The Advantages and challenges in introducing ITC at elementary Schools for the underprivileged children in Developing Countries; with Specific Reference to India

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Abstract

Education plays a very important role in every individual life. It not only develops a positive personality and strength to face the challenges of life in an individual but also helps the country to grow in terms of economic development. Thus, early childhood education and elementary education plays a very crucial role in the development of the child. The future of a nation depends on well-educated citizens. Realizing the importance of education many developing countries have pledged to provide free education and some developing countries like India are not only providing free but also compulsory elementary education.

This research paper tries to analyze whether developing countries have succeeded in educating millions of children worldwide, who are living in the poverty and below poverty line. Whether the schemes and policies of the governments have succeeded in giving meaningful education for the children? Are children successfully learning in these schools? Can information and communication technology can be used to get better learning outcome from these children, are some of the issues that will be addressed in the paper.

Keywords

Compulsory education; Developing countries; ERT; Elementary education; Free education; ICT; RTE;

1. Introduction

The use of information and communication technology (ICT) in education is often viewed from two different prospective. One, from the perspective of teaching by using ICT and other from the perspective of making youngsters learn the technological skills to fulfil the market demand and for better future. Over the past five years, one might observe the existence of a worldwide social discussion regarding the future of our societies including the potential implications for the goals and organization of our academic systems [for instance, European round Table of Industrialists (ERT, 1997); Panel on educational Technology (PCACT/PET, 1997)]. The data figure has generated an intense speculations relating to the necessity of educational reforms which is able to allow future voters to survive in the digital society.

The current belief is that ICT is not only acting as a backbone of the information society, but in addition to that it is also it is serving as an important catalyst to bring about educational reforms that can modify our students into productive information employees. Many governments since late Nineties, developed plans to intensify their investments for ICT in education. The dramatic rise in the use of the internet and worldwide web (www) has led to the adoption ICT in all schools and to equip all faculties with access to those facilities at the earliest. ICT in education is in chaos and many participants play a task. Forces that influence at the small and macro-level of the education system (that is at schools and in classrooms) in bringing changes are beyond the control of governments. Therefore, it's necessary for concerned educational departments to check on the status of implementation of ICT in schools. Several countries are usually under observance on the introduction of ICT in education not alone to account for the (sometimes huge) cash investments from public sources, but also to tell regarding the content and directions of future policies. The governments are often interested to know the degree of implementation of ICT-related efforts in other countries.

2. Use of technology for teaching children at elementary level

The research study shows that using technology has resulted in better learning in the subjects like mathematics and science. Understanding the concept has become easier for children due to use of technology.

Analysis of the Ofsted information on quality of ICT use reveals that attainment is even higher when high levels of ICT resource are combined with 'Good' ICT teaching. So on the average sixty nine of pupils in schools with 'Very good' ICT resources earned a minimum of 5 GCSEs. Once 'Very good' resources are combined with 'Good' ICT teaching, this proportion rises to seventy two. (Becta, 2001b, p. 8)

As Cox et al. stated:

There is a powerful relationship between the ways in which ICT has been used and pupils' attainment. This implies that the crucial element within the acceptable choice and use of ICT within education is that the teacher and his or her pedagogic

approaches. Specific uses of ICT have a positive result on pupils' learning wherever the use of ICT is closely associated with learning objectives. (Cox et al., 2003a, p. 3)
They went on to mention that:

Studies show that the foremost effective uses of ICT are those within which the teacher and also the computer programming will challenge pupils' understanding and thinking, either through whole-class discussions using an interactive whiteboard or through individual or paired work on computers. If the teacher have the talents to prepare and stimulate the ICT-based activity, then both the whole-class and individual work will be equally effective. (Cox et al., 2003b, p. 3)

In cases wherever pupils expertise appropriate ICT use, the crucial actions of the teacher in supporting learning have been identified during a vary of studies. Ofsted expressed, as an example, that:

Evidence conjointly shows a transparent place for pupils' use of ICT across subjects wherever the learner is using ICT strictly as the medium for learning and wherever previous learning in ICT capability isn't utilised. The gains in such experiences embrace having the ability to regulate the pace and order of learning and also the clarity of exposition through animated graphics or video clips. The role of the teacher during this activity paradoxically becomes a lot of significant; the combination of human and pc interactions is that the telling issue. (Ofsted, 2004, p. 8)

The role of motivation in enhancing learning is commonly reported by teachers. A number of studies have highlighted the passion that may be generated and stirred up once ICT is employed, and therefore the kinds of motivation arising are shown in some specific studies positively to enhance learning. Passey and Rogers (2004, p. 3), studied the amount of motivational impacts arising from uses of ICT, concluded that: 'ICT use by pupils and teachers in the case study schools led to positive motivational outcomes, supporting a focus upon learning and the tackling of learning tasks'.

Education in the past was typically a matter of uni-directional transfer of information: from the teacher to the student. The main pedagogical approach was whole class teaching. Many argue that new pedagogical models need to be explored in order to prepare future citizens for lifelong learning. There is, as yet, very little accord in societies regarding what these new education models ought to embrace. There are notions that students ought to be trained to find out a lot of autonomously and to induce access to and appreciate the subject independently than has been the case till date. However, to apply this to the education system is rather unclear. However, it is still a question as to what extent the schools will accept the idea of giving more scope for autonomous learning to students.

It is typically assumed that active learning is often expedited by ICT. Active learning presupposes that the learner has quick access to data sources. Such access nowadays are easily available on the Internet and of interactive, locally available data bases, such as encyclopaedia on CD-ROM.

It is acknowledged from previous analysis that academic innovations sometimes don't succeed if teachers aren't given the abilities and skill required to implement the new innovations. Training teachers may be a very costly activity and therefore we see this area is not being much importance.

The major obstacles are lack of computers and lack of knowledge among teachers. ICT has the potential to transform the nature of education (improving teachers' design work, enhancing the roles of students and teachers in the learning process and helping to create a collaborative learning environment, etc).

ICT for education is more critical today than ever before since its growing demand and capabilities are triggering a change in the learning environments in the education system. (Pajo and Wallace, 2001). The use of ICT offers powerful learning environments and can transform the learning and teaching process very effective and interesting, so that students can deal with knowledge in an active, self-directed and constructive way (Volman and Van Eck, 2001; de Corte et al., 2003). At present ICT is considered as an important means to promote new methods of instruction (teaching and learning). It should be used to develop students' skills for cooperation, communication, problem solving and lifelong learning (Plomp et al., 1996; Voogt, 2003). Although computers and technology are prevalent throughout our society (Cuban, 2001), developing countries are far from reaping their benefits because of certain barriers.

By adopting ICT, we can offer high quality education. Ehrmann (1994) identified four distinct faces of quality education, which can be supported by ICT: learning by doing, real time conversation, delayed time conversation and directed instruction. Hawkridge et al. (1990) suggested that the use of ICT could improve performance, teaching, and administration, have a positive impact on education as a whole, and develop relevant skills in the disadvantaged communities - helping in liberation and transformation. The Dakar Framework for Action (World Education Forum, Dakar, Senegal, April 2000) also stressed the use of ICT for achieving 'Education for All' (EFA) goals and recommended, "ICT must be harnessed to support EFA goals at an affordable cost. These technologies have great potential for knowledge dissemination, effective learning and the development of more efficient education services." Technology should be used as a tool to support educational objectives such as skills for searching and assessing information, cooperation, communication and problem solving - which are important for the preparation of children for the knowledge society (Drent and Meelissen 2008). Cox et al. (1999) carried out a study examining the factors relating to the uptake of ICT in teaching.

The results of the research study showed that the teachers who are already regular users of ICT have confidence in using ICT, perceive it to be useful for their personal work and for his or her teaching and conceive to extend their use more within the future. The factors that were found to be the foremost necessary to those teachers in their teaching were: creating the teachings a lot of attention-grabbing, easier, more fun for them and their pupils, a lot of variety, more motivating for the pupils isnd more enjoyable. Additional, a lot of personal, factors were: improving presentation materials, allowing greater access to computers for personal use, giving more power to the teacher in the school, giving the teacher more status, making the teachers' administration more economical and providing technical support through the technology.

Researchers have conjointly found that computers enhance teaching and learning by providing opportunities to observe and to research, providing higher access to relevant articles and teaching and learning materials. Every teacher ought to use learning

technologies to boost their students' learning in each subject - as a result of ICT will have interaction the thinking, higher intelligence quotient, downside determination and reasoning behaviors of students (Grabe and Grabe, 2001). In fact, innovative use of ICT can facilitate student-centered learning (Drent, 2005), engage students in constructive classrooms and enhance their social interaction (Dodge, Colker, and Heroman, 2003). It has been shown to improve their thinking ability (Nir-Gal & Klein, 2004), increase creativity (O'Hara, 2008), and improve their problem-solving skills (Sarama and Clements, 2001).

3. Need for ICT in Education

Information and Communication Technologies are outlined as all devices, tools, content, resources, and services, digital and those that can be converted into or delivered through digital forms, can be effectively used for attaining the goals of teaching and the learning process, for enhancing access to education and reach of resources to the needy, increase the capacity of the management of an educational institution. This includes hardware devices connected to computers, and software package applications, but also interactive digital content, internet and other satellite communication devices, radio and television services, web-based content vault, discussion forums, learning management systems, and management information systems.

In India, ICT is essentially related to the utilization of computers and internet technology. What one uses ICT for and the way one uses it, isn't addressed sufficiently. Schools and faculties acquire computers, web connectivity, LCD projectors and then send their teachers for crash courses that supposedly teach them to use technology. The trouble is that this whole approach is neglected from focus. But, until teachers are compelled to appreciate the necessity of ICT, no amount of computerization can help in imparting better education. Teachers who are unwilling to use technology consider the ICT plunge is, 'Can the student learn something without the teacher explaining or intervening?'. However, these are the teachers who do not appreciate the children's' ability and intelligence for learning. Thus, teachers have to be trained to facilitate the learning process, make the process real, achievable, challenging, yet exciting and not intimidating. Many teachers suppose that the computer is employed solely to create the content look attractive! However, today getting information on an internet is not difficult for the children, instead organizing, sharing, and collaborating is the challenging task and requires special skill to do the same. Hence, ICT is not merely to portray information but to interact, share, and thus learn and make other learn. ICT provides significant and an interesting media that makes teaching-learning more efficient and productive. According to Peeraer and Petergem, ICT benefits schools in several ways:

(i) enhancing learning in a classroom;

(ii) improving school management and related tasks;

(iii) improving accountability, efficiency and effectiveness in school activities;

(iv) introducing usage of Power Point presentations and internet.

Keengwe and Onchwari support the view that ICT in schools can lead to high quality teaching and learning. Others who confirm to this view are Jhuree, Yusuf, Dzidonu, Higgins and Moseley, and Rebecca and Marshall. Nisar, Munir and Shafqat found that availability and usage of ICT improves the knowledge and learning skills of students. Hence, it compels implementation of effective policy for the education sector. Literature reveals that when well-utilized, ICT in schools has the potential to improve the teaching-learning process in many ways. ICT is a learner centric and hence brings about active involvement of students in the learning process. Students get motivated when learning activities are challenging, authentic, multi-sensorial and multi-disciplinary.

4. Government of India initiative to promote ICT

Considering the immense importance of ICTs, the government of India has formulated the National Policy on ICT enabled school education which aims at preparing youth to participate creatively in the establishments, sustenance and growth of a knowledge society leading to all round socio-economic development of the nation and global competitiveness. In India, ICTs was launched in schools in December 2004 and revised in 2010 to provide opportunities to secondary school students for building upon their capacity on ICT skills and direct them towards computer aided learning process. ICT in schools have been included under the Rashtriya Madhyamik Shiksha Abhiyan (RMSA). The scheme is an attempt to bridge the digital gap amongst students of varied socio-economic and alternative geographical barriers and backgrounds. The scheme also provides support to States and Union Territories to establish computer labs on sustainable growth.

The highlights of the revised scheme are:

- Beneath the revised scheme, there's a provision of a appropriately qualified full-time computer teacher in every secondary and higher middle school.
- There are provisions for in-service (induction and refresher) coaching for all teachers in secondary and higher secondary schools to empower them to impart ICT enabled teaching.
- One hundred fifty smart schools would be set up by State Governments and by the UTs at the district level by utilizing a grant of Rs. 25 lakhs for a schools and a recurring grant of Rs. 2.5 lakh per year. This would enable provision of a minimum of forty computers in every such school.
- There's a provision to strengthen SIETs to contribute to e-content development.
- Management, monitoring and evaluation will be strengthened.
- Convergence with the prevailing programme would be essential particularly in teacher's training and giving regular power supply with internet facility.
- The scheme includes National Award for teachers using ICT in schools as a teaching learning method.
- The expenses will be shared in the ratio of 75:25 respectively between the Centre and the State governments except for the north eastern States including Sikkim where the ratio would on 90:10.

Nevertheless, technology is only a tool and the success of ICTs in enhancing the delivery of quality education to the needy, without widening the gap, yet it will depend largely on policy level interventions that are directed toward how ICTs must be

deployed in school education. In India, various ICTs have been employed over the years to promote primary and secondary education in schools. However, there have been enormous geographic and demographic disparities in their use. Some states and regions in the country currently have an enabling environment in place that allows for a greater use of ICT for education, whereas others lack such an environment.

5. Challenges in implementation of ICT enabled education

The above-named theme proves the efforts being created by the Government of India for improvement in education as well as the introduction of ICT for faculties. Though ICT has the potential to enhance the education system, however the most crucial challenges in implementation of ICT in India are;

- Lack of trained teachers is the major obstacle within the use of ICT. Therefore, schools depend more on NGO's to impart basic computer skills for the children particularly in government schools.
- Research studies have reported a variety of barriers/obstacles for teacher' to use ICT in their class rooms. These embody lack of resources, inadequate coaching opportunities, lack of confidence amongst teachers, scarcity of time, no idea as to how to incorporate ICT in lessons, technical problems, poor administrative support.
- The problem that was found in other developing countries in using ICT in schools are; McCarney reported that the inadequate computers, a dearth for giving sufficient time for students to use computers are vital barriers. Inadequate coaching and scarcity of skilled development programmes to incorporate technology into the present curriculum were conjointly recognized as major hindrances toward ICT integration in schools.
- Lack of time to engage regular classes was another issue that prevented teachers from making use of ICT in class rooms. Wood et al. showed that confidence with technology was connected with effective computer integration within the class room. They found in their research that the individual characteristics like expertise with computers and confidence with technology as reasons why teachers do not use computers (in spite of availability of hardware).
- Unfavorable institutional culture and poor attitudes and beliefs particularly in developing countries, the school managements fail to recognize and realize the importance of ICT in schools. Also, the teachers 'attitude and beliefs are orthodox in nature. They are unaware and rigid and not willing to adapt to the modification. They are under the false beliefs that ICT is for children and are skeptical regarding the effectiveness and utility of ICTs at school education.
- Paucity of time in schools as teachers are often burdened with multiple tasks apart from teaching. Moreover, they need teach all subjects together with ICT. Thus, teachers have no time to create, develop and incorporate technology into teaching and learning effectively.
- Another big hurdle is the software available for academic purpose is in English language.
- Majority of online content is accessible in English. English proficiency is not high, particularly outside the urban areas that become a significant barrier to maximizing the academic advantages of ICT.
- Resource connected problems and internet rural schools sometimes face hassle with relation to the supply of ICT connected resources like supporting infrastructure, uninterrupted electricity, supplementary resources like the multimedia system, projectors, scanners, sensible boards, and so on. Despite being an integral part of the ICT, the internet is lacking in most rural schools.
- There is resistant from teachers, especially from elderly teachers as compared to younger ones, to use ICT in their subject. Thus, teachers must change their mindset and have to update and get trained to use ICT in an effective manner.

6. Conclusion

India being a signatory of the United Nations Universal Declaration of Human Rights (1948) introduced free and compulsory education under Article 41 and 45 in the chapter Directive Principles of State Policy of the Constitution of India. The framers directed that the object of Article 45 must be achieved within ten years of the commencement of the constitution. However, after sixty years of independence this was still not achieved. After several judgments from the Judiciary, the parliament decided to make education a Fundamental Right. The Constitutional (Eighty Sixth) Amendment Act 2002 (Amendment Act, 2002) was passed and the right to free and compulsory education became a mandate. To execute this mandate the Parliament passed the Children Right to Education Act 2009 (RTE Act, 2009).

The main objective of the Act is to impart "free and compulsory" education and of course the overall objective of RTE Act 2009 is to give a holistic approach to elementary education. Coming to introduction of ICT at school level, in spite of revised scheme to promote ICT in schools the main challenge is implementation of the scheme effectively. The main issue is qualified teacher, electricity and availability of internet facility. Though infrastructure is provided with the computer lab, ICT is neither used effectively by teachers in teaching nor the basic skills of computer is taught effectively for the children.

7. Suggestions

The major problem at remote schools in India is 'single teacher schools'. The reason is (a) lack of qualified teachers (b) class room strength is very low. Thus, this situation can be easily solved by having one "Single school" in the locality and providing free transportation facility and children who resides beyond one kilometer in distance from the school premises shall be provided with hostel facility. The State Governments are already providing free education which is 'free and compulsory' elementary education between the age group of 6 to 14 years, which includes supply of free books, free uniform and free mid-day meal. India had succeeded in the mission of enrolment, retention and completion of elementary education. But what is lacking is learning outcome. The recent researches have proved that using ICT bring better learning outcome in children. However, what is required to get the learning outcome from children. Thus, focusing on making teaching–learning an interesting exercise and to get the expected learning outcome from the children, using ICT effectively is very essential.

The main issue is availability of electricity. This problem can be solved by using solar panels. The next issue is the availability of internet connectivity. The easy way to use the technology is to have small video clippings to use it offline. Storing in CD and

training the teachers to use the same in teaching will be of great benefit for children as well as teacher. The most important point is to train the teachers to use ICT in day to day teaching and explain the content in the local language for greater learning outcome from children.

The Statistics shows, nearly 385 million children are in poverty in India. Nearly one billion children worldwide are living in poverty. According to UNICEF, 22,000 children die each day due to poverty. When nearly, 135 countries in the world have decided to give free education for children, why the meaningful education by using technology cannot be given. It is not that every child should become a doctor or an engineer. To make a better citizen of tomorrow who have ability to take right decision, quality education is definitely essential. If all the children in the world are given better education by using technology, this world would become an amazing place to live in. Whatever may be the global problem; socio, political, economic, can be effectively solved if the people are smart and intelligent to take right decisions. Thus, for today's generation, education through ICT is one of the cost-effective means to impart education and get desired learning outcome .

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