Role of ICT: Need and Challenges in Primary Education

[1]Nazish Campwala, [2]Prof. Rameshwari Pandya, [3]Pooja Mistry

PhD Scholar, Professor, Department of Extension and Communication, Faculty of Family and Community Sciences, The M. S University of Baroda, Vadodara, Gujarat, India

Abstract: With the advent of Globalisation, Information and Communication Technologies have made a significant mark in terms of teaching and learning with their rapid diffusion and adoption throughout the educational scenario. However, these ICT's are not yet accepted, or used in our everyday social practices. Most of the educational institutes still follow the conventional method of teaching and learning in a country like India. ICT can improve the quality of teaching and learning in schools, especially the primary schools where the children are more connected to the digital world. Primary school teaching is perhaps the most challenging task a teacher can ever undertake. In terms of slightly mature and young adults, teaching and learning is comparatively an easier job, however, when it comes to children of the primary school going age, sustaining their attention and analysing what goes in their minds, is a task in itself. It is the teacher's job to make the content delivery more exciting, rewarding and a successful experience for the primary school going learners in order to enable them to achieve their potential.

There are in-numerous challenges in terms of implementation of ICTE (Information Communication Technology in Education). The government, civil society and stakeholders should have an integrated plan of action to overcome the challenges of use and implementation of ICTE's. A long-term vision on the integration of ICTE is a clear necessity to provide guidance and motivation to enthusiastic early adopters and other stakeholders. A vision is also crucial to actively plan for the deployment of ICT within the sector. In the longer term, the active participation of the government is essential to ensure the sector-wide introduction of ICTE (Information Communication Technology in Education). Government involvement is critical to source additional investments in the ICT infrastructure, to integrate ICT in the curriculum, and to facilitate the widespread diffusion of materials.

Keywords: Education, ICT, Primary Education, Infrastructure, Schools, Stakeholders.

1. INTRODUCTION

The penetration of current ICT trends in education is very important and a priority for educational development and sustainability. ICT penetration in education proliferates in many different forms and most of its realization and influence has to be gained through knowledge and technical. Information and communication technologies (ICT) have become common place entities in all aspects of life. For the past twenty years the use of ICT has fundamentally changed the practices and procedures of nearly all forms of activities within business and governance. Within education, ICT has begun to have presence but the impact has not been as extensive as in other fields. Education is a very socially oriented activity and quality education has traditionally been associated with strong teachers having high degrees of personal contact with learners.

Information and communication technologies (ICT) are simply technologies arising from scientific and technological progress in computer sciences, electronics and telecommunications. They enable us to process, store, retrieve and disseminate valuable information in text, sound and video form. In an increasing interconnected world, brought about by

the application of technological advances to all sectors of society, quality education necessitates active and innovative exploration to maximize the benefits of ICT and develop and maintain the partnerships that use of ICT in education requires. This calls for reconceptualising and restructuring the educational enterprise, so as to confront the technological challenges of this millennium. With rapid changes within society and radical transformations in the way people acquire knowledge, new teaching paradigms are required, ones that tune educational systems to modern times and ensure quality training for large numbers of persons.

The United Nations' Millennium Development Goals (MDGs) two is about achieving universal primary education. The MDG's in education are defined in terms of participation and completion of primary education by all children. The Government of India has made continuous efforts through a wide range of projects and Acts, the Sarva Shiksha Abhiyan and Right to Education Act being the revolutionary of all. Despite such efforts by the Government, a constant increase has been witnessed in the drop-out ratio of school children in the Primary School Going age.

For instance, in India, during 2004 – 05, while the Gross Enrolment Ratio for children enrolling in classes I to VIII was 97 percent, the Drop-out Rate for the same classes was as high as 46 percent. The situation is more worrying at the secondary education level (classes IX and X), where the enrolment is recorded at 53 percent and the Drop-out Rate is as high as 60 percent.

Despite the country spending large sums of money on programmes and schemes, a large chunk of the population is not yet literate. It is now time that innovative and cost effective methods be used to address the problem of not only the increasing drop-outs, but to inculcate the interest of education in the minds of the children. The population of the country is dynamic and diverse and to reach out to such diverse socio economic and cultural contexts s ICTs can be successfully employed to reach out to a greater number of students, including those to whom education was previously not easily accessible, and help in promoting learning, along with exposing students to the technical skills required for many occupations.

While there is agreement that ICT can be a powerful tool for advancing education efforts going forward, the challenge we face today is turning the potential of Information and Communication Technology for Education (ICTE) into reality with results. This is a tremendous challenge, compounded by the realistic fears that if not used properly, ICT can increase existing social and economic inequalities, particularly if access and use of ICTE is not equally available to everyone. Implementation of ICTE must be case specific and locally driven, or the development community may risk further isolating impoverished populations rather than promoting inclusion and social advancement.

Countries are beginning to realize the extraordinary potential of ICTE but are encountering tremendous challenges in bringing that same potential to life.

The penetration of current ICT trends in education is very important and a priority for educational development and sustainability. ICT penetration in education proliferates in many different forms and most of its realization and influence has to be gained through knowledge and technical know-how. The main stakeholders of the global tertiary education industry are staff and students. The staff usually have subdivision of Senior Member, Senior Staff and Junior Staff in terms of ranking and the students are also subdivided into records such as the programmes they are pursuing, year level etc. Information and communication technologies (ICT) have become common place entities in all aspects of life. For the past twenty years the use of ICT has fundamentally changed the practices and procedures of nearly all forms of activities within business and governance. Within education, ICT has begun to have presence but the impact has not been as extensive as in other fields. Education is a very socially oriented activity and quality education has traditionally been associated with strong teachers having high degrees of personal contact with learners [1]. The use of ICT in education has introduced other modes of education other than the traditional mode. Notable ICT in education modes include Electronic Learning (E-Learning) which usually involve the use of desktop computers to teach and learn either on site or at a distance and Mobile Learning (M-Learning) which involves learning through wireless mobile devices such as mobile phone, Smartphones and Personal Digital Assistants (PDAs). ICT in education lends itself to more student-centred learning settings and often this creates some tensions for some teachers and students. But with the world moving rapidly into digital media and information, the role of ICT in education is becoming more and more important and this importance will continue to grow and develop in the 21st century [1][2]. Table 1, illustrates and depicts some differences between Electronic Learning (E-Learning) and Mobile Learning (MLearning)

2. IMPROVED QUALITY OF EDUCATION THROUGH ICT

A vibrant education sector is fundamental for developing human capital within countries. With an active and transformative education policy and a supportive infrastructure, the development of a knowledge-based population can apply itself to sustained and equitable growth. ICT can play a vital role in increasing access to education as well as providing better quality 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 (Young, 2002). 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 (Young, 2002). 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.

ICT can enable teachers to transform their practices by providing them with improved educational content and more effective teaching methods. Children require more of experiential learning and interactive sessions where active learning can take place, with an internet boom, the educational world is open to more experiments with curriculum, interactive educational materials and various multimedia devices such as Televisions, videos and various software that can offer a more challenging and engaging learning environment for students of all ages.

The twenty first century education reform policy focuses more on the shift from traditional and conventional methods of teaching to a more learner centric approach that is active, collaborative and the one which creates knowledge- based classroom.

3. UNIQUE FEATURES OF ICT

ICT can offer a range of unique features to teachers and learners which are not available using other means. Although the range of ICT equipment is wide, the following general features are strengths of ICT:

- **Speed:** making Processes happen more quickly than other methods

- **Automation:** making previously tedious or effortful processes happen automatically

- **Capacity:** the storage and retrieval of large amounts of material

- **Range:** access to materials in different forms and from a wider range of sources than otherwise possible.

- **Provisionality:** the facility to change content, and change back if necessary

- **Interactivity:** the ability to respond to user input repeatedly.

(Kennewell and Beauchamp, 2007)

4. CHALLENGES OF ICT IN EDUCATION

Countries everywhere are facing similar challenges in implementing ICT in their education systems. Unfortunately, many local, national and regional government bodies are still not giving ICTE the attention and priority it deserves despite the benefits it brings.

When we talk of lacunae in implementation of ICTE, the reasons arise right from the beneficiaries to the stake holders to the people who implement it themselves. Most of the teachers in primary education teaching feel that a great '*digital*

divide' will be created amongst the various classes of students due to lack of availability of resources in various communities of the country.

Another grave problem that arises is the lack of training on the part of the teachers themselves due to which there is little or no implementation of ICT in Education.

• Inadequate national ICT and electricity infrastructure especially in the rural areas: The telecommunication network is limited to the main cities and internet access costs are still high making it difficult for schools and other educational institutions to access or afford internet access. However, the telecommunications infrastructure in the country is improving rapidly in capacity and reach. And while Tanzania recorded enormous growth in mobile subscriptions, education has not yet tapped into this technology to deliver services to especially rural communities who have remained underserved owing to the challenges of cost, electricity and connectivity. The limited electricity supply network also greatly hinders the deployment of ICT to schools especially in the semi-urban and rural areas.

• Lack of capacity at all levels to integrate and use ICT effectively has been cited as a major concern during the situational analysis. These capacity constraints include lack of coordination of ICT in education activities, limited information sharing, limited skills for integration of ICT in education, ineffective organizational structures at the various education management levels to accommodate ICT integration in teaching and learning, lack of incentives and schemes of service for ICT trained personnel to reduce attrition, and resource constraints.

• Lack of an end-to-end strategy: successful and effective use of ICT requires that governments focus on all the elements of an end-to-end system that include the technology, electronic content and curriculum integration, maintenance and support, teacher training and monitoring and evaluation. There is little evidence that concerted efforts are being directed at the development or adaption of electronic content or integration into the curriculum, the development of effective maintenance and support mechanisms, the systematic training of teachers or the continuous monitoring and evaluation of ICT use in schools to determine effectiveness and inform future programmes.

• Teachers have been found to be the major predictors of the use of new technologies in instructional settings. The teachers teach more than one subject and then they have to teach ICT which means they have a heavy load. These teachers do not have time to design, develop and incorporate technology into teaching and learning [6]. The teacher needs time to collaborate with other teachers as well as learn how to use hardware and software.

• There have been several initiatives from the Ministry, the private sector and international partners to introduce ICTs in schools in the country. Government initiatives have been limited by budgetary constraints. Schools that had computers donated by the private sector or bought by government have had challenges in the maintenance and upgrading of the computing equipment. In the case of a project, at the inception of the project the computer laboratories have all the resources needed as well as networking the computers and Internet connectivity facilities. When the project phases out, the maintenance of the computer has to be borne by the students.

5. WHAT WE AS LAW MAKERS, EDUCATORS AND CIVIL SOCIETY CAN DO?

As educators and Practitioners, we can improve the quality of education and heighten teaching efficiency provided through pre-service training and programs relevant and responsive to the needs of the education system. This will allow teachers to have sufficient subject knowledge, a repertoire of teaching methodologies and strategies, as well as professional development for lifelong learning. These programs will expose them to new modern channels of information, and will develop self-guided learning materials, placing more focus on learning rather than teaching. However, it is important to point out that ICT is used to enhance teaching styles, and should not replace the role of the teacher. ICT helps create structured and systematic teaching as well as better school management and organization of ICT usage.

Any initiative, be it from the government, private sector or civil society, should make lobbying for more investments in computers a priority. Insufficient access to computers is one of the main obstacles in ICTE programs.

The government should assist in building organizational and institutional capacity to effectively deal with the complexities of integrating and implementing ICT. Organizational restructuring might be necessary from the highest levels of authority (Ministry of Education) down to local administrators.

A long-term vision on the integration of ICTE is a clear necessity to provide guidance and motivation to enthusiastic early adopters and other stakeholders. A vision is also crucial to actively plan for the deployment of ICT within the sector. In the longer term, the active participation of the government is essential to ensure the sector-wide introduction of ICTE. Government involvement is critical to source additional investments in the ICT infrastructure, to integrate ICT in the curriculum, and to facilitate the widespread diffusion of materials, the following needs to be addressed:

(1) Educational objectives: We need to re-frame the educational objectives, but before that we must ask ourselves, are we only teaching them so that they get promoted? Or has the teaching got to do something with lifelong learning that is effective? For the retention value of the educational matter that is being taught, it is very essential that ICT be integrated into the current educational system for the curriculum being not only relevant, but interesting too.

(2) Infrastructure readiness and platform development: many resources have been provided to many schools, however there is no updating of those resources, it is very necessary that the resources be updated in order to keep them in working condition so that there are no loopholes in the implementation of the educational objectives.

(3) Curriculum development: in the light of the educational objectives, the curriculum must be integrated along with the conventional sources of teaching and ICT's and must be parallel to the developmental goals of the nation as well as the state.

(4) Training and usage support: Training and support staff in schools is the necessity of the hour as many of the staff members have little or no knowledge of integrating theory matter with the digital literacy. Competent staff training at the time of induction of teaching personnel into the education system will matter a great deal in terms of deliverables of the educational goals.

(5) Comprehensive monitoring and evaluation: it is quite necessary that regular mechanisms of monitoring and evaluation are carried out at a central level in educational institutions to judge whether the ICT's are being integrated and implemented effectively or not. Regular monitoring will ensure that there are no loopholes in the implementation and can thus help to overcome any issues that the teaching personnel is facing.

With various measures and an attitude open to change, the education system today can improve a great deal when we all come to a common realisation that Digital Literacy is the need of the education system today and proper and regular implementation of integration of ICT's with the educational objectives can in turn improve on the quality of teaching and also the retention level of the students.

6.   SUMMARY AND CONCLUSIONS

Changes in the curriculum do support fundamental economic and social transformation in the Society. Such transformations require new kinds of skills, capabilities and attitudes, which can be developed by integrating ICT in education. The overall literature suggests that successful ICT integration depends on many factors. National policies as well as school policies and actions taken have a deep impact on the same. Similarly, there needs to be an ICT plan, support and training to all the stakeholders involved in the integration. There needs to be shared vision among the various stakeholders and a collaborative approach should be adopted. Care should be taken to influence the attitudes and beliefs of all the stakeholders.

ICT can affect the delivery of education and enable wider access to the same. In addition, it will increase flexibility so that learners can access the education regardless of time and geographical barriers. It can influence the way students are taught and how they learn. It would enable development of collaborative skills as well as knowledge creation skills. This in turn would better prepare the learners for lifelong learning as well as to join the industry. It can improve the quality of learning and thus contribute to the economy. Similarly wider availability of best practices and best course material in education, which can be shared by means of ICT, can foster better teaching. However there exist some risks and drawbacks with introducing ICT in education which have to be mitigated. Successful implementation of ICT to lead change is more about influencing and empowering teachers and supporting them in their engagement with students in learning rather than acquiring computer skills and obtaining software and equipment. Also proper controls and licensing should be ensured so that accountability, quality assurance, accreditation and consumer protection are taken care of. ICT enabled education will ultimately lead to the democratization of education.

REFERENCES

[1] Aggarwal Yash and Kusum K. Premi *Reforming School Education: Issues in Policy Planning and Implementation,* Vikas Publishers, New Delhi. (1998b)

[2] Beauchamp Gary, ICT in the Primary School, Publisher, Routledge, New York, USA(2012)

[3] Government of India, *National Policy on Education, 1986*. MHRD, New Delhi. (1986)

[4] Hattangdi A.Ghose A, Enhancing the quality and accessibility of higher education through the use of Information and Communication Technologies, School of Management, IIT Bombay.

[5] Selected Educational Statistics; Government of India, Ministry of Human Resource Development, New Delhi (2006 – 07)

[6] Shukla S. Attainment of Primary School Children in India, NCERT, New Delhi. (1994)

[7] Syed Noor-Ul-Amin, An Effective use of ICT for Education and Learning by Drawing on Worldwide Knowledge, Research, and Experience: ICT as a Change Agent for Education, Department Of Education, University Of Kashmir

[8] World Bank, *Primary Education in India, D*evelopment in Practice Series, World Bank, Washington. (1997)

[9] http://www.gesci.org/assets/files/Knowledge%20Centre/Situational%20Analysis_Tanzania.pdf

[10] http://www.ijhssi.org/papers/v2(9)/Version-3/A02930104.pdf

[11] http://www.rocare.org/ChangingMindsets/pdf/ch09-ICTandChangingMindset.pdf

[12] http://research.ijcaonline.org/volume62/number8/pxc3884745.pdf

[13] http://www.nyu.edu/classes/keefer/waoe/amins.pdf

[14] http://www.iitk.ac.in/infocell/announce/convention/papers/Strategy%20Learning-01-Ashish%20Hattangdi,%20% 20Atanu%20Ghosh.pdf