Problems and Solutions in Facilitating Educational Technology in Rural India

Mrs. Pooja Rathi HOD and Assistant Professor, Dept. of Computer Science, St. Vincent Pallotti College, Raipur, India. rathipooja.08@gmail.com

Mrs. Abhilasha Khare, Assistant Professor, Department of Computer, St. Vincent Pallotti College, Raipur, India. abhilasha.khare@gmail.com

Abstract: Teaching learning is a most important factor when it comes to the quality education. In this era, when the world is rapidly marching toward the advancement in technology, problem solving has become easier with the help of different tools and machines. To remain in the race and to acquire a place, it has become mandatory to be tech savvy with efficient and smart working. Technology is playing a very vital role in the process of teaching learning. In India, 2/3rd of the population resides in rural area and around 1/4th of them are under the process of their primary or secondary education. In this context, when so much of tender age population (which will be would be HEROs of this country) in rural India is under their developing and progressing age, bringing of ICT enabled education is crucial and imperative. ICT has a great potential for enhancing teaching and learning outcomes. This study explores about the brief history of use of ICT in teaching learning and the role of teachers in ICT enabled education. This paper also tries to attempt problems and obstacles that are faced by the rural education systems. This study also proposes some appropriate approaches for well planned and systematic implementation of ICT enabled teaching for accomplishing the success. ICT infrastructure in Chhattisgarh state of India is also studied.

Keywords: use of ICT, Rural Development, Problems, Challenges, Solutions, ICT in Chhattisgarh.

I. INTRODUCTION

Education is fundamental to development and growth. The purpose of education is to develop students' desire and ability to think and learn. It is the process of facilitating learning and acquisition of knowledge, skills, values, beliefs and habits. Education can be thought of as the transmission of

the values and accumulated knowledge of the society. Knowledge can be information, facts, principles, skills, understanding, etc. that can be acquired through education. It is an important tool to get positive changes in society. So knowledge and education, together, can be exceptionally operational in directing the children towards their eventual role in society.

The real India lives in the villages. According to 2011 census, 68.84% of total population of India lives in rural areas. This is almost 2/3rd of the whole population and around 1/4th of this rural people are under the process of their primary or secondary education. With such large rural population very strong and tangible efforts are required for the development of rural areas. Rural development implies both the economic betterment of people as well as greater social transformation. The crucial motivating factor for the rural development is Education and imparting knowledge through education. Teaching and learning are the important processes that are linked with education and with the acquisition of knowledge. Apart from the traditional methods of teaching and learning, new emerging trends have made the work more motivating, appealing and more worthy. This is the era of technology and innovations. To learn in a structured and conceptualized way from right sources with the right and active learning methods has become mandatory and at the same time approachable. All over the world, governments and educationists are bringing up new focal points to expand the knowledge creation and sharing, with the help of advancement in technologies and sciences. In this context, acceptance and implementation of Information and Communication Technology (ICT) in India, may it be rural or urban, would certainly contribute and enhance its productivity, efficiency and growth.

II. OBJECTIVE OF THE STUDY

- To study the meaning and importance of ICT
- To explore the need of ICT and its implication in rural education and rural development
- To investigate the problems in facilitating ICT education in rural areas in India
- To analyze the possible solutions for these problems
- To find out the conclusion

 DOI : 10.18231/2454-9150.2018.1165

III. RESEARCH METHODOLOGY

The paper is based on secondary data and data is procured from published sources like the websites of Ministry of Rural Development, research papers, Science Direct, books and periodicals and newspaper reports.

IV. WHAT IS ICT

ICT, or information and communications technology, is the combination of tools, techniques and components that provide advancements in computing. It refers to all the technologies that are effectively used in variety of real life work including telecommunications, intelligent systems, transmission systems and many more. The last few decades have seen tremendous advances and innovations in technology and those leveraging these advances have seen paradigm shifts, be it in communications, computing, manufacturing, entertainment or media.

Although there is no single, universal definition of ICT, the term is generally accepted to mean all devices, networking components, applications and systems that combined allow people and organizations (i.e., businesses, nonprofit agencies, governments and criminal enterprises) to interact in the digital world. Michiel and Van Crowder (2001) have defined Information and Communication Technologies or ICTs as "a range of electronic technologies which when converged in new configurations are flexible, adaptable, enabling and capable of transforming organizations and redefining social relations. The range of technologies is increasing all the time and there is a convergence between the new technologies and conventional media".

The list of ICT components is exhaustive, and it continues to grow. Some components, such as computers and telephones, have existed for decades. Others, such as smartphones, digital TVs and robots, are more recent entries.

V. NEED OF EDUCATIONAL TECHNOLOGY

Every nation focuses on the sustainable growth and development of the society and Education is one of the most significant and essential tool to achieve it. Primary and secondary education acts as a major factors to enable and facilitate basic education, economic development and socialism. Over the years, liberalization and globalization have led to rapid changes in scientific and technological world and have prompted the general needs of improved quality of life and reduced poverty. This, undoubtedly, necessitates the school students to acquire higher levels of knowledge and skills than what they are essentially imparted with throughout their elementary education.

While talking about the quality education and about the various aspects of teaching learning, technology is turning up to be the most important factor. Technology and education, when blended together, have proven to be critically helpful in the systematic and conceptual learning with clear vision and understanding. To be an active, smart and tech-savvy citizen of the 21st century, today's children have to be prepared through technical aspects. Although, technology does not replace the teacher, but, the process of teaching-learning can be augmented with diversified approaches to inculcate skills in the young learners.

Integration of ICTs in education has a major impact on the learning environment and on a variety of students' learning activities, by encouraging more personalized, differentiated, and customized pedagogical approaches to cater for different conditions or even special needs. ICTs have the capability to innovate, fasten, enhance, and extend skills, to stimulate and connect students, to apply the knowledge in practical life, to strengthen the nation's economic status and to intensify education process. Regarding the pedagogical approaches, ICT enables teachers to create their own digital teaching materials and deploy them in a variety of teaching scenarios. Consequently, ICT is being exploited in subjects and across subjects. ICT has the ability to convert passive classroom sessions into active and enthusiastic learning. Therefore, it is important for teachers to understand new educational, didactic, cultural and social potential of ICT at their disposal.

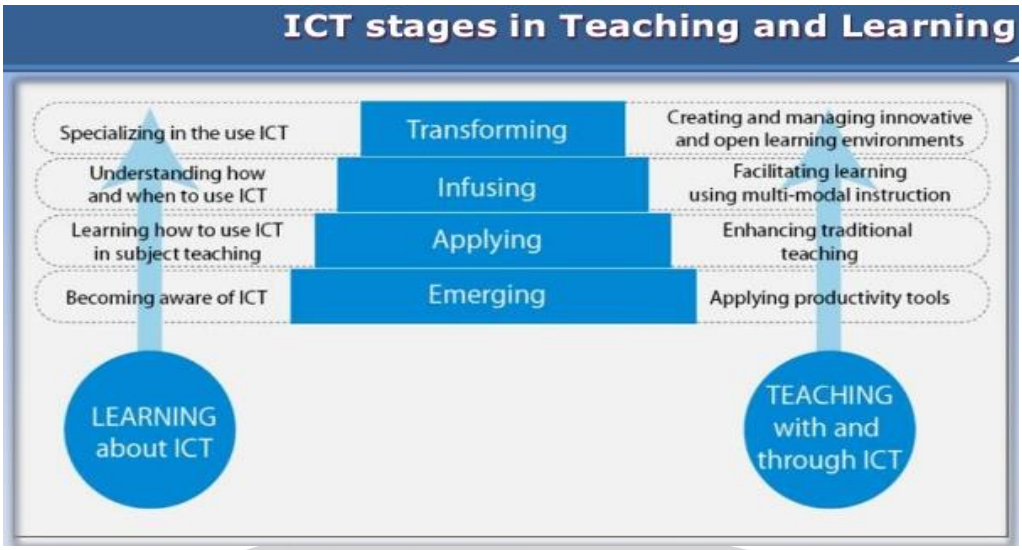
VI. ROLE OF ICT IN RURAL DEVELOPMENT

Literature reveals that when well-utilized, ICT in schools has the potential to improve the teaching-learning process in many ways. ICT is 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. Schools tend to witness a higher attendance, motivation levels, academic accomplishments and effective communication as an outcome of ICT programs and projects. Teachers too gain as a result of ICT initiatives. They find ICT to be useful for teaching as well as for personal and professional work. While imparting knowledge with the aid of ICT, educators find that students are more receptive and responsive. Also, ICT can help to impart more information and knowledge to students in a shorter time, enabling maximum utilization of resources and time. Some of the advantages of using ICT in Education are:

- Teaching-Learning process can be improved
- Systematic management of the tasks like record keeping, audits, MIS, research, presentations, audio-visual lessons etc
- Multimedia Classes

 DOI : 10.18231/2454-9150.2018.1165

- Conceptual learning with clear understanding
- Improvements in knowledge and skills of the students



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VII. PROBLEMS IN FACILITATING ICT IN RURAL EDUCATION

In the above sections, we have discussed about the importance of ICT enabled teaching and its impact in the development of the country. But in the developing country like India, implementation of ICT education in rural areas is quite difficult and complex. There are multiple issues and challenges involved in the compilation and execution of the ICT facilities in the remote villages and rural parts. Different issues and obstacles are been faced by the teachers and children in these schools.

Most of the teachers face some or most of the following obstacles:

- Lack of funding: This is the most crucial issue in setting up of ICT in rural schools. Purchasing of hardwares, softwares, and the other digital medias are often expensive.
- Lack of technical and supporting staff: Highly qualified and experienced technical teaching and assisting staffs are required for the smooth and effective teaching of the ICT classes. Also maintenance is important and critical.
- Low quality and insufficient infrastructure: This includes quality of hardware parts installed, quality of internet connection and other devices like modems, tablets, mobile devices etc.
- Lack of training programs for non technical staff: Proper training is required for taking ICT classes through which teachers can be made aware of use of projectors, internet surfing, etc.
- Lack of Time and professional development facilities: Teachers are often overloaded with lot of work apart from teaching. For ICT enabled teaching, they require extra practice and reading time which is rarely provided. Even they need facilities for their own development.
- Lack of Parent's support: This is due to insufficient knowledge and also due to social and cultural differences.
- Lack of teachers' confidence and expertise in the field of ICT.

VIII. POSSIBLE SOLUTIONS TO FACILITATE ICT IN RURAL EDUCATION

For overall development of the nation and for economic development, it has become mandatory to have the connectivity with the exterior world and ICT plays its role here. With the objective of communication and to exchange the information in the rural part of India, ICT can be very much useful. Rural community can get connected with the global information system. For providing more proficient ways of retrieving, processing and delivering of information facilitation of ICT education is essential following are some possible solutions on the problems discussed above.

- The most important action is the Motivation. Students and teachers, both, should first get aware of the importance of technology and its application. Unless and until the role and benefits are been clearly comprehensive, people will not get inspiration and inclination towards the emerging technologies.
- For enhancing the ICT technology, sufficient amount of funding is necessary and the funds should be loyally and authentically used for the purpose of the ICT application.
- For setting up the infrastructure, appropriate equipments and pertinent manpower should be provided.
- Quality of the tools and equipments should be good enough to carry on the process. Internet connection and its speed and consistency should be maintained.
- Teachers should be trained through the proper training sessions. At most of the places, staff is not trained and

 DOI : 10.18231/2454-9150.2018.1165

is reluctant to the use of technology. Seminars and workshops should be conducted for them.

- Technicians should be appointed for troubleshooting and for solving hardware and software related problems.
- Proper importance should be given to the technology based teaching and atmosphere should be created. Then only the students will understand its importance.

IX. GOVERNMENT INITIATIVES

For the expansion of ICT enabled teaching learning in the field of education, Indian government has announced 2010-2010 as the decade of innovations. With major focus on worldwide and incorporated learning, different policies are been launched to promote and create ICT environment for empowering the children of rural India. Some of the initiatives are:

- Community radio initiative - to focus on issues relating to health, education, environment, agriculture, rural and community development.
- Mobile classroom facilities – will be movable classroom with all ICT infrastructure.
- Community Television : As an instrumental device it is being used in variety of ways such as for direct teaching for supplementing formal education.
- Computer literacy projects for teachers and children
- Gyan Sanchar : It is designed to bring affordable and cost effective services to rural India. The objective of this project is to develop a model for sustainable increase of telecommunication services and ICT applications in rural India.
- Installation of E-learning centers and information Kiosk in villages.
- ICT initiatives by Higher education like Gyan Darshan, Gyan Vani etc and various other technology education programs
- E-Seva centers- are the centers for e-governance to provide better governance facilities to the rural people.
- Award for the teachers who uses ICT aids in their teaching-learning.

X. ICT INFRASTRUCTURE IN CHHATTISGARH

Chhattisgarh in India is a central Indian state. It is the 7th largest state in the country with a total area of 135,195 sq.km. The state has 27 districts and these are divided in three regions: Northern region, Central Plains region and Southern region. Raipur is the capital city. Chhattisgarh is primarily a rural state with only 20% of its population (around 5.1 million people in 2011) residing in urban areas. According to the census of 2011, Chhattisgarh's literacy rate was 71.04% with female literacy at 60.59%.

Table 1 : Percentage of Schools established since 2012

Year	2012-13	2013-14	2014-15	2015-16
Chhattisgarh	18.60	13.56	15.84	17.34

Source: Compiled from U-DISE Flash statistics for respective years

Table 1 shows the percentage of secondary schools established since 2012. There has been gradual increase in the number of schools established from 2013-14 to 2015-16. However, there was a drop in the percentage of schools established from 18.60% in 2012-13 to 13.56% in 2013-14.

Table 2 : Total Enrolment in Secondary Schools

Year	Total enrolment
2012-13	884293
2013-14	982097 (11.06 %)
2014-15	992283 (1.03%)
2015-16	989703 (-0.26%)

Source: Compiled from U-DISE Flash statistics for respective years

Table 2 shows the total enrolment in secondary schools in Chhattisgarh. In 2013-14 there was 11.06% increase in enrolment and in 2014-15 there was an increase of 1.03% in enrolment. In 2015-16, there were 9,89,703 secondary school students in Chhattisgarh.

By acknowledging the importance of ICT in the growth and progress of the country, it has been introduced in the schools and as per the NCERT rules, one to three percent of the budget be spent on providing computers in secondary and senior secondary schools. Following this recommendation, in 2004, the government launched its flagship ICT scheme for schools, the 'ICT@Schools', to promote ICT literacy and ICT-enabled learning in government and government-aided secondary and senior secondary schools. Based on the implementation experience of the first six years, the Government revised the ICT@Schools scheme in 2010. Within a federal government structure, the central government lays down the broad guidelines for the scheme, while individual states are responsible for its implementation. Following table shows the status of ICT infrastructure in Chhattisgarh.

Table 3: Status of ICT infrastructure in Secondary schools in Chhattisgarh

Year	Computer	Computer with Internet	Student-Classroom Ratio
2012-13	15.20%	5.70%	61
2013-14	34.56%	11.41%	59
2014-15	43.25%	16.28%	53
2015-16	46.41%	19.81%	50

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Source: Compiled from U-DISE Flash statistics for respective years

In 2015-16, 46.41% of the schools had computers, 19.18% of the schools had computer with internet connection and the average student to classroom ratio was 50.

XI. CONCLUSION

To conclude with, it is studied that, educational technology have increased the quality, quantity and speed of knowledge sharing drastically and have reduced the cost and efforts. India is a developing country with the graph of economy growing continuously. It is necessary for India to maintain its development in different sectors including rural areas. ICT can be a better solution to lessen the hurdles in the developing processes. Government is trying and launching different plans for initiation of fast rural growth in the field of education. The young pupils of the remote India can be transformed into tech savvy buddies to perform their role in the country's development and progress. This will be possible only with the rapid and drastic transformation in educational technology. This paper discussed about the brief observation about use of ICT in teaching learning and the role of teachers in ICT enabled education. Problems and obstacles that are faced by the rural education systems are also been discussed. This study also proposes some appropriate approaches for well planned and systematic implementation of ICT enabled teaching for accomplishing the success. ICT infrastructure in Chhattisgarh state of India is also studied.

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