

A Comparative Study of Approaches Available to Support the Impact Study of Satellite Supported One Way Educational System

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ABSTRACT

Education is a universally recognized key tool for the prosperity and overall socio-economic development of the country. Quality Elementary education is undoubtedly the quintessential passport to new opportunities and greater avenues as social, economic or higher education. The policy makers of the country are aware the potential benefits of applications of Information and Communication Technologies (ICT) in education and therefore an Educational Satellite (EduSat) was launched by ISRO, which was world's first Indian satellite built exclusively to meet educational objectives only. The aim of this initiative was to provide equal opportunities of quality education and its associated services at every corner of the country. For optimum utilization of the EduSat, numerous educational projects at elementary, higher, technical level were started. The Rajiv Gandhi Project for EduSat Supported Elementary Education (RGPEEE) was one among them, its detailed configuration and functioning is given in Desai et al [4]. Manoj et al [6], Sampat et al [7] Bhandigadi [3] have conducted various studies to find out the impact of the project over the target group of people. These studies were based on the data collected using the questionnaires and feedbacks from the identified remote ends of the network. This paper presents a study about the various methodologies available to support the impact studies of the Satellite Enabled Educational Receive Only Terminals (ROTs) along with their pros and cons. We also suggest the integration of technology enabled authentic audience measurement system as a recent approach for the purpose of impact study of Satellite Enable Educational Receive Only Terminals (ROTs).

Keywords: *Receive Only Terminals (ROTs), Impact Study, Educational Satellite (EduSat).*

1. INTRODUCTION

Education is everything and entire socio, economic and technological development of the nation depends on the availability of quality education to each and every citizen of the nation. With all the collaborative efforts of the policy maker, the Indian literacy rate could reach up to 74.04% in 2011 from 65.38 in 2001, Status of Literacy [8]. The policy makers are also fully aware about the potential benefits of application of Information and Communication Technologies (ICT) and therefore promoting ICT supported educational environment targeting each category of learner. Panda[1], Gupta et al [2] and Choudhary et al [3] emphasized the benefits of ICT empowered education in distance mode.

With the core objective to meet the challenges of quality in education and reaching out to the unreached, satellite technology was reaped in. A solely dedicated for the purpose of education dissemination was conceived. 'EduSat' in September, 2004. The major portion of the EduSat network was in the form DTH type ROT and partially is SIT (Satellite Interactive Terminal). To meet the core objective of this initiative, a number of project in the pilot mode were introduced viz.

- The Primary School Project of Chamarajanagar and Kenchanahalli, Hobli in Karnataka
- Initiative of the Government of Harayana with five channels to cover entire gamut of education viz. Primary Education, Secondary Education (two channels), Colleges and Technical Institutions.

2. RGPEEE: A SATELLITE EMPOWERED ELEMENTARY EDUCATION INITIATIVE FOR HINDI SPEAKING STATES

The Rajiv Gandhi Project for EduSat Supported Project for Elementary Education (RGPEEE) was initiated in December 2005 by Ministry of Human Resources Development (MHRD), Distance Education Council (DEC), Indian Space Research Organization (ISRO), India Gandhi National Open University (IGNOU), DEP-SSA and the concerned State Governments (Gupta et al [2]) with a network of about 1200 Receive Only Terminals (ROTs) in the Hindi speaking states of the country viz. Madhya Pradesh, Chhattisgarh, Uttar Pradesh, Bihar, Jharkhand, Rajasthan and Uttarakhand.

- The Rajiv Gandhi Project for EduSat Supported Education (RGPEEE)

A. Configuration of Receive Only Terminal

The Receive Only Terminals (ROTs) under the RGPEEE network as well in other EduSat networks are in the form of DTH type ROT having solar powered backup support. Under the RGPEEE network, the solar power backup supports an uninterrupted transmission of two and half hours on regular basis to the students of the schools. Here under the network, the Digital Video Broadcasting (DVB) transmission scheme is adopted, which was based on the MPEG-2 video-compression technology. The functional configuration of a Receive Only Terminal (ROT) is shown in Fig. 1.

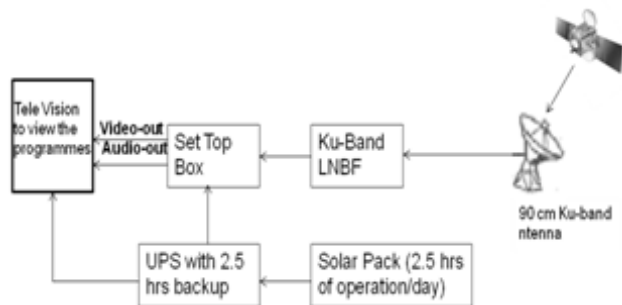


Fig 1: Configuration of Receive Only Terminals of RGPEEE Network

B. Main Objectives of the Project

- To support in improvement of the literacy rate of the country.
- Uniform availability of curriculum to all.
- Regular transmission from the Hub for all the receiving nodes.
- Recurrent training to the teachers about the ICT and other recent techniques.
- Reviving the interest of children with the ICT enabled environment in classroom studies.
- To provide access of quality education, particularly for far flung/remote location schools.
- To reduce the dropout rate in the schools.

C. Outcome of the Initiatives

To find out the impact of Satellite and ICT enabled educational initiatives, a number of studies have been undertaken by different group of researchers viz. Bhandigadi [3] and (Manoj et al [6], Sampat et al [7]) have conducted studies of EduSat supported educational project of Karnataka state and another national project RGPEEE respectively. The required feedback data in these studies was collected using traditional questionnaire approach.

3. NEED OF IMPACT STUDY

- Outcome of the impact studies plays an important role in decision and implementation of the innovative schemes for the betterment of the society.
- The outcome of the impact study of any project in pilot phase determines the life cycle of the projects.
- The impact study of an educational system can be used to assess the quality and impact educational contents over the targeted audience.
- Based on finding, a road map may be planned. If necessary another impact study can be done to determine the improvement in the situation.

4. APPROACHES AVAILABLE TO SUPPORT THE IMPACT STUDY OF SATELLITE ENABLED RECEIVING ONLY TERMINALS

A. Traditional Methodology

The finding of an impact study determines future of the project/scheme. The methods mentioned below are most popular among the researchers to collect the feedback information for further analysis.

- Predesigned Questionnaire
- Interviewing with the people
- Maintenance of Log record at the receiving end
- Telephonically or using other electronic means

The questionnaire approach uses preprinted form to collect the feedbacks to study the impact of the project/scheme. In this approach, the target audience is supposed to answer a series of questions for which a number of choices are provided. Later with the help of analytical tools, these are finally analyzed to record the outcome. The outcome of such studies provides support to the policy makers to take an appropriate decision at appropriate time.

An interview approach, the feedbacks are collected by meeting the people live. These feedbacks are later analyzed using suitable application software.

In log record maintenance approach, each receiving end maintains a register with prescribed format on regular

basis. Periodically, these recorded data are used to study the effectiveness of the project.

In telephonically approach, the staff from the control/transmission end gets feedback by asking some questions to the remote end in random manner. In this approach the remote end should be equipped with the telephone facility and with other electronic means like e-mail facility etc.

With the advent of Information and Communication Technology (ICT), other options of data collection viz E-mail, Chat, Video-conferencing etc. are very popular but these are not easily accessible at the grass roots of the country.

All the above mentioned methods are popular and effective but they do not provide technological evidences for the authenticity of the collected information. Roy et al [4] and Agrawal et al [5] used the number of questionnaire to collect the feedbacks from various group of people and analyzed them to project the impact of initiatives. A number of other researchers have also conducted various impact studies based on secondary data collected in the form questionnaire.

B. Technology Enabled Methodologies

i. Integration of People Meter Device

Gupta [11] has also suggested the integration of the 'People Device' to record the technological enabled information about the transmission. This device is placed with the television at the receiving end. It has capability to record; what is being viewed, by whom, and of storing this information. This information is then periodically transmitted to a central computer using local telephone line. A typically People Meter as shown in Fig. 2, which has 8 lights in front side, numbered from 1 to 8 with its own remote control. These lights may be used in planned manner for different category of audience like students, parents, teachers etc. In case button is not pressed it does not records viewing details assuming that no one is viewing the programme.

To calculate the Television Rating Point (TRP) of different channels, some organizations are already using this technology; its brief is given in Policy Guidelines [9]. This device may be used to indicate the popularity of the channel/programme, which also helps to ascertain the advertisement rates for various programmes/channel. The Indian Television Audience Measurement (INTAM) and some other agencies are providing information regarding the the popularity of the programmer and channel.



Fig 2: A typical "People Meter" Device for DTH type ROTs

To obtain more authentic information, we may integrate the 'People Meter' device with the DTH type educational Receive Only Terminals (ROTs). In case budget limitation we may choose 20-30% of total sites with the representation of all area of the network.

ii. Picture Matching People Meter

We have another option to integrate the 'Picture Matching People Meter' device with the ROTs, if there is possibility of frequent changes in the frequencies of the different channels before sending the signals at the receiving end. This will not provide the accurate data about the viewed programme. To overcome this issue one more reliable technique can be adopted with the integration of 'Picture Matching People Meter'. In this technique, the people meter device records a small portion of the picture that is being watched at the remote end. The central server compares this sample picture with its main data bank to ensure the transmission beamed and scheduled programme at the receiving end.

5. PROS AND CONS OF APPROACHES AVAILABLE TO SUPPORT IMPACT STUDY

The Table 1, focuses on the pros and cons of traditionally used and technology enabled methods available for the purpose of Impact study.

Table 1: Pros and Cons of different Data Collection Methodologies for Impact Study

Characteristics	Traditional approach of Data Collection (questionnaire , interview etc.)	Technology Enabled Method using 'People Meter' Device	Technology Enabled Method using 'Picture Matching People Meter' Device
	[1]	[2]	[3]
Nature	Simple	Simple, operational knowledge is required	Simple, operational knowledge is required
Operational	Not essential	Required	Required

Training			
Human Intervention	may be	No	No
Site Visits	Required	No	No
Funds requirement	No	Yes	Yes
Recorded Data format	In preprinted forms	Digital form	Digital form
Instant Feedback	No	Yes	Yes
Live Interaction	Required	No	No
Authenticity of Audience Measurement Data	Authentic	More authentic	Much more authentic
Outsourcing	Not essential It is manual process and therefore local people may be engaged to collect the feedback in prescribed form.	Required. Currently INTAM (Indian Television Audience Measurement) and a few other agencies are providing services to evaluate the rating of the channel/programme	Required Currently INTAM (Indian Television Audience Measurement) and a few other agencies are providing services to evaluate the rating of the channel/programme
Telephone at the remote site	Not essential	Required	Required
Technological/Communication Failure	No effect because works in offline mode.	Unable to record the information.	Unable to record the information.
Transmission Frequency	N.A.	Single frequency mode	Multiple frequencies modes
Recording of data	Feedbacks are collected in the preprinted questionnaire form.	Records time, frequency of the programme, viewer group at the receiving end	Record time, frequency, viewer group and sample picture of the programme at the receiving end
Analysis of Data	Need to be converted into digitized form.	Readily available for analysis and other purposes.	Readily available for analysis and other purposes.

6. SUGGESTIONS

- The traditional feedback collection approaches are totally manual process and therefore human intervention during the gathering of information is possible.
- The integration of “People Meter” device at the receiving end will automate the data recording procedure.
- The device “People Meter with Picture Matching” is optional because the Set Top Box of Satellite Enabled Receive Only Terminals is tuned for single allocated frequency so there is possibility of change in the tuned frequency.
- On implementation of new approach, instant feedback will be available; the policy maker can see the resulting impact immediately.
- The “People Meter” can be installed in between 20-30% locations of the total network and periodically these may be shifted to other locations to cover the entire network.

7. CONCLUSIONS

The comparative study of pros and cons of various methodologies clearly indicates the benefits of integration of ‘People Meter’ and ‘Picture Matching People Meter’ devices at the receiving end. Usually in the educational Receive Only Terminals (ROTs), the Set Top Box is tuned for a single allocated frequency so “People Meter” device illustrated in column 2 may be at the remote end. With the integration of suggested technology, the authorities will be able to get periodic information regarding viewership data for the purpose of effective monitoring, control and optimum return of the investment. The mechanism will provide quick, authentic, instant information about viewership whenever required without visits to the receiving locations. We have also option to shift the device to other places after stipulated time intervals. Finally, we suggest that with the integration of suggested technology enabled audience measurement system, the policy maker and authorities may get more authentic information for the purpose of effective monitoring and control of the project/scheme.

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