



# INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

## Key Challenges in Integrating ICTs in Education

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### Abstract

This paper attempts to study the significant challenges in integrating ICTs use in education rising from environmental, cultural and educational faced by policy makers, educators, educational administrators and students in higher education. The role of Information & Communication Technology (ICT) in Education is undisputed globally. ICT have potentially powerful tool for extending educational opportunities. ICT have the potential for increasing access to and improving the relevance and quality of Education. ICT can enhance the quality of education in several ways: by increasing learner motivation and engagement, by facilitating the acquisition of basic skills and by enhancing teacher training. In 21<sup>st</sup> century teaching learning skill underscore the need to shift from traditional teacher centered pedagogy to more learner-centered method, so that's why we need ICT facilities in our modern education system. But some barriers may discourage teachers & student to integrated ICT in education, like- availability in educational institution, maintenance, lack of knowledge, pace of change & funding. The process of using ICT is changing everyday in education that's very complicated, because people can't know, what is it, how can we handle it, when we use it. People must know what can be done with ICT. This paper examined some key challenges faced by the higher education institutions (HEIs) in integrating ICTs into teaching and learning & key challenges of ICT envisaged in our 21<sup>st</sup> century Education & how we overcome the problems that we face in use of ICT in 21<sup>st</sup> century of education.

The task of employment and integration of ICT in modern education is facing a lot of challenges. the challenges like-availability of ICT facilities in educational institution, lack of knowledge to handle ICT equipment, language problem, insufficient funds, lack of trained etc. but we can over come the challenges- to create awareness on ICT Education, to formulate policies to promote broad access to skills and competencies for learning and adopting ICT, enlarge community participation for self-sustainability in ICT application, develop supportive infrastructure facilities such as electricity, internet, etc. Government should actively. Responsible authorities have to try and overcome these challenges, so that the modern education can benefit. ICTs, in their role as tools added to pedagogical models, can become valuable resources for learning and for equipping students with appropriate personal and professional skills for a country's development (Prieto, Quiñones, Ramírez, Fuentes, Labrada, Pérez & Montero, 2011).

**Keywords:** ICT, Challenges, higher education institution, ICT integration, availability.

## Introduction

ICT stands for Information and Communication Technologies and are define, for the purpose of this primer, as a " diverse set technological tools and resources used to communicate, and to create, disseminate, store, and manage information. The United Nations Development Programme (UNDP) defines Information and Communication Technologies: "ICTs are basically information-handling tools-a varied set of goods, application and services that are used to produce, store, process, distribute and exchange information....." Information and Communication Technology (ICTs) is an accepted element in all our lives and has a central role to play in Education. 21<sup>st</sup> century is the age of Information and Communication Technology. All over the globe, there is a trend to use ICT in teaching learning process. ICT is inevitable for all sectors and all segment across region. ICTs offer the potential to share information across traditional barriers, to give a voice to traditionally unheard peoples, to provide valuable information that enhances economic, health and educational activities. ICT has a direct role to play in education sector. It can bring many benefits to schools, educational as well as to the community. ICTs in school add to knowledge production, information and communication sharing among the school community. But more barriers or challenges may discourage teacher and student to integrated ICT in education. One of the major challenge of using ICT in Higher Education is to base choice on technological possibilities rather than educational needs. The educational effectiveness of ICT depends on how they are used and for what purpose. ICTs do not work for everyone, everywhere in the sane way. In the different part of the world the use of ICTs is differently depending on the affordability, availability and access to technology. The contribution of ICTs to education and society as such is undoubtedly flexibility and adaptability to an increasingly changing environment. While at the outset labour was mainly affected by this process, however, the passage of time has shown that society depends on a technological approach to help it build and acquire knowledge.

Revolution in information and communication technologies has reduced national boundaries to meaningless lines drawn on maps. In this scenario, education has been identified as one of the services which need to be opened up for free flow of trade between countries. ICTs use in modern education can save a lot of money of the Government. Moreover a lot of qualitative improvement can be seen as resource persons for the training can be best of the world. ICT can be helpful in quality and standards of education by implementing it in various phases of education. But lack of resources within the educational sector educational is a hindrance in the implementation of ICT in developing in 21<sup>st</sup> century.

Knowledge creation- Design ICT-based learning resources and environments use ICT to support the development of knowledge creation and critical thinking skills of students, support students' continuous reflective learning, and create knowledge communities for students and colleagues.

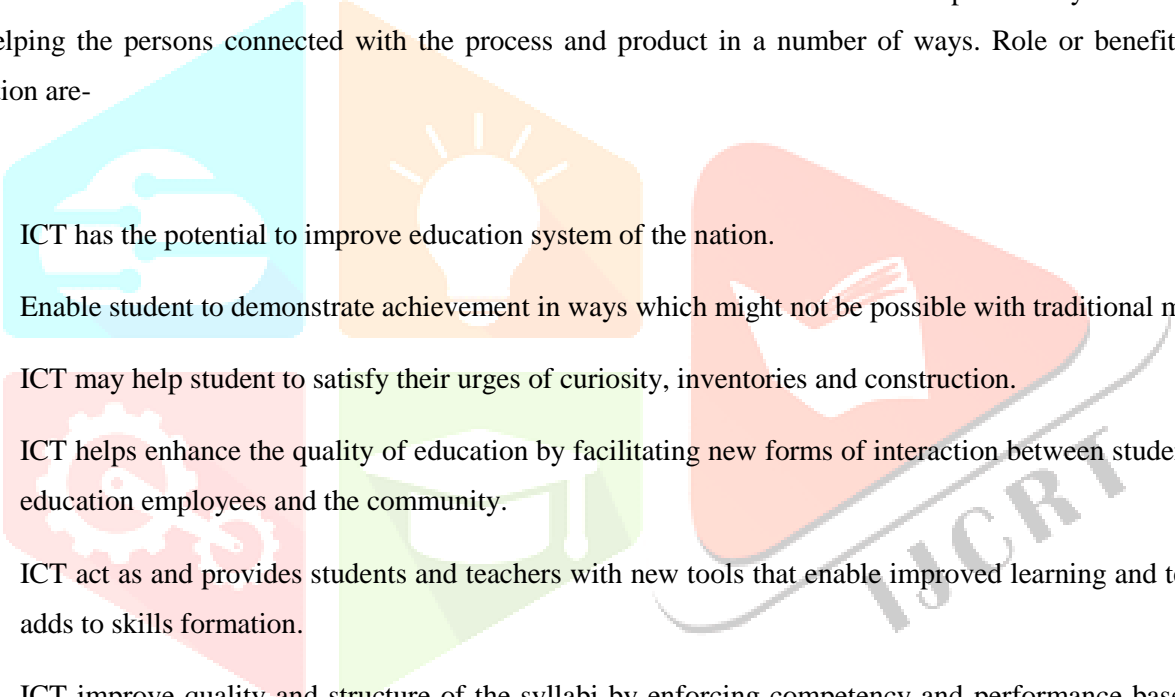
Impact in classroom- Opportunities to deploy innovative teaching methodologies and to deploy more interesting material that create an interest in the students, enable better management of classroom and students thereby improving the productivity of the tutor as well as the taught, enables the teacher to concentrate on other tasks such as research and consultancy, enables optimum utilization and sharing of resources among institutions thereby reducing the cost of implementing ICT solution and to find appropriate online resources that can be used offline or converted to a paper based resource.

## Objective:

This paper intends to explore and analyze some key challenges faced by the education institutions (Primary/HEIs) in integrating information and communication technologies (ICTs). Also describe **challenges** in implementing **ICT** for development viz Sustainability and scale · Lack of knowledge · Funding , Changing technical landscape

## Role of ICT in Modern Education

ICTs can play the same role in our information and communication process and their outcomes as played by other technologies in making our lives quite comfortable and purposeful. The ICT has been developing very rapidly nowadays. Therefore, in order to balance it, the whole educational system should be reformed and it should be integrated into educational activities, Traditional learning was hard, introduction of ICT has change the traditional concept. It has the potential to transform the nature of education. ICT and their role have a tremendous potentiality of serving its cause and helping the persons connected with the process and product in a number of ways. Role or benefits of ICT in education are-

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- ICT has the potential to improve education system of the nation.
  - Enable student to demonstrate achievement in ways which might not be possible with traditional method.
  - ICT may help student to satisfy their urges of curiosity, inventories and construction.
  - ICT helps enhance the quality of education by facilitating new forms of interaction between students, teacher, education employees and the community.
  - ICT act as and provides students and teachers with new tools that enable improved learning and teaching and adds to skills formation.
  - ICT improve quality and structure of the syllabi by enforcing competency and performance based approach towards it.
  - Access to the learning programme any time convenient to the learner, learner can be at any place to log on.
  - The teacher gets sufficient help from ICT, in their task of teaching.
  - To increase variety to educational services and medium.
  - It improves that learning process through the provision of more interactive educational materials that increase learner motivation and facilitate the easy acquisition of basic skills.
  - ICT makes education more accessible for all, bringing to the doorstep of children living in remote rural location by means of enabling distance learning.
  - Improving the efficiency of educational administration and management at every level from the classroom, school library, through the school and on to the sector as a whole.

## Integration of ICT in teaching-learning

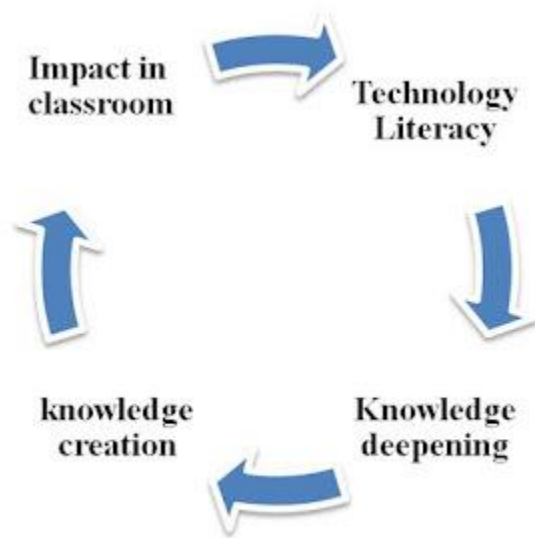


figure1: some elements of integration ICT in education

Technology literacy- Basic digital literacy skills to use technology, ability to select and use appropriate software available including internet in computer laboratories or with limited classroom facilities to complement standard curriculum objectives, assessment approaches, lesson plans and didactic teaching methods, able to use ICT to manage classroom data and support their own professional development. Knowledge deepening- Ability to manage information, structure problem tasks, integrate open-ended software tools and subject specific applications with student centered teaching methods and collaborative methods and collaborative projects in support of students deep understanding of key concepts and their application to solve complex world real problems, use network resources to help students collaborate, access information, communicate with experts to analyze and solve their selected problems and use ICT to create and monitor individual group plans.

### Steps taken to integrate ICT

- Eleventh Five-Year Plan (2007-2012) importance of ICT in education has been emphasized.
- “National Curriculum Framework”(2005) emphasized the judicious use of technology to increase the reach of educational program , facilitate management of the system as well as address specific learning needs and requirements.
- Government of India has set up a national task force on information technology and software development to universalize computer literacy.
- Intel Teach to future program is a world wide effort to integrate technology in classroom.

## Key Challenges of ICT in Higher Education

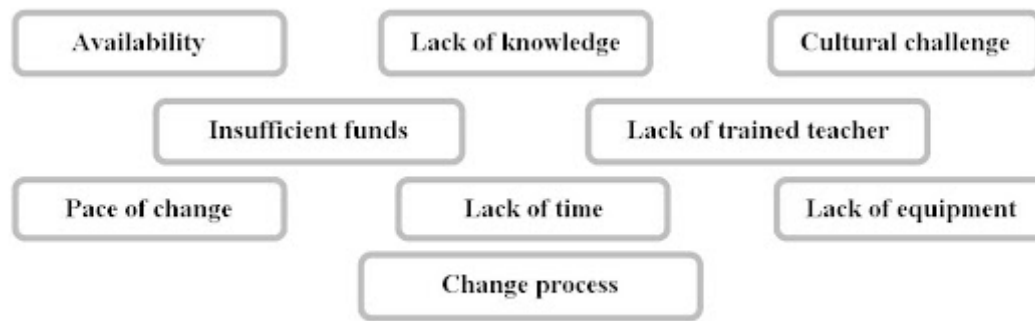


figure2: key challenges in integrating ICTs in higher education

**ICT have potentially powerful tool for extending educational opportunities. But there are multiple issues and challenges the implementation of ICT in the 21<sup>st</sup> century. The challenges are-**

1. Availability- The ICT facilities are not available in the school. Most of the schools are not in a position to afford the purchase, maintenance and other expenditure involve in its use.
2. Lack of knowledge- In the 21<sup>st</sup> century most relevant or biggest challenge is lack of knowledge to handle ICT equipment. Teacher's lack of knowledge and skills is one of the main hindrances in the use of ICT in education. They simply do not have the knowledge , expertise or organizational capacity needed.
3. Cultural challenge- Diversities of culture in different part of the world are also challenges in introducing ICT in education. A large proportion of educational software produce in the world market is in English also. But in India where English is not the first language this represents a serious challenge in integrated ICTs use in education system.
4. Insufficient funds- Effective and efficient use of technology depends on availability of hardware, software and having access to resources by teacher and students and administrative staff. In developing countries, technology implementation into education system is a difficult task as it requires a magnum of funds. The teaching aids for ICT demands a lot of funds and setting up the infrastructure, maintenance and support of ICT facilities are some of the problems that the Educational Institution are facing.

5. Lack of time- Teacher has been found to be the major predictors of the use of new technologies in instructional setting. The teachers teach more than one subject and then they have to teach ICT which means they have a heavy load. These teacher's do not have time to design, develop and incorporate technology into teaching and learning. The teacher needs time to collaborate with other teacher's as well as learn how to use hardware and software.

6. Pace of change- In the 21<sup>st</sup> century modern Education structure, staffing and ways of operating have a strong momentum that is not easy to halt or redirect it. It is relatively easy to utilize ICT to sustain and improve current organizational constructs and approaches, making useful but incremental progress. It is incredibly difficult to conceive of new ways of working with organizational constructs that are fundamentally different from the status quo and require a shift in terms of strategy, competence, skills, and organizational structure.

7. Lack of trained teacher- A major challenge in the use ICT in 21<sup>st</sup> century is the lack of knowledge and skills. The teachers do not want to have transition to new methodologies and way of teaching-learning. They will want to stick over the broadcast model of teaching instead of interactive model designed through the use of ICT.

8. Lack of equipment- The developing of ICT infrastructure in a country is depending on availability of resources. Resources like- computer, printer, projectors, scanner etc. which are not available in the every institution.

9. Change process- The highest barrier to integration of information and communication technologies into the teaching/learning process is the change as such. CEO (1999) discerns five stages of integration and overcoming difficulties:

- Entry- learners are trained how to use information and communication technologies;
- Adoption- teachers use technologies as supplementary aids in the context of traditional teaching/learning methods;
- Adaptation- technologies are used for expansion/enrichment of the curriculum;
- Appropriation- technologies are integrated and used due to their exceptional and unique qualities;
- Invention - new areas are invented where the use of technologies is appropriate.

In stage one (Entry) learners, not the teacher, gets acquainted with information technologies. Technologies are treated as a problem and inconvenience.

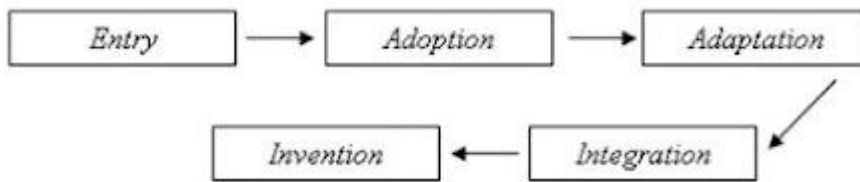


figure3: five stages of technology integration

Last but not the least, the prescribe school curriculum, the examination and evaluation system, the available instructional material and the infrastructure of the school all are not in a position to provide desirable support for the use and application of ICT in the school's teaching-learning and other useful activities for the benefits of the pupils.

### How to overcome barriers

Having overviewed the barriers and difficulties of ICT integration presented by different authors, such as Murray and Campbell (2000), Hargreaves (1994), Cook (1997), Ang (1998), Glennan and Melmad (1996), Ringstaff (1995), (Lai 2001), Sinko (2002) and etc., summarizing we will present the main factors that have to be taken into account seeking to overcome the barriers and difficulties:

1. Political decisions- Using information and communication technologies in the process of teaching/learning, i.e., in class, their integration into the present curriculum aiming at improvement of teaching/learning is the most difficult process. This attempt to integrate information and communication technologies can be fruitless and inefficient unless the Ministry of Education and Science plans and provides schools with proper resources (Lai 2001).
2. School management- Schools can play a very important role in integrating ICT into the system of education. It is worth mentioning that not only ministries should take how the process of integration should be organized, but also schools could give feedback on difficulties they are facing integrating ICT into curriculum and suggesting what could be done differently.
3. Teacher as learner- Teachers have to experience learner position. In the learner position teacher models a positive situation for learners and shows learners a different perspective, which makes the perception of new subjects easier. Teacher has to feel free and without any restrictions in the teaching environment. Only these feelings will foster the teacher to learn and develop further.
4. Barriers as opportunities- The emerged difficulties should be viewed as opportunities to develop. It should not

decrease motivation but should be transformed into the constructive process of teaching/learning, which could support ICT integration in a more efficient way (Lai 2001).

5. Peer support- Reliable colleagues can become internal "technology" teachers who could teach in small and convenient groups. Teachers can be provided help by sharing best practices of the same school teachers or analyzing the benchmarking projects.

6. Time issue- If the school intends to achieve good results in the area of ICT integration, then at least one week a year should be devoted to teacher activities outside the class. During these events teachers should be acquainted with innovations in information and communication technology area, and should be explained in detail how to use these innovations and integrate them into the process of teaching/learning.

### Conclusion

Current situation shows us that access to ICT is a major requirement for participation in a technological society (Tello, 2007). Adoption of ICTs as a means to provide access and continuity must begin by breaking up the digital divides of a society that has not internalized adaptation dynamics yet.

There is talk of integrating ICT in education once the educational system is in a position to design meaningful learning generated through experiences and a reflective content, capable of having both students and teachers generate knowledge. The above is focused not only on the classroom (Aguilar, 2012). Every space and moment where learning occurs must conceive of the idea of becoming this signal achievement. ICTs, as technological tools, have increased the degree of significance and educational conception, establishing new models of communication, besides generating spaces for training, information, debate, reflection, among others, as well as breaking up the barriers of traditionalism in the classroom (Ayala, n.d.). The teaching-learning process in the classroom, using ICT, requires a set of skills to be developed by the teacher with a view to internalizing a methodology to make the most of technological tools, in which teacher training shall be deemed among the first options prior to facing new educational challenges.

In the context of ideas above, the transition from traditional education to a knowledge acquisition-based society has been no easy task. The functional role of teachers within this approach not only requires a change in their methodological practices, but a change of mind involving their beliefs in the different environments where learning can be achieved.



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