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A SURVEY ON E-EDUCATION OF INFORMATION AND COMMUNICATION TECHNOLOGY

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ABSTRACT: *Education is the phenomenon and process of life time learning and teaching and training methods which cannot be bounded into colleges, schools and universities. In this phenomenon ICT has played a great and vital contributory role and which create smooth and flexible educational and training and teaching environment. ICT has played revolutionary role in the collecting and sharing knowledge and information to the students and teachers through WWW (World Wide Web). An even villager also gets updated in their knowledge by collecting reference books course materials, educational tutorials through www. ICT has opened the door of various courses and training planes of Open universities, Distance educational Institutes to the households and professionals, even by accessing these courses and training sessions while seating in their homes and offices easily smoothly. Educational training session can be conducted as well as accessed without any geographical bindings with less spawn of time anywhere else. Now a day's television and internet is also a great source of propagating the knowledge and information through ICT, where the formers and agriculturists can be learn new methodologies and the concepts which can be benefited to their agriculture field. Now a day's most of the educational institutes also conducting online exams and tests through which human mistakes can be avoid In this paper we take a review and survey of Information and communication technology in educational fields and how it brought a Digital educational revolution in the form of e-education.*

KEYWORDS: ICT, Internet, E-leaning, E-education, Internet.

INTRODUCTION

Definition

ICT can be define as it is the source in which information can be collected, then it store and processed, and after processing, Information can be transfer or send from one station to another station through digital electronics and communication medium. In this wide concept all are those technologies are integrated which are used as a communication media like Radio, TV, Video, Satellite services, Computers and computer networks like Internet and its all co associative services like video conferencing, E-mail ,blogs etc ,hardware's and software's . After the decades of 80's with rapidly success the Information and communication technology (ICT)is a quite modern and

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smoothly adoptable technology in teaching and education, And it has fulfill all the necessarily Educational requirements by initiating services as per the educational demands with help of world wide web and internet.

Internet as a Resource

In 1973 internet is being introduced, to transfer the files and information. Later on in 1977 Apple and commodore open the door of personal computers and so computers could be connected through the networks for the said purposes to transfer files and information and hence the gateway of Information and communication technology is opened. In 1989 Robert Cailliau [1] and Tim Berners-Lee at CERN in Switzerland put forward a proposal for the management of documents using computers. Management at CERN received the proposal as 'vague but exciting [1] Cailliau and Berners-Lee envisaged a service that could share files, documents, information, dialogue, graphics, sound files and more. They called this service the World Wide Web (WWW). Networking using the WWW continued frenetically until in 2001 the dot com crash rationalized the services that could be provided and consolidated the first round of the WWW for the provision of information globally Throughout this entire period, a computer and desktop software needed to be purchased and software installed[1].

ICT at a Glance

According to Daniels [2] ICTs have become within a very short time, one of the basic building blocks of modern society. Many countries now regard understanding ICT and mastering the basic skills and concepts of ICT as part of the core of education, alongside reading, writing and numeracy. However, there appears to be a misconception that ICTs generally refers to 'computers and computing related activities'. This is fortunately not the case, although computers and their application play a significant role in modern information management, other technologies and/or systems also comprise of the phenomenon that is commonly regarded as ICTs. Pelgrum and Law (2003) state that near the end of the 1980s, the term 'computers' was replaced by 'IT' (information technology) signifying a shift of focus from computing technology to the capacity to store and retrieve information. This was followed by the introduction of the term 'ICT' (information and communication technology) around 1992, when e-mail started to become available to the general public [3]. According to a United Nations report (1999) ICTs cover Internet service provision, telecommunications equipment and services, information technology equipment and services, media and broadcasting, libraries and documentation centers, commercial information providers, network-based information services, and other related information and communication activities.

Teaching and Learning Friendly Environment of ICT

The field of education has been affected by ICTs, which have undoubtedly affected teaching, learning and research [4] .ICTs have the potential to accelerate, enrich, and deepen skills, to motivate and engage students, to help relate school experience to work practices, create economic viability for tomorrow's workers, as well as strengthening teaching and helping schools change [4][5][6][7] Coughlin, 1998.In a rapidly changing world, basic education is essential for an individual be able to access and apply information. Such ability must find include ICTs in the global village.

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Smooth Accessibility of Education through ICT

ICT increases the flexibility of delivery of education so that learners can access knowledge anytime and from anywhere. It can influence the way students are taught and how they learn as now the processes are learner driven and not by teachers. This in turn would better prepare the learners for lifelong learning as well as to improve the quality of learning. In concert with geographical flexibility, technology-facilitated educational programs also remove many of the temporal constraints that face learners with special needs [8].Students are starting to appreciate the capability to undertake education anywhere, anytime and anyplace.

Revolutionary contribution of ICT in education

One of the most vital contributions of ICT in the field of education is- Easy Access to Learning. With the help of ICT, students can now browse through e-books, sample examination papers, previous year papers etc. and can also have an easy access to resource persons, mentors, experts, researchers, professionals, and peers-all over the world. This flexibility has heightened the availability of just-in-time learning and provided learning opportunities for many more learners who previously were constrained by other commitments [9]. Wider availability of best practices and best course material in education, which can be shared by means of ICT, can foster better teaching. ICT also allows the academic institutions to reach disadvantaged groups and new international educational markets. As well as learning at anytime, teachers are also finding the capabilities of teaching at any time to be opportunistic and able to be used to advantage.

Mobile technologies and seamless communications technologies support 24x7 teaching and learning. Choosing how much time will be used within the 24x7 envelope and what periods of time are challenges that will face the educators of the future [9]. Thus, ICT enabled education will ultimately lead to the democratization of education. Especially in developing countries like India, effective use of ICT for the purpose of education has the potential to bridge the digital divide. India has a billion-plus population and a high proportion of the young and hence it has a large formal education system. The demand for education in developing countries like India has skyrocketed as education is still regarded as an important bridge of social, economic and political mobility [10]. There exist infrastructure, socio- economic, linguistic and physical barriers in India for people who wish to access education [11]. This includes infrastructure, teacher and the processes quality. There exist drawbacks in general education in India as well as all over the world like lack of learning materials, teachers, remoteness of education facilities, high dropout rate etc [12]. Innovative use of Information and Communication Technology can potentially solve this problem. Internet usage in home and work place has grown exponentially [13]. ICT has the potential to remove the barriers that are causing the problems of low rate of education in any country. It can be used as a tool to overcome the issues of cost, less number of teachers, and poor quality of education as well as to overcome time and distance barriers [13].

LITERATURE REVIEW

Practice and Learning by ICT

The Internet has fundamentally changed the practice of teaching and learning during the last ten years, especially in colleges and universities that are well equipped with new technology. This fact is

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most evident in the transformation of universities which offer distance learning and try to exploit benefits of challenging information infrastructure and communication technology for its core performance, with desire to improve quality and reduce costs of teaching provided to student's .Computers and Internet connections are becoming widely available in schools and classrooms. In 1999, 99 percent of teachers in the United States had access to a computer in their schools, and 84 percent had one or more computers in their classrooms. At the same time, Internet connections were also widespread, with 95 percent of schools and 63 percent of classrooms having access. Worldwide, many countries are making the creation and diffusion of information and communications technology (ICT) an important priority. Even in developing countries, usage is increasing dramatically. If computers were available in classrooms during this time period, their use mirrored this dominant mode of instruction; that is, they were primarily used to present passages of text and test students' comprehension and memory for information contained in the passages. Research on learning has demonstrated the shortcomings of this type of instruction. Students often forget memorized information, or they fail to apply it in situations where it would be useful [13].

ICT Tools and Technologies in the Form of E-Learning

A successful e-learning experience will use a combination of the technologies most appropriate for the practitioner, the learner group, the course content and course assessment. Central to e-learning success are communication technologies which are generally categorized as synchronous or asynchronous. Synchronous activities happen at the same time and involve the exchange of ideas and information with one or more participants. Synchronous activities occur with all participants joining in at once, as with an online chat session or a virtual classroom. Virtual classrooms (also virtual conferences or web conferences) allow practitioners and students to interact in real time from their own computer using text chat, live voice, and interactive whiteboards.

- **A Learning Management System (LMS)**

is software for delivering content, tracking students and managing training. Practitioners set up a course web page to hold learning content and assessments, then track and manage their students with tools like grade books and activity reports.

- **M-Learning Or Mobile Learning**

covers learning with portable technologies like mobile phones, or PDAs (personal digital assistant), where the focus is on the technology (which could be in a fixed location, such as a classroom); learning across contexts, where the focus is on the mobility of the learner, interacting with portable or fixed technology; and learning in a mobile society, with a focus on how society and its institutions can accommodate and support the learning of an increasingly mobile population that is not satisfied with existing learning methodologies[13][14].

- **E-LEARNING**

E-learning with its original name in English has become ubiquitous "brand", the trademark for an Innovative approach of teaching new generation of students. Its subset, online learning, is the focus of Attention, both because of its increased use at all educational levels and numerous analyses of Positive and negative aspects of this teaching method [15]. E-learning usually takes the form of online courses. Element of the course is learning object. Contents of the course are obtained through

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compiling and organization of learning objects. The concept of objects is standardized in a rigorous form of established procedures of how these pieces of content are compiled and organized into courses and packages for delivery on the Internet. Learning Management System (LMS) is the dominant technology that is now used to organize and deliver online courses.

How Technology Enables And Resolves The Educational Problems?

One major challenge for teachers interested in problem-based learning is locating problems that are appropriate for their students and for the topics that they need to learn. Problems must be complex enough to support sustained exploration and encourage collaboration, and they should have multiple interrelated parts to develop students' ability to break problems down and organize their solutions. Representing and communicating such complex problem situations is an important function of technology. Unlike problems that occur in the real world, technology can incorporate graphics, video, animation, and other tools to create problems that can be explored repeatedly. Multimedia representations are easier to understand than problems presented as text. One example of using technology to present problems is the mathematical problem-solving series, The Adventures of Jasper Woodbury. Each problem in the Jasper series is presented as a video story that ends when the main character experiences a problem that can be solved using math. Using technology that can be easily searched and paused for inspection, students search the video looking for clues to help them understand and solve the problem. In addition to observing research activities, students are able to ask questions and get immediate answers from the scientists. Whatever type of technology is used, an important goal is to create problem representations that are interactive and under the learner's control. The student creates a plan for investigating the problem, and the technology creates an environment that makes flexible exploration possible [16][17].

- **Facts and Finding and Its Effectiveness**

The demographic data about accessed academic staff and preservice students is below.

- According to departments, the percentages of preservice teachers were as follows: Computer and Instructional Technology Department 18,1 %, Elementary School Mathematic Teaching Department 15,5%, Turkish Language Teaching Department 8,6%, Foreign Language 24%, Elementary Education Department 17,8% and Preschool Education Department 13,5%.
- The distribution of student according to grades were; Elementary education 1st grades 39,5%, 2nd grades 35,5%, 3rd grades 16, 4% and the 4th grades 7,6%.
- The percent of female students were 80,3 while the male students' percent were 15,5. 81,6% of students from Faculty of Education have own home computers with 54,9% Internet connection.
- The 35,5% of subjects pointed out that they used computer less than one hour daily, and 15,5% of them used 1-3 hours and only 4,6% of them used longer than 5 hours in a day.
- 17, 4% of participants mentioned that they have been computer less than one year, and 25% of them have been used it for 1-3 years, 18,8% of them have been used it for 3-5 years and 33,6% of them have been used computer for over 5 years.[18]

- **Perceptions Of Teachers**

It is necessary to provide one computer for every 6 students in a classroom setting for effective and efficient usage of technology. However, the existing settings are far from this reality and there is only one computer available for 12 students. The board, printed materials and overhead projection

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are widely used technological tools in classroom settings. The educational software is used very rarely in- and out of classroom. These results imply that the conventional instructional methods and technologies have been used and confessed in classroom settings unlike new approaches. The 25% of preserves teachers stated that the instructional media have been used efficiently in the courses of educational faculty they study. They maintained that academic staff use mostly board (99%), and overhead projectors (93%) printed materials (93%) during the courses. They pointed out that computers (85%), TV and video (70%) and overhead projectors (60%) should be used definitely and extensively during the courses.[18].

Educational Resources through ICT

A second function of technology in problem-based learning environments is locating information needed to solve problems or do other kinds of research. In the past, teachers attempting a problem-based curriculum felt the need to limit problems to those for which they had expertise or the local library had resources. Now the World Wide Web brings a seemingly endless amount of information on almost any subject, and it is possible for students to choose topics based on personal interest rather than availability of resources. Internet research projects are gaining rapidly in popularity. In the spring of 1998, 30 percent of teachers surveyed (and 70% of those with high-speed Internet connections) reported they had assigned Internet research tasks for their students during the school year. Use of the Internet to gather information for solving problems sometimes resembles a modern version of library research, in which students gather and synthesize information from published reports. Despite the fact that the task seems traditional, the characteristics of this new medium require special skills for students. The sheer volume of information allows students to study almost any topic, but also makes it more difficult to locate precisely the right information from among the thousands, or even millions, of sites that might be located. In addition, the ease of publishing and accessing materials on the Internet increases the likelihood that students will encounter inaccurate or biased information. As a result, students must learn new strategies for conducting searches and evaluating the information that they retrieve [19].

Fig: 1 ICT Educational Resources

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METHODOLOGY

A. What Is the Digital Education Revolution System Of ICT?

There are certain keys on the base of ICT has brought the Digital education revolution

1) It insists on learning methodologies except teaching.
2) In the environment of digital educational revolution ICT insist to a student to act not only as a passive listener but it act as a active agent
3) In this system student oriented syllabus is always updates frequently.
4) With the help of E-learning unconnected learners can learn anywhere else.
5) It provides online scale and evaluation.
6) It organized well provide discipline to the educational institutes.

B. Impact of ICT on Education

1) As school official timings enabled limited time for the students, but through ICT there is no time bounding for the students and learners even they can learn from their own houses as well.
2) ICT can provide wide spectrum global subjects to the schools and colleges from rural areas where there are a unavailability of teachers, like mathematics, science and international linguistics.
3) Retired persons can serve their expertise in the better way through ICT at outskirts school and colleges.
4) It provides opportunities of exercise to the students depending their timings and skills.
5) It provides global information and solution to the students through Internet to solve their queries.
6) It enables all worlds globe into a single classroom.
7) It motivates to learning and reading to the students.
8) It allows sharing and explaining the ideas among the students in the form of debate, conversations.

	Traditional system
Syllabus	Limited with the institutes
Lessons	Limited with the particular periods
Teaching and learning methods	Homogenous :- 1) only educational institutes 2) Traditional students 3) Face to face interaction 4) Teaching According to the

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	instructions
Interaction in classroom	Oral teaching method
Administration and control	Traditionally
Evaluation	Traditionally, oral, written, observations

Table1: Educational traditional system

ICT based system
According to students needs
Fast changing
Heterogeneous 1) Any where any time 2) Digital age students 3) Electronic interaction 4) Constructive and non centric teaching and learning
Homogenous teaching methodologies with the help of technology eg CD,DVD, Multimedia and Web Heterogeneous virtual classrooms Tv video conference and E-learning
Monitored by camera ICT enabled offices and libraries
Online , software ,data base, Online results

Table 2. ICT enables system

C. Modeling and Simulation of ICT

Due to the inventions of new born technology, A new global economics is introduced in 21st century, which is powered by technology, fueled by Information, and it took movement by knowledge.

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The Role of ICT in Science Subjects

It can be divided majorly into 4 parts

- **Collection of data logging**

Data collection is a quit important into the experiments of science, Data can collected, recorded and measured through electronic devices and ICT can provide these tasks with accuracy.

- **Visual representation and information**

It helps in easy to understanding & imaginations and stages of visual representation and information, ICT has specific methods in teaching of science subjects like spreadsheet, graphics and information representation like digital projectors writing boards.

- **Modeling and simulation**

Majorly Modeling and simulation is used in demos and foretell, with the help of Modeling and simulation teachers can perform good experiments and demos, which is not possible with other methods.

- **Sources of information**

The best source of information and data is internet

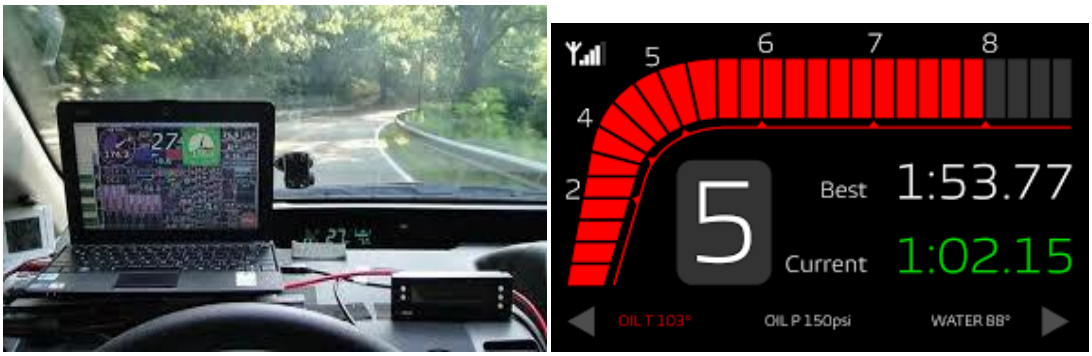

Fig: 2 Data logger on car dash board and collected data

The Role of ICT in Mathematics

ICT has change the methodologies and techniques of teaching in mathematics

There are certain aims and the objectives of ICT in mathematics which are as follows

- Learn from feed backs
- Pattern observations and recognitions
- Relations observations
- Creation of Visual image
- Inventions of realistic data
- Relations can be find out between formulas and data and graphical form of data through computer
- Graphical data representation can be drawn through spreadsheet.

Modern Changing Teaching Trends

Implementation of E- learning education system in the educational Institutes in the form of Blended mode which included following features, Because chalk and black board has traditional tools in

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school education system which having so less emphasis and will not be eliminated, but alternatively technological education system offers interactive digital course material which having more emphasis, interactive and having on demands learning techniques.

In online multimedia teaching environment system it offers teaching and learning face to face interaction with greater concentration of learners including monitoring and grading system.

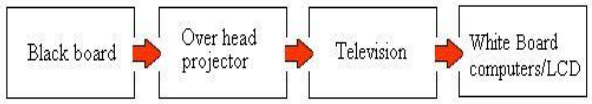

Fig: 3 changing teaching trends

Multimedia Learning System (MLS)

It offers the environment of virtual classroom with Virtual teacher with a great potential of learning management system on home ground level. it has some benefits which are as follows

- It is on demanding which can be accessible anywhere as per our demand
- It is flexible, convenient and cost effective.
- Virtual learning system can access lessons among all connected schools and so it reduces travelling and accommodations and material cost as well.
- Apart from cost it is more attentive and engaging easy to understand, repeatable and very easy to controlling and monitoring and having so less administrative and documentary work is required.

After this

Multimedi School Software's

A Package of Multimedia Educational School Software's. For Primary, Middle, Secondary and Senior Secondary Schools. The Software includes subject from Science, Math's, Languages, Social Science, Astronomy to Yoga based on Global Education and quit easy to understand.

Multimedi Education

EDUCON is a product developed specifically for Indian schools and aims to achieve the following objectives: To encourage the use of computers as a means of delivering consistently good and revolutionary education. To create and deliver content that is as good as any other international

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product but for use by especially Indian students. To develop a nurture a brain trust of concerned parties in the Indian educational system so as to create a product that meets all its needs as they arise. To use the most current and the complex technologies available to develop the product while keeping the user interface simple, attractive, and uncluttered. To encourage the spread of this form of education by being extremely economical and cost effective

- EDUCON is a fully voiced, full multimedia product, with thousands of pictures, animations, videos and other features.
- EDUCON is India specific, based on Indian CBSE & State curriculum.
- EDUCON has a Teachers-Aid module to help a teacher to teach better.
- EDUCON is a fully configured computer deliverable multimedia software package.

It is programmed to be deliverable over a number of computers connected in a local area network. The entire package is 100% based on the prescribed syllabus on the Indian school board, and in this situations, it is a unique product. Each module of the product uses full color with thousands of graphics, hundreds of videos and animations, Indian professional voices that are easy to understand for Indian children's.

Fig: 5 Some of Interfacing of EDUCON Multimedia Software's

CONCLUSION

On the basis of analysis and the review of this paper it is being concluded that internet brought a drastic revolutionary change in our day today life. And it makes so smooth and easy to share or to access information throughout globe. It reduces the distance, time of communications with greater accuracy. And no doubt this has impacted on education system, educational institutes and whole educational infrastructure as well. In this paper the review of ICT and its educational trends is taken and how ICT provides best option to the education system. ICT has given a real mean to the learners and it motivates then into right direction. Being a students and teachers it quit important to understands the actual goals of ICT in education and learning system that actually what is demands, how and what are the methodologies and tools is necessarily to understand then and then the great digital revolution in education system is can be helpful for us and can play an important role to buildup the modern digital society and modern digital country.

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