

# ICT: THE NEED OF 21ST CENTURY

Nitin D. Chudasama<sup>1</sup>, Siddharth V. Thaker<sup>2</sup>

<sup>1</sup> Nitin D. Chudasama Department of Computer Science, Shree GK & CK Bosamia College, Jetpur , Gujarat, India

<sup>2</sup> Siddharth V. Thaker Department of Computer Science, Shree GK & CK Bosamia College, Jetpur, Gujarat, India

## ABSTRACT

*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.*

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

*Information comes in various formats and it is all around us:*

- Voice Conversation
- Text
- Pictures
- Data
- Motion Pictures or Video
- Multimedia Presentations
- Radio and Wireless Broadcast
- Television Broadcast

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

*This research describes the different factors of E - Learning In which it provides the various details like the meaning of E learning, why we should follow the E learning, Different approaches of e learning Different methods of E learning It also provide the tabulate difference between conventional le learning and E learning in comparison some the parameters are taken like, learning theories and approaches, Independent learner centered learning, flexibility in learning , interactions ,access to material, contact with instructor and the utilization of technology.*

**Keyword:** - ICT, E – Learning, Class room ,Technology

## 1. INTRODUCTION

Information and communications technology (ICT) is an extended term for information technology (IT) which stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals), computers as well as necessary enterprise software, middleware, storage, and audio-visual systems, which enable users to access, store, transmit, and manipulate information.

The term ICT is also used to refer to the convergence of audio-visual and telephone networks with computer networks through a single cabling or link system. There are large economic incentives (huge cost savings due to elimination of the telephone network) to merge the telephone network with the computer network system using a single unified system of cabling, signal distribution and management.

However, ICT has no universal definition, as "the concepts, methods and applications involved in ICT are constantly evolving on an almost daily basis." The broadness of ICT covers any product that will store,

retrieve, manipulate, transmit or receive information electronically in a digital form, e.g. personal computers, digital television, email, robots. Skills Framework for the Information Age is one of many models for describing and managing competencies for ICT professionals for the 21st century.

## 2. RESEARCH ELABORATIONS

### 2.1 Monetization

The money spent on IT worldwide has been most recently estimated as US \$3.5 trillion and is currently growing at 5% per year, doubling every 15 years. The 2014 IT budget of US federal government is nearly \$82 billion. IT costs, as a percentage of corporate revenue, have grown 50% since 2002, putting a strain on IT budgets. When looking at current companies' IT budgets, 75% are recurrent costs, used to "keep the lights on" in the IT department, and 25% are cost of new initiatives for technology development.

The average IT budget has the following breakdown.

- 31% personnel costs (internal)
- 29% software costs (external/purchasing category)
- 26% hardware costs (external/purchasing category)
- 14% costs of external service providers (external/services).

### 2.2 Technological capacity









The world's technological capacity to store information grew from 2.6 (optimally compressed) exabytes in 1986 to 15.8 in 1993, over 54.5 in 2000, and to 295 (optimally compressed) exabytes in 2007, and some 5 zettabytes in 2014.<sup>[13][14]</sup> This is the informational equivalent to 1.25 stacks of CD-ROM from the earth to the moon in 2007, and the equivalent of 4,500 stacks of printed books from the earth to the sun in 2014.

The world's technological capacity to receive information through one-way broadcast networks was 432 Exabyte of (optimally compressed) information in 1986, 715 (optimally compressed) Exabyte in 1993, 1.2 (optimally compressed) zettabytes in 2000, and 1.9 zettabytes in 2007.[13] The world's effective capacity to exchange information through two-way telecommunication networks was 281 petabytes of (optimally compressed) information in 1986, 471 petabytes in 1993, 2.2 (optimally compressed) exabytes in 2000, 65 (optimally compressed) exabytes in 2007, and some 100 exabytes in 2014. The world's technological capacity to compute information with humanly guided general-purpose computers grew from  $3.0 \times 10^8$  MIPS in 1986, to  $6.4 \times 10^{12}$  MIPS in 2007.

## 3. ICT SECTOR IN THE OECD (Organization for Economic Cooperation and Development)

The following is a list of OECD countries by share of ICT sector in total value added in 2013.

Table -1

Rank	Country	ICT sector in %
1	 <a href="#">South Korea</a>	10.7
2	 <a href="#">Japan</a>	7.02
3	 <a href="#">Ireland</a>	6.99
4	 <a href="#">Sweden</a>	6.82
5	 <a href="#">Hungary</a>	6.09
6	 <a href="#">United States</a>	5.89
7	 <a href="#">Czech Republic</a>	5.74
8	 <a href="#">Finland</a>	5.60

Rank	Country	ICT sector in %
9	 <a href="#">United Kingdom</a>	5.53
10	 <a href="#">Estonia</a>	5.33
11	 <a href="#">Slovakia</a>	4.87
12	 <a href="#">Germany</a>	4.84
13	 <a href="#">Luxembourg</a>	4.54
14	 <a href="#">Netherlands</a>	4.44
15	 <a href="#">Switzerland</a>	4.63
16	 <a href="#">France</a>	4.33
17	 <a href="#">Slovenia</a>	4.26
18	 <a href="#">Denmark</a>	4.06
19	 <a href="#">Spain</a>	4.00
20	 <a href="#">Canada</a>	3.86
21	 <a href="#">Italy</a>	3.72
22	 <a href="#">Belgium</a>	3.72
23	 <a href="#">Austria</a>	3.56
24	 <a href="#">Portugal</a>	3.43
25	 <a href="#">Poland</a>	3.33
26	 <a href="#">Norway</a>	3.32
27	 <a href="#">Greece</a>	3.31
28	 <a href="#">Iceland</a>	2.87
29	 <a href="#">Mexico</a>	2.77

#### 4. ICT DEVELOPMENT INDEX

The ICT Development Index ranks and compares the level of ICT use and access across the various countries around the world. In 2014 ITU (International Communications Union) released the latest rankings of the IDI, with Denmark attaining the top spot, followed by South Korea. The top 30 countries in the rankings include most high-income countries where quality of life is higher than average, which includes countries from Europe and other regions such as "Australia, Bahrain, Canada, Japan, Macao (China), New Zealand, Singapore and the United States; almost all countries surveyed improved their IDI ranking this year".

#### 5. ICT IN EDUCATION

Today's society shows the ever-growing computer-centric lifestyle, which includes the rapid influx of computers in the modern classroom.

Information and Communication Technology can contribute to universal access to education, equity in education, the delivery of quality learning and teaching, teachers' professional development and more efficient education management, governance and administration. UNESCO takes a holistic and comprehensive approach to promoting ICT in education. Access, inclusion and quality are among the main challenges they can address. The Organization's Inter-sectoral Platform for ICT in education focuses on these issues through the joint work of three of its sectors: Communication & Information, Education and Science.

## 6. ICT - TODAY

In modern society ICT is ever-present, with over three billion people having access to the Internet. With approximately 8 out of 10 Internet users owning a smartphone, information and data are increasing by leaps and bounds. This rapid growth, especially in developing countries, has led ICT to become a keystone of everyday life, in which life without some facet of technology renders most of clerical, work and routine tasks dysfunctional. The most recent authoritative data, released in 2014, shows "that Internet use continues to grow steadily, at 6.6% globally in 2014 (3.3% in developed countries, 8.7% in the developing world); the number of Internet users in developing countries has doubled in five years (2009-2014), with two thirds of all people online now living in the developing world."

However, hurdles are still at large. "Of the 4.3 billion people not yet using the Internet, 90% live in developing countries. In the world's 42 Least Connected Countries (LCCs), which are home to 2.5 billion people, access to ICTs remains largely out of reach, particularly for these countries' large rural populations. ICT has yet to penetrate the remote areas of some countries, with many developing countries dearth of any type of Internet.

This also includes the availability of telephone lines, particularly the availability of cellular coverage, and other forms of electronic transmission of data. The latest "Measuring the Information Society Report" cautiously stated that the increase in the aforementioned cellular data coverage is ostensible, as "many users have multiple subscriptions, with global growth figures sometimes translating into little real improvement in the level of connectivity of those at the very bottom of the pyramid; an estimated 450 million people worldwide live in places which are still out of reach of mobile cellular service".

Favorably, the gap between the access to the Internet and mobile coverage has decreased substantially in the last fifteen years, in which "2015 is the deadline for achievements of the UN Millennium Development Goals (MDGs), which global leaders agreed upon in the year 2000, and the new data show ICT progress and highlight remaining gaps." ICT continues to take on new form, with nanotechnology set to usher in a new wave of ICT electronics and gadgets.

ICT newest editions into the modern electronic world include smart watches, such as the Apple Watch, smart wristbands such as the Nike+ Fuel Band, and smart TVs such as Google TV. With desktops soon becoming part of a bygone era, and laptops becoming the preferred method of computing, ICT continues to insinuate and alter itself in the ever-changing globe.

## 7. A PLUMBING ANALOGY

A plumbing system is made up of storage tanks and pipes. Water is stored in the storage tanks and flows through the pipes. ICT is made up of information technology (storage tanks) and communications technology (pipes). Information (stored water) is stored using information technology (storage tanks) and a communication (flowing water) reaches the recipient through communications technology (pipes).

**Table -2**

Water System	ICT	Examples
Storage tanks	Information technology (IT)	Hard drive, processor, content management system
Pipes	Communications technology	Fibre optic cable, Internet Protocol, POP, e-mail client, VoIP
Standing water	Information	File in pdf format or html format
Flowing water	Communication	Data message, voice, data packet

## **8. USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT) IN EDUCATION**

- 1. Modern developments in** information and communication technologies (ICT) provide exciting possibilities to enhance the quality of education. Interactive education software, open access digital libraries, and cheaper and more intuitive technology may facilitate new forms of interaction between students, teachers, education employees and the community and enhance the quality of education by making it more accessible.
- 2. Education may be enriched** by integrating such technologies into traditional educational activities. However, it must be recognised that ITC may never displace the relationship between teacher and learner which is crucial to the learning and development process.
- 3. ICT has the capacity to enhance** the learning process and facilitate communications within education institutions and between educators and learners but it must be used in education institutions under the supervision of qualified well-trained professionals with the expertise in pedagogy and in education to ensure that its impact does not damage or undermine the learning process or the development of learners.

## **9. ROLE OF EDUCATION UNIONS**

- (i) Support the use of ICT as an integral part of the provision of quality education for all. They should advocate for the use of ICT in education as a key modern aid to teaching and learning;
- (ii) Advocate for free access for all teachers and learners, support professionals and administrators in education, to high quality dedicated ICT;
- (iii) Insist that ICT in education is appropriate to the learning requirements in the curriculum in each subject, is supportive of the work of teachers and learners, and of administrative and professional staff in education;
- (iv) Insist that educators are consulted about the introduction of ICT into education institutions and involved in the design and development of appropriate ICT for education purposes;
- (v) Monitor the implementation of any agreements entered into by governments, national education or school authorities for the provision of ICT by commercial companies.

## **10. ROLE OF GOVERNMENTS AND NATIONAL EDUCATION AUTHORITIES**

- (i) Develop national plans for the use and promotion of ICT in education in consultation with education unions and education community interests and others with relevant expertise;
- (ii) Allocate the necessary funds to develop appropriate ICT for schools and education institutions and ensure that the outcome of such development work is available freely to all;
- (iii) Allocate the necessary funds to ensure that every education institution has access to high quality ITC, both hardware and software, irrespective of where it is situated;
- (iv) Allocate the necessary funds to provide continuous professional development in the use of ICT for teachers and other education professionals;
- (v) Ensure that high quality internet access is available to all schools and education institutions.



## 11. RESULT OR FINDINGS

A Computer literate is someone who has developed the skills to be able to use a Computer to accomplish meaningful tasks as part of their normal duties in the workplace or in private.

Most schools now have ICT and Computer studies as part of their curriculum. Besides acquiring ICT knowledge and skills through formal education an individual can take steps to develop skills on their own through one of the following means:

- Register for Computer training classes
- Register for an online or internet training course
- Use free Tutorials and Manuals on the Internet
- Learn to type with the help of typing software (.e.g Mavis Beacon Teaches Typing)
- Learn to identify various programs on the Computer and what they can be used for
- Learn to use the Computer to find information

## 12. CONCLUSION

In my view, ICT should be a shortening for “information, communication and technology” so that it is broad enough to include all the different aspects of what the acronym stands for. Some people focus on the “technology” whilst others focus on the “information” or “communication”. For example, ICT governance is not only about the governance of “technology” (the storage tanks and pipes), but also about the governance of “information” (the water).

## 13. REFERENCES

- [1]. <http://www.slideshare.net/biotechvictor1950/integration-of-ict-in-teaching-and-learning>
- [2]. <http://www.unevoc.unesco.org/fileadmin/up/emergingtrendsiniictforeducation.pdf>
- [3]. <http://legacy.oise.utoronto.ca/research/field-centres/TVC/RossReports/vol7no1.htm>
- [4]. Pascu, C. (2008). An Empirical Analysis of the Creation, Use and Adoption of Social Computing Applications. IPTS Exploratory Research on the Socio-economic Impact of Social Computing. Institute for Prospective Technological Studies (IPTS), JRC, European Commission. EUR 23415 EN. available at: <http://ipts.jrc.ec.europa.eu/publications/pub.cfm?id=1684>
- [5]. Punie, Y., Cabrera, M., Bogdanowicz, M., Zinnbauer, D. & Navajas, E. (2006a). The Future of ICT and Learning in the Knowledge Society, Report on a Joint DG JRC-DG EAC Workshop held in Seville, 20-21 October 2005, EUR 22218 EN. <http://ipts.jrc.ec.europa.eu/publications/pub.cfm?id=1407>
- [6] Zinnbauer, P. (2007). What can Social Capital and ICT do for Inclusion?., Institute for Prospective Technological Studies (IPTS), JRC, European Commission. EUR 22673 EN. available at: <http://ipts.jrc.ec.europa.eu/publications/pub.cfm?id=1466>