



## **Ict And Sustainable Education For Rural India**

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### **Abstract**

*Although India boasts of being one of the largest users of telecom in the world, internet penetration in rural India is still around 20% as against 65% in urban India. Policy making efforts in India so far, have largely focused on overcoming infrastructural barriers to rural access. However, access to ICT and internet is only a part of the problem that rural India is facing with regard to digital inclusion.*

*The adult literacy rate in India is about 71%-64% in rural areas as compared to 84% in the urban areas (Economic times 2015). Consequently, the demand for education is very high, sometimes beyond the conventional system's ability to provide it. Therefore, it is being realized that ICT based resources can extend opportunities to previously neglected and scattered populations. Hence, ICT's must be included in educational systems to improve the effectiveness and efficiency of education in formal and non formal settings, as well as to familiarize and provide skills to students with digital tools and environments.*

*The census data of 2011 states that almost 70% of India's population still lives in rural areas. As India boasts of it's gigantic telecom customer base, the world's lowest call rates and fastest growth in the number of subscribers, fastest sale of mobile phones, and the world's most affordable 3G phone, according to the Telecom Regulatory Authority of India (TRAI), such a strong ICT base can be leveraged to develop a, model for increasing literacy in rural India.*

*The deteriorating state of rural education itself has been a major concern for educational policy makers in India. According to Pratham's Annual Status of education Report (ASER) 2016, which revealed that despite increased enrolment, a significant proportion of children in classes 1 to 8 in government and rural private schools could not read texts for class 2 students or even do simple arithmetic that their age group is expected to do. Adding to the problem is the high dropout rate which is nearly 50% by age 14. Therefore, for the vast majority of rural students who attend government schools, the acquisition of ICT skill sets and facilities remains a distant dream.*

*New tools for digital education in rural India could solve the problems of mass reach as well as quality and relevance of education. Due to the dearth of teachers in the rural areas, one of the options could be the creation of virtual classrooms through which teachers could be made available. The government has also moved speedily to create the required infrastructure for*



*ICT enabled education for a more sustainable future in education for the rural populations in India.*

**Key words:** *internet, rural, urban, digital, inclusion, education, sustainable*

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### **Introduction**

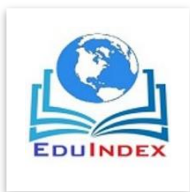
<sup>1</sup>*India boasts of having one of the world's largest telecom customer base, the lowest call rates, the cheapest mobile handset and the most affordable 3G phone in the world. However, the penetration of the internet in rural India is still as low as 20%, as against 65% that exists in urban India. Policy makers in India have focused on overcoming barriers in gaining access to rural India. However, as far as the problem of digital inclusion with regard to education in rural India is concerned, access to ICT devices and internet is only a part of the problem.*

*Broadly, ICT's in education refer to a wide set of technological tools and resources that can be used to communicate, create, disseminate, store and manage information (Blurton 1999). In India, the adult literacy rate falls between 64%-71% in the rural areas as compared to 84% in the urban areas (Economic Times 2015). The demand for education in India is much higher than the capacity to provide for it. It is also being realized widely that the use of ICT can help in building opportunities to the scattered and neglected populations of the country. Hence, ICTs must be ingrained into the educational systems in order to improve the effectiveness and efficiency of education in formal and non-formal settings. This will help in the long run to acquaint students and provide them with the necessary skills with digital tools.*

*A national policy was formulated by the government of India in 2012, based on an ICT enabled school education which aimed at preparing the youth to participate creatively in establishing, sustaining and building a knowledge society which would lead to the all-round socio economic development of the country and global competition at large. The National Commission on Education through information and communication technology (NME-ICT)*

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<sup>1</sup>Madangopal.M .D &Madangopal.M (2018 Aug 6) 'CT in education: The rural challenge'CCDS-Centre for Communication and Development Studies. Retrieved from<https://digitalequality.in/ict-in-education-the-rural-challenge/>



*tried to bring about change in a holistic manner by offering internet access to remote areas, developing e content and empowering the students by providing them with low cost tablet personal computers. One such provision went by the name of 'Aakash' which in spite of being a low cost initiative was not very effective as it ran out of adequate supporting infrastructure such as content, unlimited data plans and applications. Apart from this "Aakash" failed in its distribution as well.*

*It is an accepted fact by academicians and practitioners that the use of ICTs in education has a positive impact on the overall learning environment. With the help of ICTs, one can innovate and build skills to motivate and keep students engaged in lifelong learning wherein the experience at school and college can be related to work practices and create an economically viable environment for workers and strengthen teaching.*

<sup>2</sup>At the same time, the wide range of available platforms serves as a cautionary tale. Many of these were conceived as an ultimate solution to the fragmentation evident in the education space, only to fall short during adoption and implementation. In this way, attempts to consolidate ICT usage around certain platforms has only added to the fragmentation discouraging scaling up. For this reason, the best approach to encouraging consolidation is not introducing a new platform addressing all the shortcomings of existing platforms. Rather, the best existing societal platform should be aggressively promoted in combination with efforts to expand and improve the content available. Teachers will only adopt platforms hosting resources they find useful, and will only contribute content to platforms they are sufficiently comfortable with, but once this process starts, it should continue organically.

### **Benefits of ICT in Schools**

<sup>3</sup>ICT plays an important function when used in educational institutions as it assist in activities such as record keeping, research work, instructional uses, presentations, financial analysis, examination results management, communication, supervision, MIS, teaching –learning activities and general school management functions. Peeraer and Petergem (2011) in their research on the benefits of ICT in educational institutions have found that it benefits schools in several ways:

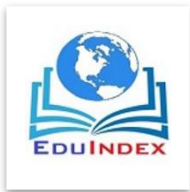
-enhancing learning in the classroom

-improving school management and related tasks

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<sup>2</sup>Bajpai.N&Biberman.J&S.Aanchal (2019, January)'Information and Communications Technology in the Education Sector in India'. CSD Working Paper Series: Towards a New Indian Model of Information and Communications Technology-Led Growth and Development, Pgs. 2, 6, 7,8,9,10,11

<sup>3</sup>Budhedeo S.S (2016, January)'Issues and Challenges in Bringing ICT Enabled Education To Rural India'. International Journal of Scientific Research and Education, Volume 4, Issue 1, Pgs.4759-4766



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-improving accountability, efficiency and effectiveness in school activities

-Introducing the use of power point presentations and internet

Keengwe and Onchwari (2011) in their research have found that ICT when introduced in schools can lead to high quality teaching and learning. Others who confirm to this view are Jhuree (2005), Yusuf (2005), Dzidonu (2010), Higgins and Moseley (2011), and Rebecca and Marshall (2012). Nisar, Munir and Shafqat (2011) found that the availability and use of ICT in educational institutions improves the knowledge and learning skills of students. Motivation to learn among students is greater when learning activities are challenging, authentic, multi sensorial and multi disciplinary. As an outcome of ICT programs and projects, students attend classes more regularly, their motivation levels are higher, they accomplish better academically and also develop effective communication.

Teachers also stand to gain as a result of ICT initiatives. ICT based teaching and learning helps teachers with their teaching and in their personal and professional work. Teaching becomes more innovative, interesting, interactive, easy and effective.

A study that was conducted by ASER (2014) reports a small increase in the availability of computers in rural schools. Computer availability has increased from 15.8% in 2010 to 19.6% in 2014. Among the states that have shown positive increase in this regard are Gujarat wherein 81.3% of schools visited had computers. In Kerala a record of 89.8% schools had computer facilities. Maharashtra showed 46.3% computer enabled schools and also 62.4% schools in Tamil Nadu.

### **Rural challenges**

The census data of the year 2011 states that almost 70% of India's population still lives in rural areas, As India already has a strong ICT base ,it can be leveraged to develop a model for increasing literacy in rural India.

According to the 'Internet in India 2017' report by the Internet and mobile Association of India (IAMAI) and Indian Market Research Bureau (IMRB) Kantar, internet penetration in urban India is 64.84% and in rural India it is still as low as 20.26% in December 2017. The stagnating state of rural education has become a major area of concern for educational policy makers in India. In spite of the increased enrolment, a significant proportion of children from classes 1 to 8 in government and rural private schools could not read text that is suitable for class 2 students or even solve simple Maths problems for their age group. This is the data that was submitted by Pratham's Annual Status of Education Report (ASER) 2016. Nearly 50% students drop out by the age of 14. This adds to the already existing problem. As a result of this for a large majority of students in the rural areas who attend government schools, developing ICT skill sets remains a distant dream.



In the rural areas, teachers who play the role of disseminating information, are inadequately trained and are often over burdened with administration of mid-day meals, assisting in immunization programmes and in providing aid in areas of health care and social awareness.

### **What is being done**

There is a need for new digitized education tools in rural India which could solve the problem of mass reach as well as the quality of education. Virtual classrooms could be used more frequently making teachers more available to students. This is especially because most qualified teachers are unwilling to move to the remote village areas. The government is also working towards creating the required infrastructure for ICT enabled education. Some of the programmes that have been introduced to enhance the use of ICT in rural schools are:

-The ICT@ schools programme which was launched in December 2004 and later revised in 2010 which aims to build the ICT skills of secondary school students and also encourage learning through computer aided processes. The ICT@Schools has also been included in the RashtriyaMadhyamikShikshaAbhiyan (RMSA), which also supports states/union territories in establishing sustainable computer labs. It has also helped greatly in bringing together students across all socio economic and geographical barriers.

-According to the Digital India initiative of the present government, there is a massive plan to provide rural areas with high speed internet networks.e.g E-basta is one such program which aims to provide learners with tablets and computers to promote digital education in the rural areas.

-Another initiative is one that has been taken by the government of West Bengal as they have introduced a number of projects for computer skill development among school and college students. This initiative has been taken as a part of the vocational education curriculum .This is accompanied by broad based computer awareness and training programme for the disadvantaged groups such as the scheduled castes, scheduled tribes and other backward classes and religious minorities among other social welfare activities introduced by the government.

-A state financed computer education and computer aided project for students of class 8to 10 was introduced by the Karnataka government in the year 2001 under the Mahiti Sindhu project.

-The Gujarat government has also set up computer centres with broadband internet in the villages under the government's ICT in education initiative.



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-Some noteworthy attempts have been made by a few NGO's in spreading digital education tools in Indian villages in order to improve the quality of education in the remote regions through digital classrooms. One such initiative is 'eVidyaloka

-One of the most self-sustainable, demand led and flexible models that addresses education and ICT requirements in rural India is AISECT that has pioneered the multipurpose IT center model in India. This model aims to provide entrepreneurs in rural India an additional income.

-AISECT has also launched Advantage Pro Interactive Multimedia Content in order to provide low cost and high quality e learning modules and solutions to students in semi urban and rural areas.

-Among the corporates who have joined the band wagon are Qualcomm who have launched the Play n Learn Programme for school children between the ages of 5-8 yrs., by providing them with 3G tablets under it's scheme of the 'Wireless Reach' initiative.

-Recently, Samsung has also started a Smart Learning initiative in order to provide interactive study materials to students. Tata and reliance are also major players in providing digital education.

### **Corporate Social Responsibility**

#### **Azim Premji Foundation**

<sup>4</sup>The chairman of the Indian Tech giant, Wipro and the founder of the Azim Premji Foundation, has made a philanthropic effort which dates back to the year 2000, in delivering quality universal education to the nation's rural government run elementary schools. During the early years of the Foundation, educational initiatives were implemented in direct collaboration with the state governments in the areas of assessment, curriculum reform, textbook development, teacher training and educational administration. A commitment to multi lingual digital learning resources was the goal of these programs which included books, electronic databases and software for students from classes 1-8. The Azim Premji Foundation's focus has shifted since 2010 to direct management with institutions in order to work with the state in a more systematic and sustainable manner.

#### **HCL Foundation**

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<sup>4</sup>Bajpai.N&Biberman.J&S.Aanchal (2019, January)'Information and Communications Technology in the Education Sector in India'. CSD Working Paper Series: Towards a New Indian Model of Information and Communications Technology-Led Growth and Development, Pgs. 2, 6, 7,8,9,10,11



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The Hindustan Computers Limited (HCL) under the auspices of the Shiv Nadar Foundation has also been delivering technology powered education solutions to children and women in urban and rural areas, as a part of their corporate social responsibility. The Samuday Program which falls under the philanthropic efforts of HCL, sustainable development is promoted in rural India. HCL has three education initiatives namely Gurukul, My School and My Scholar. These initiatives have reached 133,665 adults, youth and children in the years 2016-17. The Gurukul initiative offers digital literacy courses for women and children through a community center outreach model. On the other hand, the My School initiative works around directly strengthening the quality of school programs. My school is a scholarship that is offered to the children of the staff who work at HCL and who fall within a certain income category.

The Shiv Nadar Foundation introduced VidyaGyan in 2009, which is a leadership academy in Uttar Pradesh that reaches out to the underprivileged students from rural backgrounds. The Shiv Nadar Foundation began outreach work in education by establishing educational institutions focusing on Tech and other STEM applications.

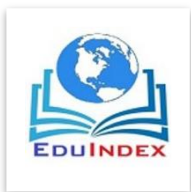
‘Shiksha’ is another initiative of the Shiv Nadar Foundation which was introduced in the year 2012 that set out to deliver ICT powered content to over 25000 students at over 300 schools in rural Uttar Pradesh along with imparting ICT trainings for over 600 teachers. An adult literacy project was also introduced by ‘Shiksha’ in 2015 in 20 villages. The project aims to cover 100,000 schools by 2023.

### **Infosys**

Infosys is also associated with another philanthropic effort through Rohini Nilekani, the wife of the founder Nandan Nilekani who is also the chairman of ‘EkStep’. Mrs. Nilekani is the former chair of the Akshara Foundation, a primary level education initiative in Karnataka and Odisha which has reached 900,000 children since 2000. ICT is incorporated through educational software packages by Akshara’s Library program, which links students to titles in the library. Akshara also serves as the anchor of the Karnataka Learning Partnership wherein communities, schools and non-profits are allowed to share data, network and discuss concrete means to improve the quality of education.

### **EkStep Foundation**

The EkStep Foundation supports ICT enabled education at 2 levels. It creates numerous comprehensive platforms operated by the state governments that provides crowd sourced educational content to end users. EkStep’s app ‘Genie’ provides content that integrates guided practice and assessments into an interesting digital environment that keeps students engaged.



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For teachers, it offers analytics for content creation, tutoring, assessment and reporting. Incentives are offered to content creators to encourage them to apply innovative teaching methods such as concept maps, games and stories in order to share their pedagogical knowledge and experience with others. Ekstep also supports content in multiple languages and adapts to the requirements of the local curricula.

EkStep has also provided support to other ICT based educational platforms such as DIKSHA and Andhra Pradesh's e-knowledge exchange platform, APEKX and has also incubated Sunbird which is an open source repository for teaching and education management solutions.

By collaborating with other organizations and through its own platform, EkStep seeks to impact 200 million children by 2020 together with improving schools, government and non-governmental agencies, extracurricular programs and parents at home.

### **EDUSAT**

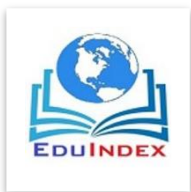
EDUSAT was launched by ISRO in 2004 as an 'educational satellite' which sits in a geosynchronous orbit above India. It serves as a hub for schools and content providers wherein videos education materials can be exchanged. This is one of the most innovative ways to distribute quality educational content to remote areas such as the villages of India.

EDUSAT is also capable of facilitating 2 way interactivity between teachers and students. This would serve well for schools offering distance learning modules and which are equipped with the capacity to receive these transmissions and enough electricity to use them in the classroom.

### **Diksha (Digital Infrastructure for Knowledge Sharing)**

DIKSHA was launched in 2015 in collaboration with the Ministry of Human Resource Development (MHRD), The National Council for Teacher Education (NCTE), and the EkStep Foundation. It was established as a state level plan offering an open and customizable digital education platform in order to host a comprehensive set of educational resources to help teachers develop into more interactive and engaging educators. It has achieved this through consultations with state governments, NGO's and more than 30 public and private organizations. DIKSHA ICT based educational programmes support 10 Indian languages and caters to the varied educational needs of India's diverse population. DIKSHA's core objective is to host Open Educational Resources (OERs) for schoolteachers, teacher educators and student teachers.

### **Meghshala**



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‘Meghshala’ which literally means ‘school on the cloud’ is an effort that emerged from the state of Bangalore in partnership with private organizations such as Teach for India, Tata trusts and the Government of Karnataka towards transforming the state’s education system.

This is a platform that supports more interactive learning within the classrooms. It is designed around an offline mobile android app to help learners and educators. Consisting of 2500 ‘teachkits’ multimedia modules which are aligned with the Karnataka state curriculum, the Meghshala app is prepared by experienced teachers.

Especially in rural areas where teachers and schools may lack the familiarity or infrastructure for ICT based education in their own classrooms, teachers are trained in the technology and then given computers and solar powered projectors to use the ‘Meghshala’ app in their classrooms as intended. Hence ‘Meghshala’ has been created for the teachers’ convenience and aims to reach 100,000 teachers by 2020. It has also been created to support government schools and low income private schools in both urban and rural areas.

### **Learning Delight**

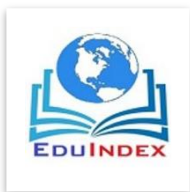
Learning Delight which was founded in 2016 is a digital tool that is currently used in schools in rural Gujarat. The tool uses nontraditional tools like animation, riddles and puzzles in its learning modules.

Learning Delight also offers e-books that utilize audio and video aligned to the state curriculum in the regional language, making subjects more engaging and accessible to students. Learning Delight also offers logistical and technical support to these schools so that the ICT based infrastructure is maintained after installation and the program is properly implemented.

Teachers are also trained in Computer aided Learning (CAL) so that they are able to make the best use of ICT in education.

### **Connected Learning Initiatives (CLIX)**

Experiential learning in the high school classroom is what is being offered by CLIX in the subjects of science, mathematics and communicative English. CLIX was founded in 2015 and has been implemented so far in Chhattisgarh, Mizoram, Rajasthan and Telangana. Software is developed by experts in each of these fields to help students to connect what they have learnt in the classroom to their experiences outside. Since we are lacking in higher order cognitive development in the country accompanied by educational inequality, these serve as significant barriers to India’s future growth. CLIX as a program seeks to improve knowledge, acquisition of skills by involving students directly into the learning process. Hence, CLIX focuses on expanding ICT usage and hands on activities in secondary schools and sustainable growth of the initiative.



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### **Distance Education Platforms**

#### **Swayam (Study Webs of Active-Learning for young Aspiring Minds)**

SWAYAM was introduced by MHRD in July 2017 in collaboration with Microsoft and the All India Council for Technical Education (AICTE). SWAYAM provides Massive Online Open Courses (MOOCS) for Indian students. It caters to the secondary and higher secondary education market to provide affordable education to students within the skill sector and training in advanced subjects. SWAYAM currently supports a bandwidth of one million viewers while the government plans to enroll 10 million students within the first 2-3 years. Currently 323 courses are offered with certificates offered in collaboration with numerous major Indian universities.

#### **Jugnuu**

Jugnuu is a private mobile based platform which seeks to provide English language learning resources to students from remote areas. Jugnuu provides English speaking, reading and listening content to students through phone calls and text messages in order to offer a personalized learning atmosphere outside the classroom. Jugnuu is simple in design and hence can be used by smartphones and feature phone user as well. In this manner, Jugnuu hopes to close learning gaps for students who could otherwise be left behind.

#### **Mindspark**

Mindspark was developed in 2009 in order to improve student competency in the subjects of Maths and English. Misunderstandings in these 2 core subjects are identified through this learning program. More than 2 million data points are used after 10 years of benchmarking tests to grade questions according to the type, difficulty and students needs. A time based reward system is also offered which encourages participation and computational fluency. The application can be used online as well as offline depending upon internet connectivity. Mindspark has been adopted by schools as an affordable and scalable method of instruction and review wherever teachers are either unavailable or inadequate.

#### **Specialized Platforms**

##### **Firki**

Firki is a platform that was started in 2013 and developed by 'Teach for India'. Firki approaches educational needs by blending online resources such as readings, videos and



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assessments with in person facilitation and peer learning. Firkifocuses on developing teaching competencies and providing pedagogical tools in alignment with the B.Ed curriculum. Firki aims to train 50,000 teachers in India using the portal by directly impacting 196,500 children.

### **E-Pathshala**

E Pathshala offers free and easy access to digital text books and learning resources in Hindi, English and Urdu. It was introduced by the MHRD in November 2015 wherein teachers have access to instructional and curricular resources through the platform, including resources for teaching diverse groups of students. The platform also gives access to parents to curricular documents and student resources to support the learning outcomes and participate in their children's education. These resources are also available on a mobile app.

### **Shaala Siddhi**

Shaala Siddhi is a comprehensive school evaluation web portal which enables schools to examine and improve their performance. It is also known as the National program on School Standards and Evaluation (NPSSE). It was introduced in 2015 by the National University of Educational Planning and Administration (NUEPA) under MHRD. The program reaches out to 1.6 million schools across India for evaluation on a set of comprehensive metrics including enabling resources, teacher training, learning outcomes, teacher performance and professional development, school leadership and management, productive community participation and inclusion, health and safety. Results are also easily available for all participants as feedback in order to create a culture of collaborative feedback so that school evaluations may be considered along these lines. This may also lead to the provision of concrete policies and actions from the local to the national level. Therefore the program identifies the specific needs of the schools and the systematic gaps where policy intervention could improve school performance.

### **Story Weaver**

As reading resources in the mother tongue is not easily available, Story Weaver has applied collaborative crowd sourcing to solve the problem since 2015. The platform connects readers, authors, illustrators and translators to create free stories for children, recognizing the issues of affordability and access that limit children's ability to benefit from reading resources in their native language.

### **EVidyaloka**



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Evidyaloka is aimed at improving lower secondary education in rural schools by crowd sourcing volunteer teachers and bringing them to classrooms in the remote areas via digital infrastructure. Digital classrooms are set up by the participating schools including LCD screens, cameras and conference microphones. These are set up by the community partners. The local curriculum and language of instruction is used by the volunteer teachers with a primary focus on mathematics, science and English

### **What needs to be done**

Policy makers are of the belief that by providing computers and broadband internet, the aims of reaching the goals of a digital India will be met with. However, that has not always been the case. One of the greatest challenges of digital inclusion are the psychological and socio cultural barriers that emerge in the use of technology as studies have shown that interpersonal ties and a strong sense of belonging to the community predict the extent to which technology maybe used in rural areas.

-As the stakeholders in education are the learners, teachers, educational administrators, policy makers and the community at large, policies should ideally take into account the best interests of the stake holders, so that all are aware of the issues concerned with establishing ICT enabled education.e.g Panchayats can facilitate the training of teachers and ensure optimal utilization of ICT resources. However, these institutions should be provided with adequate funding and professionally trained staff so that they can effectively take on the responsibility of capacity building at different levels in order to ensure that ICT enabled education is absorbed positively and constructively. Along with this attempts should be made to keep crucial components in place such as the laws regarding privacy and data protection and cyberspace security.

-The involvement of the community and intermediaries selected from the grassroots are key factors for ICT models in rural India to be successful.

-It is imperative to group students according to their learning abilities rather than grouping students with similar grades as this would enable students to use digital content modules depending on their capabilities. In addition to this, the performance of teachers must also be closely evaluated.

### **Challenges in Implementation of ICT Enabled Education**



<sup>5</sup>In the case of developing countries, the potential of ICT to improve the education system in the remote villages and rural areas, is questionable and has met with some inherent difficulties in its implementation. There are internal and external barriers that cause hindrances in the implementation of ICT in rural schools. Among the internal barriers is the lack of trained teachers, knowledge and skills. One of the major reasons for this is that there is hardly any quality training imparted to teachers on a regular basis in these areas. While using ICT within the classrooms, teachers face difficulties due to a lack of resources, inadequate training opportunities, lack of confidence, paucity of time, insufficient knowledge about integrating ICT into the lessons taught in class and lack of support from the administration. Once the barriers to the implementation of ICT are identified, action can be taken to deal with them.

Among other areas of difficulties that prevent teachers from using ICT in the classroom is the dearth of software, insufficient funds, inadequate time and lack of technical skills. Added to these reasons is the unfavorable organizational culture together with poor attitudes and beliefs that is often found in developing countries.

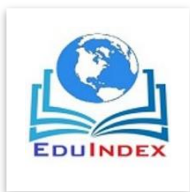
Educational organizations and managements of educational institutions in the rural areas fail to perceive the importance and seriousness of the role of ICT in enhancing education. Teacher's attitudes and perceptions continue to remain orthodox and rigid as they are not willing to adapt to the change. Teachers are also burdened with other extracurricular work in addition to their teaching responsibilities. As a result of these difficulties, teachers do not have the time to design, develop and incorporate technology into their teaching and learning methodologies.

In addition to this is also the issue of maintenance and upgrading of ICT equipment. This is possible only if there is adequate financial aid available. Most of the government initiatives come along with budgetary constraints. The ICT projects in rural schools are not self-sustainable. When the government provisions of ICT projects in rural schools phase out, the expense of the maintenance of the equipment has to be borne by the schools. This is possible only through students' fees which are quite low in rural schools, as students hail from weak economic backgrounds.

Another problem facing rural educational institutions is the fact that, a large proportion of the educational software produced around the world is in English. As proficiency in the English language is not very high especially in the rural schools, this becomes a serious barrier to maximizing the educational benefits of ICT.

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<sup>5</sup>Kundu.A&Keydarnath.D (2018, March), 'Challenges in Implementation of ICT Enabled Education'. International Journal of Scientific Research and Reviews, Pgs. 341-359



There is also a shortage of equipments such as computers and computer related resources such as printers, projectors, scanners etc. in rural schools. Even the basic ICT equipments and computers possessed in rural schools are unreliable and of poor quality.

The introduction of ICT into the educational system also poses the requirement of ICT service centres with trained technical personnel. Without onsite technical support, there is a wastage of money in times of technical breakdowns. Rural schools also face trouble with respect to the availability of supporting infrastructure, uninterrupted electricity, supplementary resources like multimedia, projectors, scanners, smart boards and so on.

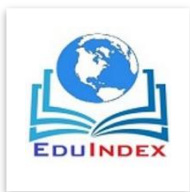
### **Suggestions for Better Implementation of ICT in Rural Schools In India**

Although internet technology was introduced into Indian classrooms in the year 1984-85, the way in which it has been adopted in the teaching learning process has been quite limited. The fact that ICT in school education is strictly restricted to a handful of elite schools is a glaring example of the uneven and limited distribution of ICT resources in the educational system of the country.

One way by which this problem could be resolved is if accreditation bodies like NAAC, NBA, AICTE and CBSE and other authorities come together and create a standard list of parameters to decide the quality of education. In order to bridge the gap between the government and educational institutions in the successful implementation of ICT based education, it is necessary for public and private stakeholders to cooperate. There is an urgent need to focus on improving and enabling ICT with regard to it's access, usage, economic and social impact.

Some suggestions for improving and achieving maximum utilization of ICT enabled education in schools and colleges in rural areas are:

- Establishing state of the art and cost effective adequate ICT along with the necessary infrastructure required for it's maintenance in all secondary schools. This would also take into account the size of the school, needs of the ICT programme and time sharing possibilities
- Not more than 2 students should work at a computer access point at a given time.
- At least one printer, scanner, projector, digital camera, audio recorders and other necessary devices should be part of the infrastructure.



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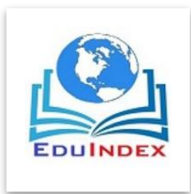
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- Each school should be equipped with at least one computer laboratory with at least 10 networked computer access points to begin with.
- Each laboratory should have a maximum of 20 access points, accommodating 40 students at a time
- The ratio of the total number of access points to the population of the school will be regulated in order to ensure optimal access to all students and teachers
- In composite schools, exclusive laboratories should be set up with the provision of appropriate hardware and software for the secondary as well as the higher secondary classes.
- In addition to this at least one classroom should be equipped with appropriate audio visual facilities to support ICT enabled teaching and learning.
- Appropriate hardware for satellite terminals should also be provided to selected schools in a progressive manner
- Computer access points with internet connectivity should also be provided at the library, the teacher's common room and the school head's office in order to realize the proposed objectives of automated school management and professional development activities.
- The introduction of digital devices like still and video cameras, music and video devices, digital microscopes and telescopes, digital probes for investigation can significantly enhance ICT enabled education and the range of classroom practices. All this can also become a part of the infrastructure of educational institutions.
- All computers in a school maybe part of a single local area network in order to enable optimum sharing of resources
- Broadband connectivity maybe provided in each school by which each school maybe capable of receiving,streaming,audio,video,a range of digital learning resources and interactive programmes
- All computers which are given internet connectivity maybe governed by the available bandwidth, in order to ensure adequate speeds
- In order to have offline access, a mechanism to avail of internet content may also be set.
- An educational programme for teachers and students may also be designed in order to educate them on the safe use of internet firewalls. Along with this, other security measures may be implemented in order to guard the school network against cyber-attacks and the misuse of ICT facilities



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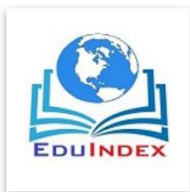
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- In order to ensure network security, appropriate guidelines should also be developed
- In order to expand the range of learning, free and open source software-operating system and software applications would be preferable.
- In order to meet the demands of a broad based ICT literacy and ICT enabled teaching and learning programme, a wide variety of software applications and tools are also required.
- In order to increase the range of skills and conceptual knowledge of the students and teachers, graphics and animation ,desktop publishing, web designing, databases and programming tools are also required which have the potential of increasing the range of skills and conceptual knowledge of the students and teachers.
- Specialized software for different subjects, simulations, virtual laboratories, modeling and problem solving applications should also be encouraged
- For the widespread infusion of ICT enabled education, teachers will also need to be trained in capacity building. In order to achieve this goal, a capacity building programme should be planned in phases. Teachers who are in service may avail of induction trainings as well as refresher courses. The induction trainings maybe imparted by the regional institutes of education of the NCERT, SCERT or such other institutions of the central or state governments. Refresher courses in ICT enabled education maybe carried out every year so that teachers may be able to share, learn and keep abreast of the latest trends in ICT based teaching and learning processes. Following the induction training, teachers may be evaluated in order to ensure that a minimum competency is achieved.
- Teachers may also become a part of some online professional groups e.g. English teachers association after sensitizing them initially. This will help them in continuing their education, pool in their resources and actively contribute to the strengthening of their knowledge base specific to their subjects.
- Forums may also be initiated which will help in facilitating continuous development of ICT skills introducing teachers to tools and resources in different subjects. This will also help in creating and sharing learning resources in those subjects
- Heads of institutions may also play an important role in the administration of digital resources for the school. For this they would have to be trained in the processes leading to automation of administration, management and monitoring of the school system. They would also have to be proactive in the implementation of School Education Management Information System (SEMI).Heads of institutions may also receive support in this area from the states/districts/education department personnel at all levels.



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-Curriculum may also be developed by the national and state level agencies, like the National Institute of Open Schooling, the State Councils of Educational Research and Training, the States Institutes of Educational Technology or any other public educational agency designated by the State. These bodies may also develop resources and undertake capacity building programmes which will serve as models for adaptation and implementation across the system.

-The implementation of the ICT programmes maybe spearheaded by the States Department of Education to guide the implementation of the ICT programme, it's monitoring and evaluation. This advisory group may consist of the a reputed engineering institute of the state, university departments etc. considering the variety of technical,educational,financial and administrative tasks involved.

-The norms for pricing, quality of service and maintenance maybe negotiated by the state's department of education .The respective states may also explore the possibilities of sharing the infrastructure partly or wholly with the community so that education maybe extended to train students after school hours.

-The department of school education and literacy, ministry of HRD, government of India maybe given the responsibility of guiding the implementation of the ICT programme in schools across the country.

-Finally, the task of the overall responsibility of guiding and implementing the ICT programme in schools across the country should be given to the Programme Monitoring and evaluation Group of the Department of School Education and Literacy ,Ministry of HRD,government of India. Task groups maybe set up by the PMEG to invite institutions or professionals with substantial expertise in the ICT sector to develop norms, specifications, guidelines, evaluation reports etc. to guide the educational institutions in implementing the ICT programme.

<sup>6</sup>Since female literacy has been recorded as 58.75% (Census 2011), the provision of functional literacy to rural women should be the first step of any ICT initiative. Various women's issues such as child care, entrepreneurship, health and hygiene can be focused upon within a system of ongoing learning as a vital aspect of women's education. Such functional literacy should inevitably follow into digital literacy. Special hands on training and periodical learning programmes should be organized for women in the rural areas. The requirements of

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<sup>6</sup>Soundari.H.M (2016), 'Role of ICT Initiatives in Sustainable Progress of Rural Women in India'.European Journal of Sustainable Development, Volume 5, Issue 1, Pgs. 39-46



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rural women vary from place to place. It is imperative to provide a comprehensive education to women on legal rights, health education, civic consciousness and human dignity.

### **Inclusive Education**

ICT based education for rural women should include constructive discourses on adult education or lifelong learning so that the illiterate women of the rural areas may acquire functional literacy. This type of education could include skill training and vocational training which could comprise of life skills such as tailoring, knitting, embroidery work, animal husbandry, agriculture etc.

### **Holistic Health**

Rural women need to focus on their health with regard to their personal health and reproductive health. Education on preventive health measures and early detection of cancer must also be imparted. Rural women should also be educated on health related insurance schemes.

### **Value system**

In an inherently patriarchal system, upholding gender equality should be inculcated among women. This may be a challenge as it may be difficult for rural women to unlearn the values that taught them to accept all male members as the patriarchs of the family. They will need to be educated to think in the ways of a gender just society.

### **Conclusion**

The government seems to be moving speedily in the direction of meeting the demands of ICT based education which would depend upon the speed of broadband penetration, availability



of web enabled and mobile compatible learning content and maturity of consumers in accepting the digital format of education. While this has already been achieved in its initial phase in the urban areas, the big opportunity lies in the rural areas wherein the digital format can bring in big gains. Digital education would be beneficial in the sense that it could bring about increased collaboration between learners in all segments. Self-paced and on demand learning would also gain further momentum in the future. This could prove to be highly useful in improving and enabling ICT education specifically in rural India. Monitoring and evaluation must be made a priority for ICT's to be effective and an integral tool of education. However, we may continue to face problems as far as the rural urban divide is concerned in terms of access, equity and resources as educators will have to address the needs of the learning community on a priority basis.

## **References**

- 1)Madangopal.M .D &Madangopal.M (2018 Aug 6) 'CT in education: The rural challenge'CCDS-Centre for Communication and Development Studies.  
Retrieved from<https://digitalequality.in/ict-in-education-the-rural-challenge/>
- 2) Bajpai.N&Biberman.J&S.Aanchal (2019, January)'Information and Communications Technology in the Education Sector in India'.CSD Working Paper Series: Towards a New Indian Model of Information and Communications Technology-Led Growth and Development, Pgs 2, 6, 7,8,9,10,11
- 3)Budhedeo S.S (2016, January)'Issues and Challenges in Bringing ICT Enabled Education To Rural India'. International Journal of Scientific Research and Education, Volume 4, Issue 1, Pgs4759-4766
- 4) Kundu.A&Keydarnath.D (2018, March),' Challenges in Implementation of ICT Enabled Education'.International Journal of Scientific Research and Reviews, Pgs 341-359  
Retrieved from <https://www.researchgate.net/publication/327671947>
- 5) Soundari.H.M (2016),'Role of ICT Initiatives in Sustainable Progress of Rural Women in India'.European Journal of Sustainable Development, Volume 5, Issue 1, Pgs 39-46