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An Analytical Study on Current Level of ICT Access and Its Use in Education Sector: A Wake up Call for Educational Institutions

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Abstract:

Education is an asset for a society. The education system in India is governed by the Ministry of Human Resource Development (MHRD), and the different Departments of Education at the state level. The government of India has been making various noteworthy advancements in achieving the goals of universalization of elementary education through (ICT). This research work is an attempt to generate awareness among both in teaching and student fraternity employed/ enrolled in an educational institution. This is a secondary research on various policies of ICT run by government of India and by state governments to facilitate virtual teaching, online classes, content development and its delivery and connecting students from remote areas, rural areas along with urban regions. Some of the popular schemes are Sarva Shiksha Abhiyan(SSA), Kendriya Vidyalaya Sangathan(KVS) or Central Schools, Navodaya Vidhayalaya Samiti(NVS), Rashtriya Madhyamik Shiksha Abhiyan, and EDUSAT etc. This research highlights the spectrum of experiences of various schemes launched by government of India and by state government, for school education. It will also include the advantages and some practical hurdles of implementing ICT at primary, secondary and senior secondary school education.

Key words: Education, ICT, MHRD, Teaching and student fraternity, SSA, KVS, NVS, EDUSAT, Challenges, Schemes, Government, Primary, Elementary and Secondary Education

1. Full Length Paper

The education system in India is governed by the Ministry of Human Resource Development along with different Departments of Education at the state level. The government of India has been making various significant advancements in achieving the goals of universalization of elementary education. Since 2001, 'Sarva Shiksha Abhiyan' (SSA), which is known as the government's flagship education scheme, was implemented in partnership with the state governments since year 2001. It has been successful in appreciably increasing enrollments and reducing the gender gap in primary education. With the comparative success of SSA, the government has shifted its focus on universalization of secondary education, in a mission mode, by the implementation of the 'Rashtriya Madhyamik Shiksha Abhiyan'. Another significant milestone in this arena is 'Right to Education' bill, which has been designed to accomplish the task of ensuring equal access to quality basic education for all. It was passed by the parliament in August 2009. It made education a fundamental right for every child in the country.

This research paper is a result of extensive secondary research and would focus upon the current level of ICT in primary and secondary education in India based on a descriptive analysis of studies conducted by the Ministry of HRD, World Bank, UNESCO, private organizations like Intel, Azim Premji Foundation etc. This analysis has been done to update the level of awareness among people in general and among parents in specific, who are living in Indian society.

This research provides a secondary study of trends and dominant features of the use of ICTs for school education as profiled in different initiatives captured in the country reports. The paper also examines the inputs and challenges in the effective implementation of ICTs in school education. It provides suggestions to deal with these challenges and help the implementation of ICTs in school education. It is observed that new technologies are being incorporated with the older technologies to make ICT applications in education more effective. Educators are also exhibiting interest to use mobile technology to enable access to education. These consist of learning objects from digital Web-based resources, formed to bear learning and can function as discrete entities or be linked in order to relate to clear concepts or learning outcomes. These digital resources are stored in the repositories that function as libraries,

and provide information to the teachers, students and parents. These are structured and organized to facilitate the finding and employ learning materials regardless of their source location.

2. Information and Communication Technology Schemes for Schools

The ICT Schools scheme was launched in 2004 by government of India, with a vision to provide opportunities to students to develop their ICT skills and to enhance the use of ICTs to aid the teaching learning process. This scheme supports the procurement of computers, peripherals, software, connectivity, digital laboratories etc. The scheme is presently being implemented in all the states and union territories of India, in each government and government-aided secondary and higher secondary schools. It has become a popular and compulsory feature of almost all private schools whether affiliated to ICSE, CBSE or state board. The scheme aims to set up SMART schools in addition to basic ICT equipped labs, in Kendriya Vidyalayas and Navodaya Vidyalayas, both central government school systems, which will act as "Technology Demonstrators". It can guide to diffuse ICT skills among students of neighboring schools.

3. Sarva Shiksha Abhiyan

Sarva Shiksha Abhiyan is a main programme of the Government of India in partnership with the state governments to enhance creative development, and, to strengthen the formal primary and upper primary school systems. SSA started as a pilot mission for certain time period, with the objectives of ensuring universalization of Education that would bridge gender and social gaps by 2010. The SSA program is largely funded by the Government of India and it is also supported by the World Bank, the European Community, and Department for International Development.

4. EDUSAT (Education Satellite) is designed to provide distance education within the states as an effective aid for school education. Distance education functions as a catalyst for expediting SSA. Management Information System tool of SSA is a remarkable part of the project as it monitors the physical and financial parameters of the scheme. The system works on various modules viz. District Level, State Level, and Ministry Level modules. Role-based access control is given at each level, for different functions right from entering relevant school level data, to, generating and reviewing consolidated data at school, district, and state level.

The basic MIS functionality has been worked successfully in some states like Orissa and Uttar Pradesh by introducing features like GIS, Child Tracking etc. In 2007–08, the District Information System for Education was found operational in 624 districts in the country and it had collected information on 1.25 million institutions providing education at elementary level, with more than 5.61 million teachers.

Central government schemes such as ICT @ Schools, SSA, and Mission on Education through ICT are getting popular and are being used by almost all educational institutions, with significant number of students enrolled in open learning systems at the school and college levels. In addition to these central government schemes, state governments too, have their own major ICT-related projects in educational institutions.

Some examples of education initiatives using ICT in different states are:

"Chalta-Phirta Mobile Bus": It is a bus equipped with a television screen, computers, multimedia facilities, a book library, a blackboard/ white board and toys. It is especially designed to facilitate the slum clusters of New Delhi where children do not have a direct access to education. Each bus has at least two teachers specially trained to educate children through books, computers, exhibitions, videos, films et cetera.

"Eklavya computer-aided self-learning": It is a new practice, initiated by the government of Chhatisgarh, to provide fully animated multimedia software based on textbooks of classes 6,7& 8. These soft wares have been loaded on touch screen computers, which are kept in the school corridors for easy access by children.

5. Teacher's Training or TOTs (Train the trainers)

ICTs have offered an opportunity to teachers of schools, to transform their practices by providing them with improved educational content and much more effective teaching and learning methods. ICTs advance the learning process through the provision of more interactive educational materials that enhances learner's motivation and facilitate the easy gaining of basic skills. The use of various multimedia devices like television, videos, and computer applications have created more demanding and engaging learning environment for students of all ages.

In twenty-first century, there is a need to shift, the stereotyped traditional form of teaching and learning, from the traditional teacher-centered pedagogy to more learner-centered methods.

Active and joint learning environments facilitated by ICT, add to the creation of a knowledge-based student fraternity. ICT can improve education leadership, management, and governance by enhancing content development and by supporting administrative processes in schools and other educational institutions.

6. EDUSAT (Education Satellite), the first Indian satellite built exclusively for serving the educational sector, had been launched by the Indian Space Research Organization (ISRO). It was launched with the vision of serving the need for an interactive satellite to enhance the distance education system in India. Many projects have been initiated to impart education through the EDUSAT e.g. the Virtual Classroom Technology on EDUSAT for Rural Schools (VICTERS) program is one such initiative. Another example of such

program is “IT @ School”, a project initiated by Kerala State Government, envisioned to connect the EDUSAT satellite to train teachers, to provide high-speed net connectivity to schools, and to implement learning management solutions.

The Rajiv Gandhi Project for EDUSAT Supported Elementary Education (RGPEEE) is another important initiative aimed at enhancing the benefits of EDUSAT. It is a collaborative project of Ministry of Human Resource Development (MHRD), Indira Gandhi National Open University (IGNOU), and ISRO. This project aims at promoting the use of EDUSAT in teaching fraternity, to incorporate ICT in elementary education. It is operational in Madhya Pradesh, Uttar Pradesh, Chhattisgarh, and Bihar.

7. Navodaya Vidyalaya Samiti

Navodaya Vidyalaya Samiti (NVS) is an autonomous organization, run by the Ministry of Human Resource Development, Department of Secondary & Higher Education Government of India. It was shaped with an idea of providing quality education to the rural population who has been underprivileged of quality modern education usually available in urban areas. It is an attempt to recognize and implement the goal of setting up residential schools, to bring out the best of rural talents, mentioned in the National Policy on Education 1986. These residential schools are commonly known as Jawahar Navodaya Vidyalayas (JNV). NVS has incorporated a number of ICT facilities in each of the 576 schools stretch across the rural areas of the country.

8. Kendriya Vidyalaya Sangathan

Kendriya Vidyalaya Sangathan (KVS) is also an autonomous organization of the Ministry of Human Resource Development that aims at catering the educational needs of the children of transferable Central Government Employees along with Defense Personnel and Para-Military forces by providing a common programme of education. KVS governs the responsibility of establishing and maintaining Kendriya Vidyalayas (Central Schools). At present, the number of KVs is 978 in India with one school each in Kathmandu, Moscow, and Tehran. Over the last 4 years KVS has made wide-ranging efforts to promote ICTs in its schools. An example of this is Project “Shiksha” (literally meaning knowledge), initiated by KVS in collaboration with Microsoft to implement teacher training programs as well as to monitor the effectiveness of the training programs in the schools.

9. Project Shiksha

Teacher training under Project Shiksha, aims at acquainting teachers, to use technology in the classroom; they are trained on using visual presentation of theories and concepts in the curriculum after school hours to ensure no interference with the daily school routine. This kind of training lasts for a period of 10 days by working 3–4 hours per day.

10. Advantages of ICT

ICT proves to be a boon for children who live in rural and remote-rural locations, have special learning needs, which possess physical disabilities, constraining their access to schools, have dropped out and/or have kept themselves out of school for various reasons, which aim at excellence and fail to get satisfied in the current system. It has made a remarkable progress in following areas-

- Widening the availability of quality education materials
- Increasing access to institutions through distance learning
- Enabling a knowledge network for students
- Teacher’s Training
- Merging New Technologies with Existing Technologies in Use
- Enhanced Use of Mobile Technology
- Content Development by Learning Objects and Repositories

11. Limitations

- **Availability of Infrastructure to Support ICT**
It is a great challenge for schools to have availability of adequate infrastructure to support the deployment of ICTs. High initial cost of purchasing and setting up the requisite infrastructure, the maintenance and upgrade costs are a great hurdle in remote areas. The cost and effort of supporting such infrastructure also emerge as roadblocks to the successful usage of ICTs in schools, especially in poor and remote areas.
- **Funds Availability to Implement ICTs**
Availability of funds to set up and to start implementing these projects is still an issue of concern for developing countries like India.
- **Capacity Building of Teachers**
There is a need to get techno savvy teachers so that their potential can be increased by using various contents available at ICT platform.
- **Resistance to Change**
Resistance is commonly observed while attempting to introduce ICTs into schools, quite often from the teachers themselves, since they may think that they shall become redundant once technology comes in or that it is too late for them to acclimatize to a new environment. Educators themselves may become skeptical about the effectiveness of using ICTs in school education.

- **Lack of Awareness**

There is a general lack of awareness about ICTs in education, its utility, and how they can be accessed and utilized economically and effectively. This lack of awareness and knowledge about ICTs and their use in education, is observed even on the part of policy makers, administrators and educators, hence, makes it on the whole difficult, to deploy ICTs in the field of school education.

- **Internet Usage**

There are both the sides of coin as Internet contains tremendous potential for education, it also has its own pitfalls. For example, facilitating all the students with Internet access is an expensive proposition for most Government schools. This is witnessed more in rural centers and remote areas, where Internet connections are often erratic, if available at all.

- **Language Barriers**

English is the foremost used language of the Internet. It is estimated that 80 percent of online content is in English. A large percentage of the educational software produced in the world market is in English.

- **Monitoring and evaluation:**

Most of the issues, and problems associated with ICTs in education initiatives are known by policy-makers, donor staff, and educators. However, maintenance of data on the nature and complexity of these issues remains limited, because the system lacks good monitoring and evaluation tools and processes.

12. Conclusion

According to Promoting the Use of Information and Communication Technologies for Primary and Secondary Education: The Case of the States of Chhattisgarh, Jharkhand and Karnataka in India' Discussion Paper by Amitabh Dabla, Educational Development Centre, Bangalore India, it has been found that one of the biggest hindrances in the implementation of ICT programs in schools in India is the availability of technology. This is specifically true of rural India. In Tier 1 and Tier 2 regions of India, the appreciation of technology has been rated high as per surveys.

In order to prepare students more effectively to participate in ICT-driven education, greater commitments and willingness to share and adopt innovative solutions are urgently needed from all aspects of society be it Governments, the private sector, communities, donors, parents, and students. All schools should be transformed into active learning environments open to their communities. Telecommunication and power infrastructure policies should aim at schools as starting points for rural transformation; trainers, teachers and students should be empowered to be creative and should act as catalyzing agents for change in their schools; and leaders must cuddle a vision that will set up their youth for tomorrow's challenges.

Despite the challenges mentioned in the paper, ICTs are being increasingly used in education in both the developed and developing world, in order to connect children from poor and remote communities, render them a quality education, and in general equip both teachers and students with a wider range of educational resources to have greater flexibility. Hence it can be said that, the growth and success of ICTs in education depends on the extent to which the issues and challenges mentioned in this paper are addressed.

The success rates of various ongoing ICT programs in schools in India do show a ray of hope for the future. However, academicians are of the view that despite the beneficial opportunities for education that the ICT programs provide, they cannot be considered as a substitute of formal schooling. The role of technology is to support school education and not replace it, though the technology may play an appreciable part in meeting the needs of children who cannot go to a conventional school. Access to ICTs ensures enhancement of traditional or formal education systems, enabling them to adapt to the different learning and teaching needs of the societies.

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