Factors Influencing the Effective use of ICT in Education and Learning – Indian Perspective

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Abstract: This paper studies the factors towards the use of Information and Communication Technology (ICT) tools in education and learning in India. The findings of this work identify that the most significant factors are: Poor Connectivity, Self Enthusiasm, Required extra time, Incentive to integrate ICT tools in teaching, Certain ICT software is difficult to learn and use. These five factors were emerged from the discussion.

Index Terms: ICT tools, higher education, factors, Indian Perspective.

I. INTRODUCTION

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

The incorporation of computers and communication technologies offers exceptional chances to coordinate, upgrade and communicate with each other over a wide geographic separation meaningfully to accomplish the learning objectives. This development has the potential to change the nature and procedure of the learning environment and leads to another learning society. Intuitiveness, adaptability and comfort have turned into the request of the day in the ICT enhanced environment. ICT opens up the doors for new learning culture since it empowers learners to develop, change and share thoughts and data across the globe. It helps to promote learner centered collaborative learning principles to enhance critical thinking, creative thinking and problem solving skills.

II. PEDAGOGY OVER TECHNOLOGY

Utilizing ICT to enhance the learning is the key for teaching and innovation mix. Time, space, place, content selection and delivery of instructions are important factors which attracts the learners. The traditional strategies failed in it where as It is now feasible and possible to implement open and flexible learning strategies using ICT as tools. The class room learning is now becoming obsolete and the data network replaces the traditional learning by distributed learning. Learning anytime, anywhere with synchronous and asynchronous communication across space, time and pace is the key to web based instruction.

The innovative methods like content websites, online education to support and assist the learners for better understanding. The search engines, simulation tools, synthesizers, email, eBooks, social media like WhatsApp, Facebook are become one of the key competencies of modern day teachers. Searching, locating and categorizing knowledge and information via internet have opened new vistas in implementation of flexible learning strategies.Broadly ICT tools help to open up opportunities for learning by enabling four major key processes in transforming teaching and learning as follows:

Access ideas and information from diverse sources through searching, locating, selecting, and authenticating material in a wide range of multimedia forms;

Extend ideas and information through processing, manipulating, analyzing & publishing material in different multimedia forms;

Transform ideas and information into new or different forms through synthesizing, modeling, simulating and creating material in many multimedia styles and formats; and

Share ideas and information across local, national and international networks by interacting electronically with others in actual and/or delayed time.

Access, extend, transform and share represent key processes by which students learn and become independent learners and self-starters. Through the processes learners express their creativity and imagination. These processes can be applied in all areas

of learning and in all levels of education. There are three broad categories of educational software namely, **Generic tools for learning, Content-based resources and Interactive instructional courseware**. Starting from productivity tools to simulation & modeling, there are various generic tools that help learners to access, extend, transform and share information. Content-based resources help learners to access a vast source of educational resources that effectively can be integrated with the curriculum objectives. Interactive instructional courseware are basically self-paced learning materials. These programs are helpful to learners to control their learning at their own place and convenience.

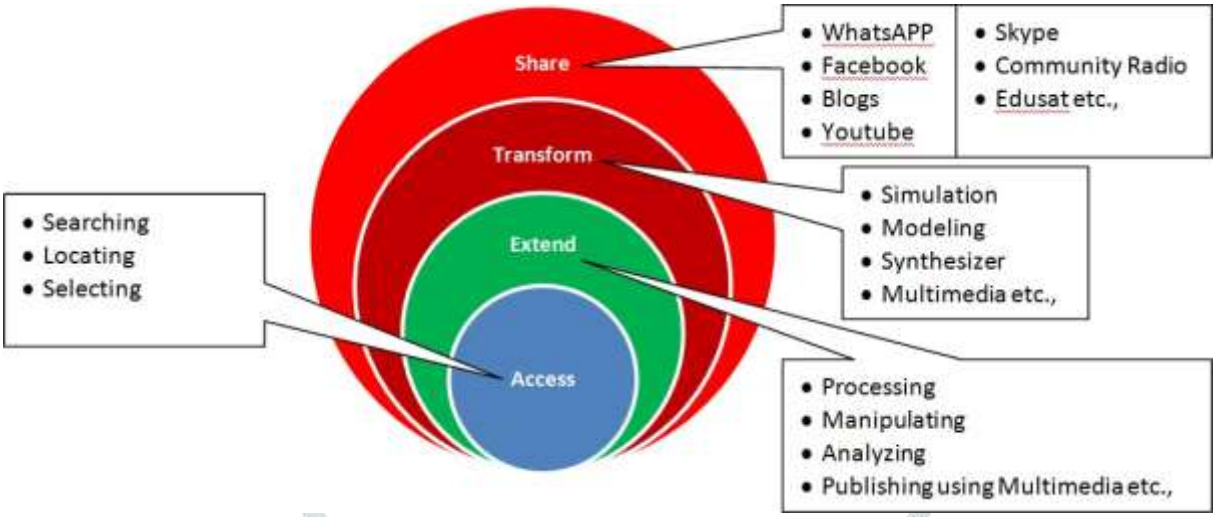

Fig.1.Key Processes which impact Teaching and Learning

III. Digital India Programme

A long-term goal of the Indian education system is to provide education to remote areas through the use of a combination of ICTs: open-source software, satellite technology, audio-visual systems, broadcast media, digital libraries, local language-mapping interfaces, and so forth.ICT tools are changing the future of education in India. Using ICTs in education has several noticeable benefits, but poses numerous challenges as well. The cost of obtaining, purchasing, installing, operating and maintaining ICTs is quite high. Another challenge is that the integration of ICTs into education is still in its developing stage.

Digital India, a national flagship programme to transform India into a digitally-empowered society and knowledge economy, was approved by the Cabinet on August 20 2014. The programme, conceptualised by the Department of Electronics and Information Technology (DeitY), aims to be transformational in nature, ensuring that all government services are available to citizens electronically through e-governance programmes. This is envisaged to bring in public accountability and seamless integration across government departments.

According to the Digital India website, the government plans to extend coverage of the information infrastructure nationally from 2014 to 2017. The cost of the entire project is estimated at about Rs 1.13 lakh crore. The programme aims at infrastructural reforms such as high-speed internet in all gram panchayats, lifelong digital identification for citizens, mobile banking for all, easy access to Common Service Centres (CSC), shareable private spaces on an easily accessible public Cloud and cyber-security. Digital India envisions universal digital literacy and universal accessibility of all digital resources for citizens. This will be ensured by making the resources and services accessible in regional languages and providing digital platforms for participatory governance. To ensure convenience, all government documents and certificates will be available on the Cloud and will be portable.

Digital India aims to provide the much-needed thrust to growth areas especially education sector. For example, providing broadband highways in urban and rural regions. On January 23, 2015, the Times of India reported that the Central government would be providing free high- speed 4G Wi-Fi in 2,500 cities and towns across the country over three years and the programme, involving an investment of up to Rs 7,000 crore, would be implemented by state- owned Bharat Sanchar Nigam Ltd (BSNL).Other initiatives include universal access to mobile connectivity, public internet access programmes involving greater accessibility to CSCs and multi-service centres, interactive e-governance, e-Kranti programmes wherein services like **education, healthcare, security, financial inclusion, justice, and aid to farmers** will be facilitated with electronic delivery, universal accessibility to information digitally, facilitating independent electronics manufacturing and creating jobs in the IT sector through digital literacy and skills training. The programme seeks to accomplish these broad goals by revamping existing e-governance initiatives, **leveraging ICT infrastructure** established by the Government of India and encouraging public-private

partnerships in necessary fields. This high speed backbone data network will definitely enhance the use of ICT in Education sector.

Table 1.The factors which affects the usage of ICT in teaching

Sl.NO	Factors
1.	Lack of teaching Content
2.	Self Enthusiasm
3.	Fast Changing
4.	Required extra time
5.	Incentive to integrate ICT tools in teaching
6.	Poor Network Connectivity
7.	Periodical Evaluation
8.	Reliability
9.	Training on ICT Tools
10.	Failure of Colleagues to integrate ICT tools in their teaching
11.	Insufficient Technical Stuff
12.	Unavailability of Hardware and Software in-place and in-time
13.	Certain software is difficult to learn and use.
14.	Lack of Initiation from Superiors
15.	Outdated Hardware
16.	Students are lack of ICT skills
17.	Outdated Software
18.	Lesser vision of administration on integration of ICT
19.	Negative comments about using ICT tools.
20.	Negative feedback of Students on ICT supported teaching
21.	Difficult over existing chalk and talk

IV. STUDY

Contemporary India stands in the threshold of a vibrant knowledge society that is widely characterized by unprecedented flow of ICTs, enhanced local global connectivity, economic globalization and a high representation of young in the country's population. Though India has a knowledge-based past, its traditional social arrangement is founded on a knowledge gap based on a caste hierarchy. As such, India needs to seek opportunities to fill this gap by providing access to quality education to all segments of society. So, the ultimate need of Indian teaching community is to use ICTs in their seamless teaching flow in order to prepare the learners to the next level. This raises the question of what are the factors to the use of ICT tools in teaching for developing countries like India.

A comprehensive discussion with different age group of higher education teachers of both gender reveals various factors which impact the effective usage of ICT based on their experience, listed in table 1.

V. DISCUSSION

Table 1 shows various factors which affects the usage of ICT in teaching irrespective of age of teachers. According to the discussion results as shown in table 2, the following five factors are discussed in the order of significance.

Table 2.Factors of Significance

Sl.NO	Factors
1.	Poor Connectivity
2.	Self Enthusiasm
3.	Required extra time

4. Incentive to integrate ICT tools in teaching
5. Certain software is difficult to learn and use

Poor network connectivity

Even in this digital era, the data network reaches only major cities and towns in India. Even though 3G, 4G networks are very popular across mobile users in India, its impact is not up to the mark in the education Sector. Many teachers still find problem in getting the latest content and trendy techniques in their teaching. This problem can be overcome within short span of time due to the recent policies and programmes of Indian government like Digital India.

Self Enthusiasm

Incorporating ICT in teaching mainly depends on the enthusiasm of individual teacher. They feel comfortable and satisfaction in traditional methods of teaching likes Chalk & Talk. The experienced teachers put forth many reasons for this mind set like aging, lack of interest, control over learners, laziness etc., They actually need strong motivation and counseling towards the use of ICT in teaching in order to use their experience and knowledge to the student community.

Required extra time

Many teachers (irrespective of age) are hesitating to go with digital pedagogy using ICT. They are much comfortable with hardcopy of books available with them and in their library for preparation instead of searching and incorporating contents from internet. Especially even in higher education sector, they follow only the textbooks given in the syllabi of affiliating Universities to cover all the units of the course. This is the reason why many local authors publishing books pertaining to a particular University. Frankly speaking they are not at all authoring the books; it is a compilation of available related contents from the internet. They are doing their business using the laziness of such teachers and students as investment. This unhealthy practice is found across India invariably.

Incentive to integrate ICT tools in teaching

The enthusiastic teachers expect appreciation for their innovative efforts using ICT, in terms of feedback from peer, students and high level administration. This tendency is strongly found more or less in all the teachers and their motivation may be appreciated by the way of incentives, awards, accolades etc.,

Certain software is difficult to learn and use

The majority of teachers need training in ICT tools periodically. The new versions of tools are not familiarized among teachers due to its complicated and difficult design methods. The teachers face a lot of problems in learning ICT software, in finding place and time for training. Even though they are stuff enough in teaching, they are little hesitating in learning the new tools. This may be eradicated by user friendly ICT software and proper periodical training schedule.

VI. CONCLUSION

The findings of this study reveals several suggestions like time must be allocated to faculty members, the institution have to provide a proper evaluation and incentive plan on integration of ICT tools in teaching, reliable ICT tools and good network connection for the continuous use of ICT tools in teaching, and quality technical support. The study result has again verified that these factors are of great importance for faculty members. There is an increasing need for institutions of higher learning to be sensitive toward the needs of the faculty members for the ICT tools integration in teaching. The implication of this finding must be taken seriously by administration in order to produce an "ICT friendly" environment for faculty members. The successful integration of ICT tools could contribute towards enhancing the teaching and lead to producing quality graduate to meet the priorities of the countries.

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