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### CHALLENGES IN THE IMPLEMENTATION OF ICT (INFORMATION AND COMMUNICATION TECHNOLOGY) IN RURAL AREAS

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#### ABSTRACT

The problems associated with the implementation of ICT in rural area that have been focused upon in this paper are Infrastructural factors, Economic factors, Cultural factors and technological factors. Among the major problems associated with implementation of ICTs the focus will be laid on Socio-political factors, Human and Administrative factors, Economic factors and Technical factors. Further, the paper based on various case studies and onsite observation derives important conclusions and also provides pertinent suggestions to ensure the smooth growth and effective implementation and application of ICT in the new World.

**KEYWORDS:** ict, it.

#### I. INTRODUCTION

Information and communications technology or information and communication technology, usually abbreviated as ICT, is often used as an extended synonym for information technology (IT), but is usually a more general term that stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals), computers, middleware as well as necessary software, storage- and audio-visual systems, which enable users to create, access, store, transmit, and manipulate information. In other words, ICT consists of IT as well as telecommunication, broadcast media, all types of audio and video processing and transmission and network based control and monitoring functions. The main purpose of ICT in education means implementing of ICT equipment and tools in teaching (school level as well as higher study level) and learning process as a media and methodology. The purpose of ICT in education is generally to familiarize students with the use and workings of computers, and related social and ethical issues. ICT has also enabled learning through multiple intelligence as ICT has introduced learning through simulation games; this enables active learning through all senses.

“The spread of Information and Communication Technology (ICT) has revolutionized the access to education in general and the Distance Open Learning (DOL) in particular. ICT’s role in the expansion of DOL need not be overemphasized. It is common knowledge that every Distance Teaching Institution is fast adapting itself to technology based teaching and learning in order to keep abreast of the changes taking place in educational technology”.

(<http://depfolang.kubsu.ru/ramanujam.html>)

#### II. INFRASTRUCTURAL CHALLENGES

The lack of appropriate infrastructure for enabling the use of ICT for school Education in rural India is a serious bottleneck.

Here are some major problems to be addressed for smooth implementation of ict in rural area of India are-

Availability of proper equipment and tools necessary for ict- In rural Part of India, it is observed that there is lack of proper computer resources necessary for teaching about ict to school students i.e. non availability of ups, or limited number of computers in schools etc, or no proper arrangement of power supply to the schools or computer labs etc are some of common problems in most of schools due to which students do not take much interest in learning icts.

The low levels of Internet penetration in India are clearly known to all of us. The percentage of Internet users is just .05% overall India but in rural area is this percentage is very poor, which compares unfavorably with countries like Thailand (.26%) and China (.27%). The same scenario holds true for most basic infrastructure

needed to make ICT usage more viable in rural area of the country. Further the waiting time for obtaining access to basic ICT is also very long. Even after liberalization, the average waiting time for obtaining telephone access in India is more than 8 months in India. Access to even the most basic of electronic devices like the Television is also highly limited in countries like India. In India the TV penetration is only 80 per 1000. Coupled with these is the fact that, for most modern information and communication technologies, the user charges are very high that makes their use for Distance Education a very costly affair.

### III. ECONOMIC CHALLENGES

In ICT Education in backward and rural field, cost is an important factor that guides the adoption and growth of Communication Technology in that region. Education boards/universities often lack the initial allocation as well as matching funds to make feasible investments in ICTs. But due to greater strengths of students and dynamic nature of technologies, often acquire costly infrastructure for proper implementation of information and communication technology.

Thomas (1987) states that there are four major factors that can affect the growth of Communication Technologies in a Country. They are

- Financial Strength of the society
- Attitude of policy makers- Budget Allocation for the technology
- Cost-efficiency of the technology

(IGNOU, "Growth of Communication Technology", Communication Technology for Distance Education, ES-318, pp.34)

Most Educational institutes are constrained by resource scarcities. Even where the importance of ICTs is recognized, allocation for the development of these is at best paltry. Due to this, many of them are forced to depend on mostly traditional means of education and training. These are limited in their efficiency.

### IV. CULTURAL CHALLENGES

Language is one of the major factors that affect (to a large extent) the use of ICTs by the students in rural areas. This hinders transfer of technology. Educational programmes, computer software and the printed texts are generally available only in English. The students in rural areas are efficient only in their local language and English is considered as one of the toughest subject. As such, such things may fail to impress students.

With regard to cultural patterns there are two groups of policy makers. Policy makers can be Pro-implementation or Anti-implementation. It is precisely the cultural moorings of a society that makes people either in favor of implementing technology or to reject it. Japanese have over the years built up a reputation of being quick to adapt and implement new technology. This can be linked to the way in which a new culture of receptivity to new ideas was built up after centuries of stagnation when Commodore Perry forced the Japanese to open up their society. Again, in recent times it has been seen that the culture of class room teaching and learning has been so strongly built into the psyche of the teaching community that they often exhibit resistance in the way of implementing technological change that forces a change in the role of the teacher from being a store house of all learning to a manager of the teaching-learning process.

### V. TECHNOLOGICAL CHALLENGES

In very small time, technology becomes the determining factor in the growth of ICT in education and any other society. But there are some very important issues that are to be addressed for the application of ICT. Some of them are discussed below.

Power Supply-in the villages and rural area, power supply is a major issue. There are uncertain, undeclared power cuts. Proper power supply is needed to be maintained for the smooth running of systems and programs.

Inadequate computer resources-as discussed earlier, in the remote locations maintaining correct ratio of students and systems in the educational institutes is a big challenge to be addressed.

Shortage of faculty- in a large no of schools, there is no staff for teaching computer, so resources are being wasted and students are lacking in knowledge of ICT.

Untrained/Unqualified faculty – in most of schools, the appointed faculty is not having proper knowledge and teaching skills.

Lack of training for staff- there is no skill improvement or any personality development for staffs who are working as computer teachers in schools program for staffs.

Lack of maintenance and support staff- If any equipment i.e. printer, operating system or any other is not in working state then it will take long time to repair them. So the fluency is disturbed that is not good thing.

One would be justified in applying the Bates criteria for media selection as an appropriate parameter for selecting appropriate technology for educational purposes.

*Bates Criteria for Media Selection*

*Bates states that the following are the major criterion that have to be taken into consideration while selecting appropriate media for Educational purposes*

A - ACCESS TO THE MEDIA

C - COST OF THE PROPOSED MEDIA

T - TEACHING FUNCTIONS OF THE MEDIA IN RELATION TO LEARNING GOALS

I - INTERACTIVENESS AND USER-FRIENDLINESS

O - ORGANISATIONAL ISSUES

N - NOVELTY OF THE MEDIA

S - SPEED WITH WHICH CHANGE CAN BE BROUGHT ABOUT IN THE MEDIA

(IGNOU, "Media in Distance Education ", *Communication Technology for Distance Education*, , (2001), ES-318.

With regard to the acceptance of a particular technology, the factors such as access, cost, teaching functions, interactive ness and user-friendliness, organizational issues and speed afforded to change are important issues. In the case of Media selection, Bates regards Novelty of a media as the least important criterion on which a particular media should be selected or rejected. However, in the case of many third world countries, it is novelty of a media that attracts the attention of policy makers. For example, in the late 70s and 80s, the novelty of TV as a medium influenced the UGC to initiate the Country-Wide Class room program for the benefit of the college students. However much care was not taken to ensure whether, the program could generate enough interest in the student community to make the program a success. Moreover, at the time of its initiation, access to TV sets was also a major problem. Even today the tele-density in India stands at a low 80 per 1000. The end result was that UGC's CWC generated a utilization rate of less than 10%.

Apart from the factors mentioned above, once a technology is selected, there are certain other factors that need the concern of policy makers. Handling of New technology needs care and technical proficiency. For this training is an important aspect. Many developing countries lack enough personnel to train manpower in new technology. Moreover, constant retraining of manpower to acquaint them with changing technology is also important. These often act as constraints before the smooth growth of ICT.

Maintenance of equipment also needs sufficient care. Frequent snags may render equipments unusable. Maintenance as a function also needs sufficiently trained staff, high quality spare parts and machine friendly attitude from the users.

## VI. CONCLUSION

To meet these challenges various remedial steps may be taken. Different section need different type of steps to be taken. These includes training of staff and faculty, proper arrangement equipments and machines, maintenance of these machines, recruitment and engagement of adequate personals.

## VII. ACKNOWLEDGEMENTS

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