational needs are able to accomplish tasks working at their own pace. Visually impaired students using the internet can access information alongside their sighted peers. Students with profound and multiple learning difficulties can communicate more easily. Students using voice communication to gain
confidence and social credibility at school and in their communities. Increased ICT confidence amongst students motivates them to use the internet at home for school work and leisure interests.

1.7. Learning Aspects:

Teachers and learners no longer have to rely solely on printed books and other materials in physical media housed in libraries (and available in limited quantities) for their educational needs. With the internet and the world wide web, a wealth of learning materials in almost every subject and in a variety of media can now be accessed from anywhere at any time of the day and by an unlimited number of people. ICTs also facilitate access to resource persons - mentors, experts, researchers, professionals, and peers all over the world.

Attitudes:

Research supports conventional wisdom indicating that students who are positively disposed toward tasks or subject matter are likely to learn more and learn more easily. For this reason, student attitudes toward computer use could have an impact on their learning. Positive attitudes towards technologies allow for their productive use throughout life.

Another finding is also relatively clear: Despite years of initiatives to engender positive attitudes among women toward ICTs and improve their efficacy in using them, men and boys still have a higher computer self-efficacy and more positive attitudes towards computers than girls and women.
Attributions:

Positive attributions of academic success, fuel a sense of mastery and are part of a positive cycle of learning that is associated with academic success.

Motivation:

There has been a long-standing argument that the use of computers for instructional purposes increases motivation in children. The use of technology in classrooms increases pupils’ self-efficacy and motivation to study and succeed. ICT in the classroom environment is the best example of using computers and the impact of ICT can be seen by the projects that are structured and learning activities are realized by technological innovation. The design of the learning environment also includes the ratio of computers-to-students, affecting the size of learning groups that can be formed.

1.8. Information Technology for Higher Education:

Higher education is at the top of the education pyramid and determines to a large extent the state of the education system of the country, especially its quality. As such it has a responsibility towards the whole education system as it has towards the whole of society. Achieving education for all should therefore be one of the responsibilities of the higher education system. However, in reality higher education has been concerned mainly with human resource development for the modern economic sector, has served the elites of the society and has produced elites.
Higher education has an important role to play through its graduates who should provide leadership roles in education as researchers, teachers, consultants and managers, who should create and apply new knowledge and innovations, and who should provide analytical perspectives on developmental problems and service to public and private sectors. Higher education through its research function could identify the preconditions for a supportive policy context for the development of basic education and explore techniques of mobilizing resources.

Higher education can no longer be considered as a campus-based education for students of age group ranged 18-25 years. The arrival of computer and later the internet in 90’s opened a much wider horizon. In its short existence, the web has proven itself a worthy tool for education. A new model has emerged that combines in different ways, all means of electronic communication and computer, to provide a wide array of delivery options and new pedagogical alternatives to all levels (primary to higher), types (general, technical, professional, vocation) and systems (conventional, distance) of education.

Through its research, training and service programmes, it could contribute to build national technical capacity and contribute to strengthening the international solidarity. The development of basic education and literacy should be an explicitly recognized function of higher education as instruction, research and public service. An
institutional framework for the development of basic education is essential within the institutions of higher education.

1.9. Development of Basic Education through ICT:

Technological change provides new opportunities as well as challenges in the higher education sector as well as in teacher training. It is imperative that various opportunities thrown up are quickly and optimally exploited. The growth of technology, media and telecommunications convergence provides an excellent opportunity to deploy them in higher education.

ICT can be divided into two groups: traditional or old ICT (namely, radio and TV) and the new ICT (namely, the Internet and telecommunications). Learning through new ICT is also called “e-learning”. Recent studies show the enormous potential of e-learning, especially in industrialized countries.

National policy of Education (1986) included, utilization of media and ICT in teacher Education as the society change from information society to knowledge society. Today there is lot of pressure on formal education, in order to achieve our goals we must use ICT. There is an urgent need to develop new generation of learning material due to development in ICT.

1.10. Use of ICT in Education Institutions:

Every teacher education institution should be equipped with ICT resources so that after becoming functional ICT literates, teacher
educators can use ICT resources for accessing latest information in their content area and organizing multimedia-based classroom teaching and learning.

1.11. Computers

Computer is an electronic machine equipped with electronic circuits, keyboards, recording and storage facilities. Although it is called “a dignified calculating machine”, or a “glorified calculated”, it has a unique capability of memorizing heaps of information and reproducing them when ever necessary. The procedures of languages used for recording and retrieving information are specific and peculiar. Hence, programming involves great knowledge and skills which call for training and experience for manipulation and translation of the information.

It works on the principles of prolonged learning that aim at individualized instruction to meet the special needs of individual learners. The computer is a flexible as well as powerful devise which can cater to these needs by storing, processing and retrieving information.

In data processing, efficiency of the computer cannot be over estimated. It can make very complicated calculations in a split second. It has proved its wonderful capabilities and is regarded as the most important invention after the birth of the printing process. It may be said that as the printing machine has enlarged the scope of communication, the computer has broadened the field of information and data processing.
As the twenty-first century unfolds, one of the top issues in education is the use of computer technology in the classroom. Although in many instances, important strides are being made to integrate computer technology into the various school subjects, concern exists among educators that computers are still underutilized by a large segment of the teachers. Over the span of one decade, the number of computers and related classroom technologies has increased substantially.

Currently, schools are adding technological equipment at a high rate, however, contemporary research reveals that the average Indian school still makes inadequate use of computers and substantial number of schools have very restricted access to technology of any kind. In addition, there is a growing concern that teachers are not taking advantage of the technological equipment that is available. Many teachers still cling to traditional methods of teaching and make little use of the computer except for reward activities or events outside of the prescribed curriculum. Finally, quality in-service programs offered to all teachers have not kept pace with the technological advances available and teacher training has also fallen behind in this area.

Today computers are used not only for mathematical purposes, but also as educational tools in different institutions. As a technological tool, a computer has the capacity to improve the teaching learning process.
1.12. Computer and Education:

According to Eric Ashby (1967), mankind is now in the midst of the Fourth Revolution in Education - the age of electronics, which comprised radio, television, audio/video recorder, computer and so on. ‘To be less knowledgeable about the basic aspects of computer technology is to be less able to participate in our culture’ - Fetler, 1985. This is true in case of countries like India.

The Programme of Action (POA) 1986 has rightly pointed out that several efforts have been made in the past to use technological aids for improving the quality of education.

Computer education has been popular in the country at various stages of education. The Computer Literacy and Studies in Schools (CLASS) Project has been implemented in hundreds of schools and with availability of micro computers their, the students have been familiarized with the application and potentiality of computer as learning medium.

In 1998, the UNESCO in its World Education Report “Teachers and Teaching in a Changing World” described the radical implications of ICT in the conventional teaching learning processes. Now in the present situation, ICT has become an important integral part of the curriculum of teacher education.

The National Curriculum Framework work (2005) calls for a greater critical awareness on the part of curriculum developers and the teachers to ensure that local knowledge does not reaffirm existing regressive
ideas. ICT integrated teaching helps a teacher to discharge one’s duties effectively.

We can precisely define computer as “a device that process given data to derive the required and useful information”. The learning process can be enriched in many subjects because of the scale and range of information provided by computer data banks. Knowledge can be extended by the computer’s ability to carry out lengthy and complex calculations at great speed. Use is increasingly being made of the computer as a resource in teaching and learning at all levels of education. Microcomputers are used by students in secondary education and increasingly pupils at primary level are being introduced to computers. Higher education, with its research activities, is supported by a proliferation of computing equipment and powerful installations. In addition, computers are used as a training aid in industry, business and commerce, and to help train people how to use computers and computer packages.

Instructional material can be prepared and stored within the computer in the form of programs, which are carefully structured to teach specific lessons. Typically, some information is presented and then a question asked. Provided the correct answer is given the next step can be attempted. When the response is incorrect the information is repackaged and the question asked again. This drill and practice approach is known as CAI (Computer Assisted Instruction). This form of
teaching aid has been used successfully to supplement more formal teaching methods and can be particularly useful for remedial purposes.

Students in higher education, particularly those studying science and technology, can also benefit from being able to use computer as a computational tool. They learn a programming language and write programs to solve some of their course work problems, treating the computer as an aid in much the same way as a slide rule or set of mathematical tables, or they may simply make use of a software package for which it is only necessary to provide data to obtain results.

The computer can ease the load of administrative duties, leaving the teacher more time to concentrate on teaching. For example, the computer can be used to assist in building timetables; to monitor and schedule teaching resources; to build up and maintain comprehensive student records in order to provide a complete student profile; and to accumulate information for assistance with careers guidance.

The first computing projects were undertaken in university laboratories and scientific institutions to develop computers for special purposes. In science, the advent of computers has meant that calculations, which were previously beyond contemplation, because of the time-span and drudgery involved in carrying them out, have now become possible. This has greatly accelerated and expanded research in the areas likes physics, chemistry, astronomy and genetics. More recently there has been an increasing use of computers of research and data analysis in less mathematical areas such as medicine, the social
sciences and even the humanities where applications include concordances, textual criticism and stylistic analysis.

We, the mankind have witnessed many eras from times immemorial, right from the Stone Age to the current computer era, where every possible thing is being computerized, we cannot now imagine a world without computers, they have become an integral part of the human race. This computerization is the result of the man’s search for better and more comfortable living a hassle free world.

Computer can be defined as a machine, which processes the given data to arrive at useful information. The process is done with the help of relevant software, which is a set of instructions, given to the computer. These set of instructions are called software programs, which make computer work and get the required task done. The computer would be a waste thing, without a software which do wonders.

Computer works basically on data, which is collection of raw facts and figures about any thing which is relevant to the organization. This data is collected mainly through two sources, the primary source of collecting data directly by interacting with people, operations etc. and the secondary source, which is printed magazines, newspapers, journals etc. The data collected is processed to give meaningful information. This data usually describes basic facts about the activities of any system, may be an educational institution, business organization, business environment and so on. It is generally composed of names, numerical figures, dates, monetary elements and so on.
These facts usually are voluminous and one cannot analyze anything nor come to a conclusion, without arranging it in a meaningful form, this can be done by processing the data. This processed data is known as information. It is this information which is used directly by mankind as it helps in the process of decision making. For example time-table, pay slips, tables etc. which are nothing but processed data.

1.13. Use of Computers in Education

Just a few years ago, using computers in education primarily suggested a handful of teachers experimenting with email and web pages. In a relatively brief length of time, perceptions of computer-based education have changed from debates over the ability, or inability, of learning communities to be formed, to cautionary warnings that students will be deprived of needed educational opportunities if their classroom-based courses do not make use of the computer technology.

Computer could be used in the classroom in different ways.

- As a Tutor: i.e., as an aid to the tutor. The computer can be used to provide instruction in a variety of strategies. Instruction using computers include drill and practice, tutorials, simulations, problem solving and instructional gaming.

- As a tool: i.e., as a medium of instruction: The availability of computers, databases and spreadsheets has helped the teachers to improve their efficiency and effectiveness.

- As a Tutee: i.e., as something to be instructed or programmed.

The computer provides the student an unrepresented opportunity
to have access to an uncontrolled responsive environment, which has an effect on the development of their intellectual and creative potential.

- As a Teaching Resource: As a teaching resource the computer can offer a number of interesting possibilities like,
  - Sound effects and analysis
  - Static and dynamic imagery through computer graphics.
  - Text handling facilities
  - Control of external devices and of learning progress
  - A variety of data capture techniques
  - Facilities for data archival, retrieval and dissemination.
  - A means of achieving highly individualized instruction.
  - Facilities for pattern matching, computation and decision making.

- As a technique of Research: The fact that computers can perform complex numeral problems would account for their widespread use in research. Problem solving which normally involves calculations extending for months can now be condensed to computer operations extending to just a few minutes. Solutions of problems using factor analysis used on social research, involving 30-40 variables often involve very complex transformations. This would require months of labour, if manual methods were used. Other parallel instances of this kind are research problems
involving the solution of partial differential equations used in engineering, dynamic system analysis, modelling etc. computers have immense possibilities as a direct research technique.

- As Information storage, retrieval and dissemination: Computers have come to occupy an important place in respect of information storage, retrieval and dissemination. The vast potentiality of computers to store, process and even interpret information is know being widely used in libraries and information resource centres in all advanced educational systems.

Internet-based education is an update of distance education. Computers, modems, and the Internet have replaced the instructional media of the post office and television.

All available information points to the inevitability of more use of technology in education. As indicated so clearly in the Department of Commerce report alluded to earlier, dramatic change has been taking place almost unnoticed for some time. The Internet has "won" the technology struggle for primacy in education (Carroll, 2000). It is displacing textbooks, CD-ROMS and other packaged learning content because it supports interactive communication and the collaborative, constructivist approach to learn that has become the dominant transfer of knowledge theory. The Internet is also important to students because of the work world of today, and certainly tomorrow, is all about learning. Employers cannot survive unless their workers are "knowledge workers" who are able to use technology to improve their knowledge and
productivity (Carroll). Students must be prepared to participate in this work world. Textbooks cannot present all of the knowledge available and essential to learners today. Internet access has become necessary and students recognize that they have more powerful learning opportunities available outside the traditional classroom than within it.

Computer technology offers great scope for teachers and students to work in innovative and interesting ways. Many websites offer content, assignments, practice modules, learning objects and projects in various subjects across all grades many student teachers have blogs for their classes to post daily entries.

**Virtual Schools:**

Online instruction is the most recent form. It is commonly termed as distant education that incorporates satellite courses, computer based programs, video instruction educational television and correspondence or home study courses. These methods attempt to move educational opportunities out from a traditional centralised classroom.

Virtual schools can be a solution to inequities in educational opportunities that exist due to factors such as geographical location, school size, demographics of income and race/ethnicity, budgeting constraints, and substandard teachers. Computer-based instruction is now offering students in low-income schools, rural areas, and small towns the same preparation for college courses and career demands previously available only to learners in well-funded urban and suburban population center schools.
1.14. Applications of Computer in Teacher Education

Teacher Education is struggling to provide their students with necessary knowledge, skills and valued system and to prepare good citizens for lifelong learning due to environmental changes. To meet these challenges, teacher education has to focus concurrently on expanding access, improving internal efficiency, promoting teaching-learning and improving classroom processes through the new emerging ICT. It facilitates the educational transaction between providers and users by keeping students well informed about the courses, enhancing teacher student relationship through e-mail chat sessions, online learning, discussion forum, blogs etc., enhancing active learning, sharing ideas, providing immediate feedback, encouraging paced learning and allowing for effective mapping of learning path ways. It also helps the teacher-educator to develop or improve their lesson plans and also to find free animation and simulation to enliven their lessons.

The National Council for Teacher Education (NCTE) has launched a new project for integrating technology in education. The XPDITTE (X-Elerated Professional Development in the Integration of Technology in Teacher Education) project to provide professional development in technology integration to all teacher educators across the country. The objectives of the project are to impart sustained professional development to all teacher educators from all the recognized institutions of teacher education across the country and to
make information technology (ICTE) as integral part of the teacher education curricular.

1.15. Significance of Computer Education:

Education for modernization involves developing original thinking and modern thinking. It ultimately leads to develop modern values among students. Modernization is an opposite concept of traditionalism. India being traditional, it is full of old traditions and superstitious beliefs. Therefore education has to cultivate modern and scientific thinking, encourage new ideas, driving superstitious beliefs. Only then Indians will compete with other Nation’s progress on par with the developed nations. It can be done only through the process of modernization, which can be speeded up or accelerated through education. This is an observation of the Kothari Commission.

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

Our Government is spending so much of money on education. Our education is not able to progress our nation and is not able to increase productivity. This is all because of lack of scientific and technical development. Today’s world is full of computers. There is a lot of development in computer technology. Computers are beginning to enter practically in every activity of human life. It is, therefore necessary that every one has some idea of what computers are, how these computers work, and why should we use them. Therefore there is a necessity for computer education to overcome certain problems. So computer education has been introduced in Private and Government schools, and also in the colleges of education recently.

**E-learning:**

By practicing e-learning, student can get wide and contemporary knowledge without going to verify the books and upgrade knowledge. Moreover it is cost effective and time bound effect.

- Learning programme can be accessed any time convenient to the learner.
- Learners can be at any place to log on.
- A synchronous interaction providing participants and tutors with time to prepare their responses leading to succinct and to-the-point interaction and on-track, thoughtful and creative conversations.
• Enhanced group collaboration creating shared electronic conversations which can be more thoughtful and permanent than voice conversation. Aided by group coordinators, these sessions can be powerful for learning and problem solving.

• New educational approaches can be used. For example, faculty from anywhere in the world, faculty teams with different specialties can be put together and innovations of teachers can be shared along themselves for improvement and adaptation.

• Recently developed Intelligent Computer Assisted Instruction (ICAI) programmes are able to generate and solve problems, diagnose students’ misconceptions, select appropriate teaching strategies and carry on dialogues with students based on indepth studies by researchers on how people think, learn and solve problems.

However, these advantages are out of reach of most developing countries, where power and telecommunication facilities are scarce and where television and other forms of distance education cost less. One has to look for alternatives with the new ICT. As in the case of higher education, there are four ways ICT can support basic education:

• Supporting education in schools,

• Providing non-formal education for out-of-school children and adults,
• Supporting pre-service distance education of teachers and their in-service professional development, and

• Enhancing the management of schools.

**Supporting Education in Teacher Education Institutions:**

ICT can provide access to information sources, enable communications, create interacting learning environment and promote change in methods of teaching. Quality and access to up-to-date and relevant materials can be improved while offsetting some costs of textbooks. However, the improvement in quality resulting from the new ICT is yet to be justified with the cost in developing countries. Radio is still the most cost-effective ICT for enhancing quality in school education. However, with the falling cost of hardware, maintenance and Internet access and increasing extension of telecommunications and power infrastructure, it is expected that the benefits of using new technology in the schools of developing countries will exceed the costs.

**Integrating Information and Communication Technology in Teacher Education:**

In the educational field, teaching has taken on gradual transformation where students are no longer restricted to learning the basics of reading, writing and arithmetic, but they are prepared to face the world with all that have learned in school. Educational system around the world are under increasing pressure to use innovative methodologies and integrate new information and communication technologies (ICT) in the teaching and learning process, to teach
students the knowledge and skills they need in the 21st century, with emerging new technologies, the teaching profession is evolving from an emphasis on teacher centered, lecture based instruction to student centered, interactive learning environments.

The teacher force of tomorrow will need an ART i.e., Alliance, Readiness, Team work, to learn more and re-new knowledge at every stage of life with the spirit of solidarity and willingness. In this scenario, ICT holds its capability to gradually transform and re-mould education in India. In India during the post-independence era indebt reviews of educational policies and practices have been undertaken at various levels and stages. The policies were reformulated based up on analysis of the existing system, availability of the expertise, resources, possibility of optimum utilization of the same to meat the evolving learning needs of the learners and the pupil and to face the new challenges emerging in a changing world.

Thus, education has responded in varying degrees to new methods, approaches, techniques to enrich the teaching learning process with the help of educational technology and now the present day information and communication technology (ICT). The national policy of education of 1986 and the programme of action documents brought out in 1986 and 1992 highlighted the importance of information technology in the context of education. Information technology was realize as the key factor in the context of globalization for localizing the
globe. The potentiality of ICT is such that it can bring forth the entire
globe with just a click of the young learner.

With the objectives of generating computer literacy India launched the first project called Computer Literacy and Studies in Schools (CLASS) in 1984. The Program of Action (1986) visualized that computers would make the teaching learning process efficient and effective and would also promote creativity on part of students.

For any innovation to be successful it is imperative that one realizes the importance of the role of technology in bringing change and its implications for education. The learning process inspected as selective filtering of experiences, co-ordination of information and construction of knowledge. The biggest challenge of information and communication technologies to education being able to realize the same. The focus of school computing globally is to enhance integration of information and communication tools in to the schooling process. This archetype needs the support of frame work for enhancing learning opportunities, and hence, the system of education must attach utmost importance to training of teachers. The training institutions must invest in training of teachers to adopt appropriately to the new world and to integrate technology into curriculum and schooling. This training can be done at pre-service stage and in-service stage. This is a big task before teacher educators of today.

With a view to train student teachers to make use of ICT in school education, a compulsory course at B.Ed., level was introduced by the
Department of Education. Further, a momentum of training student teachers in computers took place in the year 2002-2003 after Intel Teach to future programme for teacher educators. Many experiments were carried out with the novice teachers of the academic year 2003-2004 who were associated with the researchers for practice teaching. The incorporation of ICT in school education by student teachers includes not only integration of ICT in delivering lessons but also helping school students to make use of ICT tools for doing assignment work in the school. It was a challenging task for the researchers to promote `technological culture among student teachers. ICT training was found to have impressionable impact on the teaching learning process of student teachers. Researchers could see a remarkable change in their attitude towards ICT tools. This change was perceived in the terms of their appeal to have up to date knowledge in the related field, latest information, various innovative methods and approaches of teaching. Student teachers found the use of Internet highly useful and demanding in the process of learning. The introduction of ICT in schools has brought about a more positive attitude among learners. Since, ICT offers greater diversity of learning based on projects, activities and exercises than traditional classroom offerings, students interests and motivation was seen in-terms of the feedback received from them. As per the need ICT has been integrated into the regular curriculum in the form of a compulsory subject. All the students of the B.Ed., will be given training in ICT tools.
Experience of implementing technology indicates that this task can be taken up in phased manner. First an exchange phase where traditional practices still occur but at the same time new technologies are used. Second a change over phase where new practices begin to appear and well established practices are will be questioned. Third a change phase, where new technologies make possible new practices. What is required is a change in the mindset. This would require considerable amount of collaboration.

1.16. Need for the study:

Computer Education has been a compulsory subject in the teacher education programme to equip the teacher educators with the fundamental aspects of Information and communication technology and for using computer as an associate in the classroom at the same time in helping the teachers to equip themselves with the skill of using computers for ICT oriented activities.

The impact of the programme had been monitored by the performance of the student teachers by their performance in both theory and practical components. Due to the over loaded programme of teacher education in the recent past and due to the shortage of time for implementing ICT oriented teaching practice in colleges of education, there is a great need to find out the Impact of Computer Education in Teacher Education Programme in colleges of education. Previous investigations in the field of education dealing with the application of computers in the teaching learning process were limited in number with
teacher educators working in college of education. Hence an attempt is made by the investigator to study the perceptions of teacher educators towards application of Computers in Teaching Learning Process.

1.17. Statement of the Problem

Considering the importance of computers in the teaching learning process and related aspects, the present investigation focuses on ‘A study on the Perceptions of Teacher Educators towards Application of Computers in Teaching Learning Process’.

1.18. Objectives of the Study

The present study was undertaken with the following objectives.

1. To study the perceptions of teacher educators towards application of Computers in Teaching Learning Process.

2. To study the relationship between various aspects of Teaching Learning Process on the application computers.

3. To study the influence of various variables like District in which college is situated, Designation of the Teacher Educator, Gender, Age, Locality, Management of the College, Subject of teaching, Educational Qualification, Teaching experience, etc. on the perceptions towards application of Computers in Teaching Learning Process.

1.19. Hypotheses of the study

1. There will be no significant relationship between Presentation Facilities, Computer Awareness, Computer Operational Skills, Internet Applications, Computer Based Evaluation and overall

2. There will be no significant difference between Krishna, Guntur and Prakasam districts of teacher educators perceptions in the aspects of Presentation Facilities, Computer Awareness, Computer Operational Skills, Internet Applications, Computer Based Evaluation and overall response towards application of Computers in Teaching Learning Process.

3. There will be no significant difference between male and female teacher educators perceptions in the aspects of Presentation Facilities, Computer Awareness, Computer Operational Skills, Internet Applications, Computer Based Evaluation and overall response towards application of Computers in Teaching Learning Process.

4. There will be no significant difference between below 35, between 35 to 45 and above 45 age group teacher educators perceptions in the aspects of Presentation Facilities, Computer Awareness, Computer Operational Skills, Internet Applications, Computer Based Evaluation and overall response towards application of Computers in Teaching Learning Process.

5. There will be no significant difference between rural, urban and semi-urban area teacher educators perceptions in the aspects of Presentation Facilities, Computer Awareness, Computer

6. There will be no significant difference between Principal and teacher educators perceptions in the aspects of Presentation Facilities, Computer Awareness, Computer Operational Skills, Internet Applications, Computer Based Evaluation and overall response towards application of Computers in Teaching Learning Process.

7. There will be no significant difference among teacher educators perceptions based on their teaching experience in the aspects of Presentation Facilities, Computer Awareness, Computer Operational Skills, Internet Applications, Computer Based Evaluation and overall response towards application of Computers in Teaching Learning Process.


9. There will be no significant difference among teacher educators perceptions based on their teaching subject in the aspects of Presentation Facilities, Computer Awareness,


1.20. Variables of the Study

The following variables incorporated in the sample drawn from the teacher educators for the present investigation as:

<table>
<thead>
<tr>
<th>Variables of the Study</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. District</td>
<td>Krishna / Guntur / Prakasam</td>
</tr>
<tr>
<td>2. Gender</td>
<td>Male / Female</td>
</tr>
<tr>
<td>3. Age</td>
<td>Below 35 Yrs/ 35-45 Yrs/above 45 Yrs</td>
</tr>
<tr>
<td>4. Locality</td>
<td>Rural / Urban / Semi-Urban</td>
</tr>
<tr>
<td>5. Designation</td>
<td>Principal / Teacher Educator</td>
</tr>
<tr>
<td>6. Teaching Experience</td>
<td>Below 5 / 6 - 10 / 11 - 15 / 16 - 20 / Above 20 years.</td>
</tr>
<tr>
<td>8. Teaching Subject</td>
<td>Telugu / English / Mathematics / Physical Science / Biological Science / Social Studies / Foundations of Education / Educational Psychology / Educational Technology and Computer Education / School Management and Systems of Education / Personality Development and Communicative English</td>
</tr>
<tr>
<td>9. Management</td>
<td>Government / Private</td>
</tr>
</tbody>
</table>
1.21. Operational Definitions

1. Teacher Educators:

Any person male or female teacher educator or principal working in colleges of teacher education, a part of the total sample (200) who answered the opinionnaire and whose responses were considered in the analysis.

2. Teaching - Learning Process

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

1.22. Delimitations of the study

The researcher limited her study to know the perceptions of teacher educators working in collages of teacher education towards the application of computers in the teaching learning process. Further, the study was also delimited to collect data from the teacher educators both male and female working in colleges of education for secondary school
teacher trainees covering urban and semi-urban localities of Krishna, Guntur and Prakasam Districts of Andhra Pradesh State.

1.23. **Chapterisation**

The study was organized into five chapters:

Chapter I comprises the introduction on teacher education; ICT, computer and education. Use of computers in education, computers use in teacher education; need of the study, statement of the problem, objectives of the study, Hypotheses of the study, variables of the study, operational definitions of the study, delimitations of the study and organization of the study.

In Chapter II contains the review of related literature from previous studies both in India and abroad on computers use in teacher education.

Chapter III deals with the research methodology including relevant statistical competencies.

Chapter IV pertains the Analysis and Interpretation of Data. and Chapter V presented the Summary, Conclusions and suggestions for further research.