# ICT–Enabled Rural Education in India

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***Abstract*—Right to Education is the primary right of every citizen of India, whether a child resides in a high profile society or in a far away not so developed secluded village, according to the Article 45 of Indian Constitution the basic elementary education must be provided to all the children up to the age of fourteen years. Even after 64 years of independence some States in India are still struggling to achieve Universal enrolment, retention and quality education. There are about 1303996 or more than one million rural schools among 6,38,000 villages in India. Schools in rural areas are promoted to raise the level of education and literacy in rural India. The main aim of running these types of** schools in India **is to increase the rate of literacy in rural areas. More than 40 percent of India's population is illiterate and cannot read or write. Schools in rural areas are inadequate and often equivalent to being non-existent. Thus, government's initiative to set up schools in rural areas came into picture. According to Just Indian Schools the conditions of rural education in India, is improving steadily and the government is also providing full support and providing with many initiatives. The fee structure in these schools is also very low so that every child can study and afford it.**

***Index Terms*—Right of education, integrated ICT-rural education, challenges for government.**

## I. Introduction

As per the 2011 census, 72.2% of the population lives in Rural areas about 638,000 villages and the remaining 27.8% lives in more than 5,100 towns and over 380 urban agglomerations. Among all the above mentioned educations techniques adequate in rural India have to change according to the 21st Century. The main aim of this study is to elevate the Scope, Purpose and Methodology adopted for computer education in Rural India.

Information and Communication Technology (ICT) is one of the rapid development technological fields in the global society [1]. Among the developing countries India reached a significant position in development of ICTs. Particularly in the field of education its development is tremendous. There is no doubt in the near future's development will based on ICTs. However benefits of ICTs are not reached expected level in the rural areas still the rural population living with minimum level of ICTs facilities especially the poorest of the poor. Both Central and State Governments and NGOs are allocating huge amount for the development of ICTs and rural education. However the level of improvement in accessibility of ICTs in rural schools did not reached the expected level. This paper gives ideas to improve the rural education through ICTs, especially the computer related technologies. Also provide some suggestions for effective implementation of the national policy for ICT in education in rural areas.

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## II. Present Scenario

In present scenario, condition of rural education is still very poor. In some villages, there are very few Government schools, children have to travel far away distances to avail these facilities and most schools in these locations do not provide computer education. Once I visited my own village "Rampur Shyam Chand" in Raghopur Block of Vaishali District, Bihar, India. In this Block there are so many Government schools upto primary and upper primary level. Despite of all these primary schools, only two or three High Schools are there. All of them are from British period. 10+2 level education facility is not available in these schools, because of this reason lots of students have been migrated from this area and settle in Patna or Hajipur for continuing their further education. Once I visited one of the oldest and popular school namely "Rampur High School" situated in Rampur Village, find out lack of building infrastructure, electricity, telephone facilities, experienced and skilled teachers. When I entered in computer room, I was shocked to see the condition of lab. Computers are not installed there in systematic order and basic software is not installed on to them. I talked to the Co-ordinator of that Department, he told me that we had computers, but no any computer teacher and technical person appointed for this by the government. We only avail computer classes through local people by giving some honorarium by our own contribution. The quality of ICT based education facility is very poor. The teachers get very less income so, most of the time the teachers are either absent or they do not teach properly. There are many initiatives taken by the government, but they are not implemented in the schools, so the present scenario remains the same.

### *A. Problems Faced in Rural Education in India*

- Teachers of rural schools in villages and small towns receive low income so there is a possibility that teachers give less attention to children.
- Most of the schools do not have proper infrastructure. So they do not get most of the facilities such as computer education, sports education and extra-curricular activities.
- There are no proper transport facilities so children don't like to travel miles to come to school.
- There is no excess to supplemental education.

### *B. Need based ICT Education in Rural Areas*

Due to various developmental activities in education

department, rural schools have improving its infrastructure facilities. But the development is not uniformly in all rural areas; still many areas are neglected from even basic infrastructure facilities. Though, governments are providing ICT facilities to rural schools. Many of them are not working properly. The reasons such as, lack of accessibilities of the facilities by the beneficiaries, beyond the level knowledge of users and not full fill their needs or beyond their level of needs. Thus, whenever implement the ICTs related programmes in the rural areas, should be assess local conditions and priorities needs of rural students. The assessment of needs should be following the methods of dialogue, survey and discussion with beneficiaries in rural areas. First they have to understand the real benefits of the programme then only it will sustain in long term and perform effectively in rural areas.

Fig. 1. Rural computer lab

### C. Create Awareness on ICT Education

Before provide knowledge through computer related technologies, should have to create knowledge on ICT education and its usage to the rural school students. Due to their lack of awareness in the field of ICTs, rural students are not paid interest in the computer based education, some of them initially paid their interest later they are not follow, this because majority of rural ICT related programme failure even in initial period. The making awareness and motivation are not only to the students also the instructors of the ICT programme in rural schools.

### D. Infrastructure Facilities

Infrastructure facilities are one of the important factors for the implementation of ICT programme in rural areas. Existing Infrastructure in schools needs to be improved for the successful and unhindered implementation of ICT.Without proper infrastructure facilities like power, place of the centre, connectivity and computer related materials and human support the programme will not success. So before start the ICT education programme should make sure all these facilities.

### E. Community Participation

Involvement/ interest of rural students are one of the significant aspects of ICT education programme. The attitude and behaviour of rural students, accessibilities in ICTs are different from urban students. The urban areas students might have some basic knowledge in the usage of computer and its usages through their method of education and living condition, whereas the rural students may not have much awareness about the benefits of ICT to their educational improvement. So education and motivation of rural students about usages and benefits of ICT programme is an important aspect. Here, the role of teacher is vital. So, first, clear knowledge should be provided to teachers working in rural schools on the ICTs.

Majority of the rural students think computer based education is like computer training in various levels like MS word application and C, C++ programming and also one of instruments for playing games, need more English knowledge, difficult to access and getting information. So these kinds of the unnecessary taboo should be removed from their mind with help of computer graduate, who are living in rural areas and understand rural student's educational and life condition. Without knowledge about rural condition, working for development of rural education will not give sustainable success to rural ICT education programme.

### F. The Vision of the ICT for Education

ICT for education should more concern about upliftment of rural community in this connection the Vision is: **"Integrated Development for Education and Economic Empowerment for Rural Students"**

The integration should be concentrate on rural life condition as well as provide information about urban areas educational developments. The ICT for education programme not only provide computer education to rural students but also it should provide information on higher education, employment opportunities in various fields. In school education of Tamilnadu, for example there is separate syllabus for moral class or life education it has included some vocation training class like farming, vocational training of tailoring and weaving etc. But most of the schools did not follow effectively these classes. So this ICT for education programme can provide these same training and awareness through computer based education technologies with effectively. Also the computer based education will disseminate information on new technological developments from local to global level. It will be a good approach to understand to the rural students about the social and technological development of world also they can easily understand to connect with their rural life condition. This kind of ICT related educational programme will provide employment opportunity to computer and other educated youths in rural as well as areas. Also it will help to rural school students to understand computer related training and wide knowledge about resent developments in world.

## III. Initiatives Taken by Chandragupt Institute of Management Patna (CIMP).

Chandragupt Institute of Management is one of the Pioneer Management Institute in Bihar. The Institute has been contributing in the education sector of the State and has initiated various Social Projects for development of education sector in Bihar. Recently, the Institute has Trained BEO's(Block Education Officers) and DEO's(District Education Officers) of all 38 Districts Bihar under its Management Development Programme(MDP). The

objective of the Training was to enhance the teaching ability of the teachers and students in their respective schools which would be beneficial for the upliftment of Rural Education. All of them were trained through latest ICT based technology including basics of internet access and Microsoft Office package ie, Word, Excel and Powerpoint.

The Institute has also initiated "Social Development Programmes" fully free for students residing in slum areas upto 10th standard under the supervision of Dr. V. Mukunda Das, Director, CIMP. It has also initiated virtual classes Programmes in Rural Areas through Videoconferencing Technologies. The Institute is also working on Rural Knowledge Network as Pilot Project in Dharhar Jammunia village of Purnia District, Bihar, India

## IV. Need for ICT Eduction in Rural Schools

The Indian Education System is one of the largest in world. Planning and Management of ICT based education has primarily the matter of State but Central Government in this area [2]. The large size and complex structures across Indian States makes the matter of policy, planning and monitoring is highly complex. In order to improve the quality and effective ICT education, planning and management is needed in-time and in a format conforms to the requirement of the user operating agencies at various administrative hierarchies. The complexities of the multi-level decision making process and control mechanism increases due to wide geographical institutional network representing variety of school locations and endowment. Further due to the large variation in school structures, endowment and availability of teaching learning resources, the matter become more complicated.

ICTs are a potentially powerful tool for extending educational opportunities, both formal and non-formal, to previously underserved constituencies—scattered and rural populations, groups traditionally excluded from education due to cultural or social reasons such as ethnic minorities, girls and women, persons with disabilities, and the elderly, as well as all others who for reasons of cost or because of time constraints are unable to enroll on campus.

Anytime, anywhere feature of ICTs is the ability to transcend time and space. ICTs make possible asynchronous learning, or learning characterized by a time lag between the delivery of instruction and its reception by learners. Online course materials, may be accessed 24 hours a day, 7 days a week. ICT-based educational delivery (e.g., educational programming broadcast over radio or television) also dispenses with the need for all learners and the instructor to be in one physical location. Additionally, certain types of ICTs, such as teleconferencing technologies, enable instruction to be received simultaneously by multiple, geographically dispersed learners (i.e., synchronous learning).

Access to remote learning resources feature help teachers and students no longer have to rely solely on printed books and other materials in physical media housed in libraries (and available in limited quantities) for their educational needs. With the Internet and the World Wide Web, a wealth of learning materials in almost every subject and in a variety of media can now be accessed from anywhere at anytime of the day and by an unlimited number of people. This is particularly significant for many schools in developing countries, and even some in developed countries, that have limited and outdated library resources. ICTs also facilitate access to resource persons— mentors, experts, researchers, professionals, business leaders, and peers—all over the world

## V. Involvement of Nird

The National Institute of Rural Development is an apex body in the country for Research, Training and Action Research in the field of rural development sector. It works as an autonomous organisation, supported by Ministry of Rural Development, Government of India. It established in 1958, emerged as Centre of Excellence for Research and Training in the Rural Development.

In addition to this, it also involves in curriculum development, preparation of training manuals and training guidelines.

In order to fulfill the objective of widening the reach of coverage of training, NIRD is envisaged to develop a distance learning component in Training Programmes. The distance learning mode can contain the introductory print material, some components of audio video materials, two ways video conferencing technologies, such initiatives have been taken by using ICT tools for the training and development in the field of rural education.

## VI. E-Learning Centers

Government IT Department has to setup ICT based E-Learning Centers in each and every Block in any one of the school either by self or some other NGOs. It will create an E-learning programme for creating literacy campaign in the rural areas and it is a classic example of the effective reach of technology in helping towards the development of rural India. An E-learning centre is a place where the people are taught how to read and write by using visual and audio content.

The ICT based E-Learning system play a vital role in enhancing on line education for social and economic change in rural society. E-learning can be delivered anywhere, anytime, and can provide flexible models, such as just-in-time learning.

## VII. Proposed Model for ICT Education

In the proposed model we have considered all these points and for technical connection we are using RKM (Rural Kiosk Machine) which will provide physical communication between the ICT - RDD (Rural Development Department) and Rural Community [3]. Then these RKM's will be connected to Different Departments, by using area wise wireless connection according to local needs. Initially people will be trained by ICT – RDD in the Community Training Centres i.e ICT-TC and then people itself will be able to use RKM for getting the information.

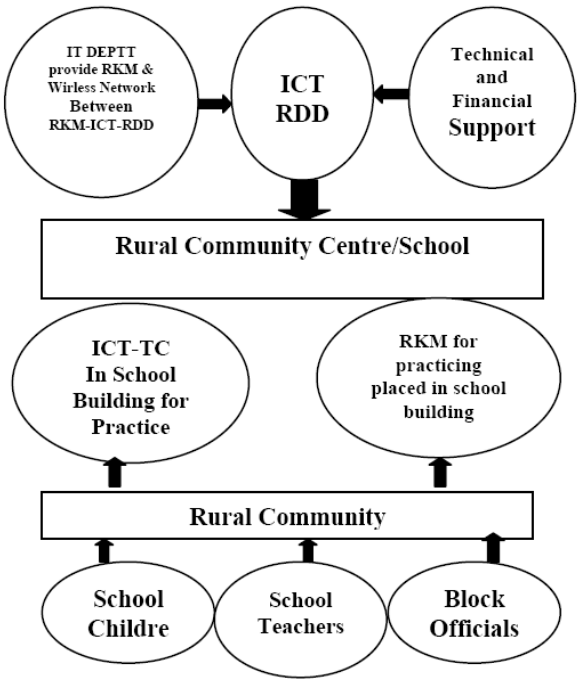


Fig. 2. Model for ICT rural education

### A. Rural Community Center

Rural Community Centre is the central component which consists of Rural Kiosk Machine (RKM) and ICT-Training Centre (ICT-TC). Rural school building will act as a Rural Community Centre which will hold RKM and facilitate the people for 24 hours. The same building will also work as ICT-TC for discussion and trainings in the evening timings for the rural community. ICT teacher/instructor of that ICT-RDD department will help the people that how to use the RKM and how to get information from that machine directly.

### B. Rural Kiosk Machine

Rural Kiosk Machine will contain the information in local languages. Most of the Indian peoples speak Hindi (Devnagari) language as an official language. English is rarely been spoken in rural areas. That's why there is a need for such a kiosk which can present information in Hindi as well as in Regional languages. RKM depicts stored information in textual, audio and video information, live stock, market prices, weather forecast, health etc. This machine will consist of user friendly interface in local language having all the required information needed for the Rural Community. All the related information will updated on hourly basis by using wireless connection by ICT-RDD department which will take information from concerned department.

RKM installation will be sponsored by Ministry of IT. These machines are connected directly through wireless connection to the ICT-RDD. All the RKM Machines will be operated centrally through ICT-RDD Department.

### C. ICT- Training Centres(ICT-TC)

ICT-RDD department will responsible for providing basic education for use of RKM for each faction of rural area by establishing ICT-Training Centre at each school in every village even though it is very small. If school is not available in the village then RKM should be placed at well known secured central place of the village. These centres will provide education on how to get information from the RKMs on almost every rural aspect.

### D. ICT- Rural Development Department (ICT-RDD)

This department will get latest information from IT and other related departments and will update the RKM's and will provide training to ICT instructors for the latest updates at rural community centre. The purpose and theme of the ICT Rural Development Department is the same with an amendment that it will work only for the development of the 70% population which need more attention and care and can be more productive for the development of country, but its cyclic process and hope it will accelerate rapidly with the passage of time.

## VIII. Challenges of the ICT for Education

Government Education Department has to take the hard decision on establishing atleast 20 to 30 computers in each and every schools residing in all the rural blocks and panchayats[4]. Infrastructure facilities are in one of the major challenges in rural schools ICT Programmes, especially in internet connectivity. But in the initial period, without internet connectivity also some training and information through computer can be provided with effectively in rural areas. Nowadays usage of CD (Compact Disk) is not major expensive and technical aspect. All the developmental programmes have been written in the CDs and also installed on computers. After that based on the standard syllabus in rural schools can be framed and then educate students.

The second objective of linkages, are the government training institutions for ICT Programme. The same CD method can be followed to this Programme. All the practical and theoretical works of the exports from the different fields has to be collected in the CDs and display in schools through computers. Here the challenge is computer knowledge of the instructors who are working in the schools. So the instructors selected must have basic knowledge of various technologies related to development aspects.

Another major challenge is knowledge of the local resources and its utilisation. The knowledge on local resources can be acquired from elders in the rural areas and related research institutions, historical events, books. But it should be compiled like a syllabus and provide information to students. It should be simple and understandable to all students.

Finally, the important aspect is involvement and interest of teachers, education department and the end user of the student community in rural areas. These two things can achieved through continuous motivation and provide better awareness about the importance of the ICT Programmes. Another major challenge is monitoring and evaluation of the overall Programme. This has to be done by the concern school education department. The government can be appointing suitable persons to monitor the ICT Programme in schools. But the person should have better knowledge on all over the Programmes like computer skill, technical knowledge on various fields, and knowledge on local resources and its management.

Since ICT is new to rural areas it will be appropriate to establish institutional networks at Panchayat level to facilitate in-service training of teachers and Panchayat officials such as Block Education Officers to ensure optimal utilization of ICT resources. State institute of education and training could provide leadership at the state level which can have network with districts and district level lead institute can develop network with Panchayat level. These institutions, if provided with adequate funding and professionally trained staff, can effectively take responsibility of capacity building at different levels to ensure absorption of ICT inputs.

Through this conclusion of the position paper would like to emphasise that in the national policy of ICT for education, the policy makers paid more attention in rural areas and its student education standard while implement ICT for education programme. It is a great opportunity to rural students to improve their educational, employment and knowledge on world technological developments.

## IX. Objectives

The overall objective of this paper is to improve access to basic information in the rural schools by improving connectivity in the field of education, governance, social inclusion, and health, access to the Internet, and disaster mitigation and control. The main stress is given on development of education level on the basis of ICT in Rural Community. Following are the important objectives that will uplift the rural education.

- To provide employment related education through computer technologies for school students at the standard of 8th to 12th.
- To integrate various government self employment training institute to work for the ICT education programmes.
- To disseminate worldwide current science and technological related information to rural students.
- To create awareness for effective utilization of local resources for development of economic condition.
- To Develop Rural Knowledge Network to enhance the E learning capabilities among rural peoples.
- To provide a forum for the exchange of knowledge and national experiences in promotion of ICT for development in the rural area through Training Centre.
- To produce a tested set of resource and training materials on concepts, issues and approaches to promote and realize the access of ICTs for all through Rural Kiosk Machine.
- Fast and easy access of updated and latest information.

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